

13th EUROPD MEETING, CONVENTION CENTRE DUBLIN, IRELAND

# TOWARDS SUSTAINABILITY: A LIFELONG JOURNEY

EUROPD



BOOK OF ABSTRACTS

4th - 7th OCTOBER 2017

 Irish Nephrology Society

[www.europd.com](http://www.europd.com)

 @EuroPDMeeting #EuroPD2017

ABSTRACT NUMBER	TITLE	CONFLICT DETAILS
O-2	Reasons for termination of PD during the first year of treatment and evolution of fluid status in incident PD patients - Data from the IPOD-PD Study	Claudio Ronco, Wim van Biesen and Christian Verger are members of the IPOD-PD Study Steering Committee. The study is being funded by Fresenius Medical Care Deutschland GmbH. Wim van Biesen received travel grants and unrestricted grants from Fresenius Medical Care, Gambro and Baxter. Katharina Brand and Tatiana De los Ríos are full-time employees of Fresenius Medical Care.
O-3	Fragile patient and peritoneal dialysis: a practical pathway.	Laura Caliri is an employee of Baxter International Inc.
P-17	Effect of alanyl-glutamine on cellular injury and cytoprotective responses in endothelial cells during peritoneal dialysis fluid exposure	RH and KK are former employees of Zytoprotec GmbH.
P-34	Quality improvement to grow and maintain a PD Programme	Mrs Cole is an employee of Baxter Healthcare.
P-50	Increasing UF volume mirror the decline in GFR and urine output in PD patients: a three year follow-up in incident PD patients – Data of the IPOD-PD Study	Paul Chamney and Tatiana De los Ríos are full-time employees of Fresenius Medical Care.
P-51	Changes in body composition (BMI, LTI, FTI) over a 36 months period in incident PD patients: is there a negative effect of glucose exposure on body composition? – Data of the IPOD-PD Study	Claudio Ronco, Wim van Biesen and Christian Verger are members of the IPOD-PD Study Steering Committee. The study is being funded by Fresenius Medical Care Deutschland GmbH. Wim van Biesen received travel grants and unrestricted grants from Fresenius Medical Care, Gambro and Baxter. Peter Wabel and Tatiana De los Ríos are full-time employees of Fresenius Medical Care.
P-52	Evolution of PD treatment during the first 3 years of dialysis – Data of the IPOD-PD Study	Claudio Ronco, Wim van Biesen and Christian Verger are members of the IPOD-PD Study Steering Committee. The study is being funded by Fresenius Medical Care Deutschland GmbH. Wim van Biesen received travel grants and unrestricted grants from Fresenius Medical Care, Gambro and Baxter. Katharina Brand and Tatiana De los Ríos are full-time employees of Fresenius Medical Care.
P-60	Clinician PD Prescription Changes Following Application of 2-Way Cycler-Embedded Remote Patient Management (RPM) Technology : Aggregate Practice Patterns	All authors are employees of Baxter Healthcare Corporation
P-61	Influence of an Automated Peritoneal Dialysis (APD) Cycler-embedded Remote Patient Management (RPM) Platform on Time Spent by Nurses on Perceived Higher-Value Interactive Tasks with Patients	Catherine Firanek and James Sloand are employees of Baxter Healthcare Corporation.
P-169	Analysis of cytoprotection of mesothelial cells by GSK3 $\beta$ -inhibition in peritoneal dialysis fluids	RH and KK are former employees of Zytoprotec GmbH
P-195	Incidence of Hospitalized Peritonitis in the United States	All authors are employees of NxStage Medical (Lawrence, Massachusetts).
P-216	Alterations in tissue and blood capillary wall in relation to changes in peritoneal transport characteristics in CAPD patients with ultrafiltration failure	B. Linholm is employed by Baxter Healthcare Corporation.

Moderated Posters Session (E-Poster Presentations)

Session 1: Thursday 5th October, 08.00-09.00

Session 2: Thursday 5th October, 14.15-15.00

Session 3: Thursday 5th October, 14.15-15.00

Session 4: Friday 6th October, 08.00-09.30

Session 5: Saturday 7th October, 08.30-09.30

## O-1

## CAUSES OF UNPLANNED DIALYSIS INITIATION

James Heaf<sup>1</sup>, Johan V Povlsen<sup>2</sup>, Anette Bagger Sørensen<sup>3</sup>, Aivars Petersons<sup>2</sup>, Baibar Venere<sup>2</sup>, Maija Heiro<sup>3</sup>, Else Randers<sup>7</sup>, Niels Løkkegaard<sup>12</sup>, Inga Bumblyte<sup>11</sup>, Mai Ots-Rosenborg<sup>4</sup>, Jan Dominic Kampmann<sup>8</sup>, Naomi Clyne<sup>6</sup>, Inger Lagreid<sup>10</sup>, Olof Heimbürger<sup>9</sup>, Bengt Lindholm<sup>9</sup>

<sup>1</sup>Zealand University Hospital, Denmark, <sup>2</sup>P.Stradins University Hospital, Latvia, <sup>3</sup>Aarhus University Hospital, Denmark, <sup>4</sup>University Hospital of Tartu, Estonia, <sup>5</sup>Turku University Hospital, Finland, <sup>6</sup>Skåne University Hospital and Lund University, Sweden, <sup>7</sup>Viborg Regional Hospital, Denmark, <sup>8</sup>Hospital of Southern Jutland, Denmark, <sup>9</sup>Karolinska Institute, Sweden, <sup>10</sup>St. Olav University Hospital, Norway, <sup>11</sup>Lithuanian University of Health Sciences, Lithuania, <sup>12</sup>Holbaek Hospital, Denmark

## Objective

Unplanned dialysis initiation (DI) affects about 40% of patients. It is associated with increased morbidity and mortality, and reduced modality choice, particularly for PD. We analysed predialysis clinical and biochemical factors to identify possible causes of unplanned DI

## Methods

The Peridialysis project is a multicentre prospective study involving 14 hospitals in 7 Nordic countries. Clinical and biochemical patient data in the pre-dialysis, and the circumstances surrounding DI, were registered in 2015-16.

## Results

840 patients were included. 43% were unplanned (UDI). Causes were: late referral 6%, acute uraemia 8%, acute progression 15%, delayed planning 5%, patient non-compliance 2%, refused dialysis but changed mind 2%, other 5%. Age (>60 yrs 46% vs. 39%\*), comorbidity (>1 chronic disease 53% vs. 38%\*\*\*), but not DM or sex, were related to UDI. GFR 3 & 6 months previous to DI was higher in UPD (15.8 vs. 11.1\*\*\* and 12.2 vs. 9.4\*\*\* ml/min respectively), but lower at DI (median 6.3 vs. 7.2 ml/min\*\*\*). Dialysis information was given at a lower GFR (8.7 vs. 10.7 ml/min\*\*\*). UDI was associated with rapid fall in GFR (6-3 months 9.7 vs. 6.0\*\*\* ml/min/yr, 3-0 months 19.7 vs. 6.9\*\*\*). GFR at DI was higher in patients with high comorbidity (>3 chronic diseases 7.7 vs. 6.3 ml/min\*\*)

## Conclusions

While UDI is common, more than 50% of cases are potentially avoidable. GFR has little predictive value, but suggests that dialysis access generally be established at a GFR≥9 ml/min. The major avoidable causes of UDI were failure to appreciate that patients with high comorbidity will need earlier DI, and delay in reacting to a rapidly declining GFR, which was already detectable 3 months prior to DI.

\*:p<0.05; \*\*:p<0.01; \*\*\*: p<0.001

## O-2

## REASONS FOR TERMINATION OF PD DURING THE FIRST YEAR OF TREATMENT AND EVOLUTION OF FLUID STATUS IN INCIDENT PD PATIENTS - DATA FROM THE IPOD-PD STUDY

C Ronco<sup>1</sup>, C Verger<sup>2</sup>, J Heaf<sup>3</sup>, R Azar<sup>4</sup>, Z Britto<sup>5</sup>, M Theodoridis<sup>6</sup>, S Shin<sup>7</sup>, D Rončević<sup>8</sup>, A Andriks<sup>9</sup>, J Pérez Martínez<sup>10</sup>, F van der Sande<sup>11</sup>, R Alonso<sup>12</sup>, K Brand<sup>13</sup>, T De los Ríos<sup>13</sup>, W Van Biesen<sup>14</sup> for the IPOD-PD study group

<sup>1</sup>San Bortolo Hospital, Vicenza, Italy, <sup>2</sup>RDPLF, France, <sup>3</sup>Zealand University Hospital, Denmark, <sup>4</sup>C.H. Dunkerque, France, <sup>5</sup>Centro De Terapia Nefrológica, Brazil, <sup>6</sup>General University Hospital of Alexandroupolis, Greece, <sup>7</sup>NHIS Ilsan Hospital, Korea, <sup>8</sup>KBC Mostar, Bosnia, <sup>9</sup>General Hospital of Ioannina, Greece, <sup>10</sup>Hospital de Albacete, Spain, <sup>11</sup>University Hospital Maastricht, Netherlands, <sup>12</sup>Complejo Hospital Universitario de Santiago, Spain, <sup>13</sup>Fresenius Medical Care Deutschland GmbH, Germany, <sup>14</sup>University Hospital Ghent, Belgium

## Objective

The aim of this non-interventional study was to track the evolution and association of fluid status and PD prescription in 1,092 incident PD patients from 28 countries (Europe, Latin America and Asia) over a 3 year follow-up period and reasons for and time to PD termination.

## Methods

After informed consent, information about PD treatment and outcome parameters was obtained along with fluid status data using bioimpedance spectroscopy. Where possible, documentation was repeated at 3 monthly intervals until either the patient dropped out or reached the end of the observation period. Reasons for and time to drop-out were also documented.

## Results

Patients had a follow-up time of 1.9 ± 1.3 years. The evolution (median, 25th and 75th percentile) of the relative fluid overload (rFO) in the analysis population (N = 1,054) in different patient categories is shown in the table below. Group allocation was according to baseline status (M0 = Month 0).

visit	rFO (%) in subgroups														hypertonic: no polyglucose but at least 1 exchange with glucose concentration >1.5% other: no polyglucose and no exchange with glucose concentration >1.5%
	male		female		no diabetes at M0		diabetes at M0		polyglucose at M0		hypertonic at M0		other at M0		
	N	Med [q1, q3]	N	Med [q1, q3]	N	Med [q1, q3]	N	Med [q1, q3]	N	Med [q1, q3]	N	Med [q1, q3]	N	Med [q1, q3]	
M0	598	10.6 [4.3,18.5]	448	6.5 [0.0,14.7]	676	7.0 [0.9,13.0]	370	14.2 [8.3,21.2]	157	9.1 [3.6,16.4]	297	10.0 [2.7,19.3]	592	8.3 [1.6,15.7]	
M3	419	10.2 [3.8,16.9]	303	5.9 [0.0,13.5]	477	6.5 [0.7,12.5]	245	12.9 [5.9,9.9]	65	9.0 [3.1,16.1]	203	8.4 [1.4,16.4]	434	8.3 [1.7,14.8]	
M12	343	7.8 [1.2,13.6]	260	4.4 [-1.6,10.1]	386	4.0 [-1.3,9.7]	217	10.4 [5.4,16.5]	87	6.0 [-0.5,10.4]	167	6.6 [0.0,12.3]	349	6.9 [0.0,12.8]	
M24	190	9.4 [2.5,15.3]	148	4.9 [0.0,10.2]	205	5.0 [-1.3,10.3]	131	10.8 [4.7,18.0]	43	5.1 [0.0,10.9]	91	6.4 [1.0,13.2]	202	7.5 [0.6,14.2]	
M36	113	9.3 [2.8,15.5]	90	5.8 [0.0,11.4]	122	5.6 [0.0,10.8]	81	10.6 [4.8,18.9]	27	8.1 [1.3,13.5]	53	5.2 [0.5,11.4]	123	9.0 [2.5,14.1]	

During the first year, 30% (N=317) dropped out of the study. The most frequent reason was transition to HD (N=110); 51 patients died and 80 patients were transplanted. The smallest drop-out rate (10%) during the first year was observed in Asian patients, while patients in Eastern Europe and Middle East (EEME) showed the highest drop-out rate with 37%.

## Conclusions

As already observed in prevalent PD patients, incident males vs. females and patients with vs. without diabetes have a higher rFO. Already at baseline, 43% of the patients received polyglucose and/or hypertonic solutions; these patients had a slightly higher rFO at baseline, but a more pronounced decrease over time. The impact of early use of polyglucose and hypertonic solutions on rFO will be the subject of further analysis. Additionally, the effect of regional differences in practice patterns on technique and patient survival needs to be elucidated.

## O-3

## FRAGILE PATIENT AND PERITONEAL DIALYSIS: A PRATICAL PATHWAY

Giuliano Boscutti<sup>1</sup>, Sabina Leonardi<sup>1</sup>, Paola Sclauzero<sup>1</sup>, Laura Caliarì<sup>2</sup>

<sup>1</sup>For the "Leonardo Project Italian Working Group" 43 Italian Centers, including ASUITS, Italy, <sup>2</sup>For the "Leonardo Project Italian Working Group" 43 Italian Centers. Baxter International Inc., Italy

## Objectives

To enable frail uremic patients to participate in a home peritoneal dialysis (PD) program managed by a team of external trainers to improve self-management. The study was named "Leonardo Project" and supported by Baxter®.

## Methods

This was a multicenter trial from July 2012 to April 2016. We enrolled 184 frail uremic patients (115 male and 69 female; age 68±14 years) that underwent home training in peritoneal dialysis (70 CAPD and 114 APD) and after this eight scheduled home visits for a year. We identified frail uremic patients administering the Charlson Comorbidity Index (CCI), Karnofsky Scale (KS) and Coping Score (CS) tests. A score consistent with frailty by any of these three tools was considered diagnostic. Another condition analysed was the presence or absence of a possible care giver. Clinical outcomes (causes of drop out, deaths, method longevity, etc.) and data useful for centre clinical practices (compliance with dialysis and drugs prescribed, hygienic conditions, logistics etc.) were collected by a predefined check-list. We analysed descriptive statistics and Kaplan-Meier survival curves.

## Results

Almost half of the patient (49.5%) were older than 70 years. PD program survival in frail patients with the Leonardo program vs non-frail controls improved in long term observation: 70.7% vs 68.2% at 12 months, 50.2% vs 45.9% at 24 months, 36.9% vs 28.8% at 36 months. The hospitalization rate was 12% within the global population, with no direct correlation with dialysis modality.

## Conclusions

The frail patient, including the elderly, is capable of executing home PD, and a program of home PD with external trainers can improve survival of the patient and of the method. Clinical outcomes are comparable to the overall dialysis population. The success of PD in this population may offer better use of health system and economic resources as well as improved quality of life.

## O-4

## PERITONEAL DIALYSIS AFTER KIDNEY TRANSPLANT FAILURE: A NATIONWIDE MATCHED COHORT STUDY FROM THE FRENCH LANGUAGE PERITONEAL DIALYSIS REGISTRY (RDPLF)

Cécile Courivaud

University Hospital Besançon, France

## Objectives

Failed kidney transplant is becoming a frequent cause of dialysis initiation. Although studies have shown no difference between peritoneal dialysis (PD) and hemodialysis in terms of patients and technique survival, PD remains quite rarely used in this condition. Studies in larger matched cohorts are missing.

## Methods

We conducted a retrospective study. 328 patients registered in the French Language Peritoneal Dialysis Registry (RDPLF) who started PD after kidney transplant failure (Tx group) between January 2002 and December 2012 were compared to 656 matched never transplanted patients having started PD during the same period (Control group). Patients and PD technique survival as well as peritonitis episodes were analyzed.

## Results

Over the study period, patients' survival was similar between the 2 groups (p=0.34). Mean time on PD was significantly shorter for patients in the Tx group: 17 months [14-20] compared to 21 months [19-23] in the control group (p=0.003). The main cause of transfer was adequacy failure (p=0.04). In multivariate analysis, kidney transplant failure (p<0.0001), younger age (p=0.02), and gender male (p=0.01) were associated with a higher risk of transfer to hemodialysis. Peritonitis rates were similar in the 2 groups: 43.6% (n=143) vs 40.1% (n=263) of patients experienced at least one episode of peritonitis, in Tx and control group, respectively (p 0.32).

## Conclusions

Comparing Tx and control groups, we report similar patients' survival and peritonitis rate but a higher PD technique failure in Tx group.

## O-5

## COMPLEMENT ACTIVATION IN PERITONEAL DIALYSIS INDUCED ARTERIOLOPATHY

Maria Bartosova<sup>1</sup>, Betti Schaefer<sup>1</sup>, Justo Lorenzo Bermejo<sup>2</sup>, Silvia Tarantino<sup>3</sup>, Felix Lasitschka<sup>1</sup>, Ariane Zaloszc<sup>4</sup>, Jun Oh<sup>5</sup>, Dorota Drozd<sup>6</sup>, Enrico Verrina<sup>7</sup>, Christoph Aufricht<sup>3</sup>, Franz Schaefer<sup>1</sup>, Klaus Kratochwill<sup>8</sup>, Claus P. Schmitt<sup>1</sup>

<sup>1</sup>University Hospital Heidelberg, Germany, <sup>2</sup>Institute of Medical Biometry and Informatics, University Heidelberg, Germany, <sup>3</sup>Medical University Vienna, Austria, <sup>4</sup>University Hospital of Strasbourg, France, <sup>5</sup>University Medical Center Hamburg-Eppendorf, Germany, <sup>6</sup>Jagiellonian University Medical College, Poland, <sup>7</sup>G. Gaslini Institute, Italy, <sup>8</sup>Christian Doppler Laboratory for Molecular Research in Peritoneal Dialysis, Medical University Vienna, Austria

Cardiovascular disease (CVD) is exceedingly severe in patients with chronic kidney disease (CKD) and further aggravated by peritoneal dialysis (PD). Children are devoid of pre-existing CVD and provide unique insight into specific uremia and PD induced pathomechanisms of CVD.

Specimens were obtained from children at time of PD catheter insertion, from children with established PD, and age matched non-uremic controls. Omental arterioles were microdissected from tissue layers not directly exposed to PD fluid and adjacent sections were used for transcriptomic and proteomic analyses. Findings were validated in omental and parietal arterioles from independent paediatric CKD5 and PD cohorts.

Uremia up-regulated 173 and down-regulated 117 arteriolar genes ( $p < 0.01$ ) compared to age and sex matched healthy controls. In children on PD, 88 genes were up- and 11 genes downregulated compared to uremia. Gene ontology analyses demonstrated activation of inflammatory, immunological and stress response cascades with uremia and even more with PD. In children on PD the complement system and respective regulatory pathways were upregulated most significantly. C3d was the fragment with the highest abundance.

In the validation cohort, C1q, C3d and terminal complement complex (TCC) were increased with PD compared to uremia and controls. In parietal arterioles, C1q and TCC correlated with degree of vasculopathy ( $r = -0.57 / -0.55$ ; both  $p < 0.05$ ) and with glucose exposure ( $r = 0.59 / 0.64$ ,  $p < 0.05 / p < 0.01$ ). TGF $\beta$  induced pSMAD2/3 abundance correlates with C1q and TCC ( $\rho = 0.5 / r = 0.41$ ,  $p < 0.01 / p < 0.05$ ) and inversely correlates with L/V ratio ( $r = -0.5$ ,  $p < 0.01$ ).

Dialysis fluids activate arteriolar complement and TGF $\beta$  signaling, which are quantitatively correlated with the severity of arteriolar vasculopathy.

## O-6

## PERITONEAL INFLAMMATION INCREASES OVER TIME, WITH ASSOCIATED INCREASE IN PLASMA IL-6 PREDICTING WORSENING SURVIVAL: RESULTS FROM THE GLOBAL FLUID STUDY

Emma Elphick<sup>1</sup>, V Zavvos<sup>2</sup>, D Fraser<sup>2</sup>, J Chess<sup>3</sup>, YL Kim<sup>4</sup>, JY Do<sup>5</sup>, HB Lee<sup>6</sup>, SN Davison<sup>7</sup>, M Dorval<sup>8</sup>, S Davies<sup>1</sup>, N Topley<sup>2</sup>, M Lambie<sup>1</sup>

<sup>1</sup>San Bortolo Hospital, Vicenza, Italy, <sup>2</sup>RDPLF, France, <sup>3</sup>Zealand University Hospital, Denmark, <sup>4</sup>C.H. Dunkerque, France, <sup>5</sup>Centro De Terapia Nefrológica, Brazil, <sup>6</sup>General University Hospital of Alexandroupolis, Greece, <sup>7</sup>NHIS Ilsan Hospital, Korea, <sup>8</sup>KBC Mostar, Bosnia, <sup>9</sup>General Hospital of Ioannina, Greece, <sup>10</sup>Hospital de Albacete, Spain, <sup>11</sup>University Hospital Maastricht, Netherlands, <sup>12</sup>Complejo Hospital Universitario de Santiago, Spain, <sup>13</sup>Fresenius Medical Care Deutschland GmbH, Germany, <sup>14</sup>University Hospital Ghent, Belgium

Local peritoneal inflammation is a feature of peritoneal dialysis (PD) treatment and high concentrations of dialysate IL-6 (dIL6) are a strong determinant of peritoneal solute transport rate (PSTR). PSTR increases during long term PD but it is unknown whether dialysate IL-6 rises. Plasma IL-6 (pIL6) predicts survival but whether dIL-6 contributes to plasma levels is unknown.

We conducted a longitudinal analysis of the Global Fluid study, a multinational cohort study from UK, Canada and Korea. All incident patients with 3 or more paired dialysate/plasma samples were assayed for IL-6 by electrochemiluminescence. PSTR was assessed by modified peritoneal equilibration testing to calculate the dialysate to plasma creatinine ratio. A linear mixed model with random intercept/slopes was used to assess associations with pIL6 and PSTR. Covariates included time, centre, dIL6, gender, age, comorbidity and urine volume. pIL6 and dIL6 were log transformed. Cox regression assessed all-cause mortality with 77 events. An unadjusted joint longitudinal survival model (JLSM) assessed pIL6 values and changes in pIL6.

217 patients with 1274 measurements, median follow up time 2.2 years. There was a significant increase in dIL6 (1.17 pg/ml/year 95% CI 1.11 to 1.24) and pIL6 (1.08 pg/ml/year per year 95% CI 1.02 to 2.24). dIL6 was significantly associated with pIL6 ( $\beta$  0.099 95% CI 0.063 to 0.135) and PSTR ( $\beta$  0.069 95% CI 0.056 to 0.083  $p < 0.001$ ). pIL6 was negatively associated with survival (HR 4.51 per log10 order, 95% CI 1.85 to 11.0) adjusting for age and comorbidity.

JLSM showed a significant negative effect on survival of pIL6 values ( $\beta$  4.31 95% CI 2.73 to 5.90) and trajectories over time ( $\beta$  -23398 95% CI -31313 to -15483).

There is a rise in solute transport over time which is associated with an increase in dialysate IL-6. This is associated with an increase in plasma IL6, which predicts mortality.

## O-7

## PATHOGEN-SPECIFIC LOCAL MicroRNAs IN PERITONEAL DIALYSIS PATIENTS WITH ACUTE PERITONITIS

Amy Brook<sup>1</sup>, Melisa Lopez-Anton<sup>1,2</sup>, Anna Rita Liuzzi<sup>1</sup>, Anne-Catherine Raby<sup>1,2</sup>, Mario Labetta<sup>1,2</sup>, Timothy Bowen<sup>1,2</sup>, Donald Fraser<sup>1,2,3,4</sup>, Matthias Eberl<sup>1,4</sup>

<sup>1</sup>Division of Infection and Immunity, School of Medicine, Cardiff University, United Kingdom, <sup>2</sup>Wales Kidney Research Unit, Cardiff University, United Kingdom, <sup>3</sup>Directorate of Nephrology and Transplantation, Cardiff and Vale University Health Board, University Hospital of Wales, United Kingdom, <sup>4</sup>Systems Immunity Research Institute, Cardiff University, United Kingdom

Peritoneal dialysis (PD) is a daily reality for 250,000 patients with end-stage kidney failure worldwide. However, infection and inflammation-induced damage on the peritoneal membrane remain the major reason for treatment failure. Neither direct identification of the causative pathogen nor current biomarkers are sufficiently accurate or rapid to reliably diagnose acute infection. We recently showed that the local host response evoked by distinct organisms is characteristic enough to rapidly identify pathogen-specific differences ('immune fingerprints'). Furthermore, certain peritoneal microRNAs in PD patients are associated with the risk of peritoneal membrane fibrosis and technique failure.

This study investigates the role of local microRNAs during acute PD-related peritonitis and analyses their potential as biomarkers to guide treatment, and aims at defining the underlying molecular mechanisms. This is achieved by recording pathogen-specific microRNA profiles in the cell-free effluent of PD patients presenting with acute peritonitis using TaqMan Low Density Arrays and qPCRs. As proof-of-concept, we use samples from patients with well-defined Gram-negative and coagulase-negative Staphylococcus infections, representing the two main organisms causing peritonitis.

Results indicate that levels of certain microRNAs are altered in PD effluent during peritonitis, with some microRNAs increasing (such as miR-223) and some microRNAs decreasing (such as miR-21 and miR-31) on day 1 of an infectious episode, compared to non-infected patients. These microRNAs can also be detected in a mouse model of peritonitis. Our single-centre study shows promise for infection-associated changes in local microRNA levels to contribute to pathogen-specific diagnostic immune fingerprints that may guide early treatment of PD-related peritonitis

## O-8

## GLUCOSE METABOLISM AS PART OF METABOLIC SYNDROME IN NON-DIABETIC PD PATIENTS: RESULTS FROM PD-CRAFT

Mark Lambie<sup>1</sup>, Louise Phillips-Darby<sup>1</sup>, Arduino Arduini<sup>2</sup>, Simon Davies<sup>1</sup>

<sup>1</sup>Keele University, United Kingdom, <sup>2</sup>CoreQuest, Italy

## Objectives

Dialysate glucose loading has been associated with an increase in metabolic syndrome in ethnically Chinese patients however the impact on other populations is not clear, and neither is the impact on systemic glucose metabolism.

## Methods

This was a cohort study of prevalent patients on peritoneal dialysis in 39 centres in the UK. Whole blood samples were stored in the BioCentre and transferred to a central laboratory for glycated haemoglobin assays. Waist circumference was measured with dialysate in situ, and other demographic and clinical measures were stored in a bespoke database (PDDb). Adjusted analysis was by linear regression models, with backwards selection of variables.

## Results

628 non-diabetic patients were included but 26 patients with values >8.0% were excluded from further modelling. There was a median glycated haemoglobin of 5.7% (IQR 5.4-6.0). There was no significant correlation between glycated haemoglobin and dialysate glucose load (-0.08). Correlations with individual components of metabolic syndrome were absent/weak (body mass index 0.05, triglycerides 0.09, HDL cholesterol -0.06) apart from waist circumference (0.17). Results for random plasma glucose levels were similar to glycated haemoglobin. In multivariable modelling there was strong evidence for an effect of age, and decreasing strength of evidence for an association with triglycerides, waist circumference and ischaemic heart disease with no evidence for other variables including dialysate glucose load. The multivariable model had an adjusted R-squared value of 0.18. Waist circumference provided a better model than body mass index ( $\Delta$ -2LL=3.58).

## Conclusions

There does not appear to be any significant association between glycated haemoglobin and dialysate glucose load in non-diabetic PD patients. This could be partly because the variability in glycated haemoglobin is poorly explained by other aspects of metabolic syndrome.

## P-1 Moderated Poster Session 2

### A SINGLE PD DWELL INDUCES UPREGULATION OF NK1 RECEPTORS AND SUBSTANCE P DEPENDENT IL-6 RELEASE IN RAT PERITONEUM

Manus Braide<sup>1</sup> Oliver Williams<sup>1,2</sup> Eva Jennische<sup>1</sup>,

<sup>1</sup>University of Gothenburg, Sweden, <sup>2</sup>University of Bath, United Kingdom

#### Objective

A single PD dwell inflicted on the naive peritoneal membrane of the rat has been used as a model to study the local pro-inflammatory effects of PD, ultimately leading to functional and morphologic changes of the peritoneal membrane. The cytokine IL-6 is used as a marker of peritoneal membrane change in PD patients. In the rat model a PD dwell induces synthesis and release of IL-6, possibly related to substance P effects mediated by NK1 receptors. Hypothetically, PD induces substance P signaling and upregulation of NK1 receptors thus providing a mechanism for maintaining peritoneal inflammation.

#### Methods

Single 4-hour 20 ml PD dwells of filter-sterilized, lactate-buffered, 2.3% glucose PD fluid were performed in rats with previously implanted PD catheters. Dialysate samples were collected for measurements of IL-6 release. Transcription of IL-6 and NK1 receptors in relation to housekeeping genes beta-actin was quantified by qPCR on RNA extracts from abdominal muscle biopsies. The expression of NK1 receptors in the peritoneal membrane was evaluated by immuno histochemistry. PD with and without pre-treatment with the NK1 receptor blocker Spantide II was compared with untreated animals and animals with implanted PD catheter but no PD treatment.

#### Results

Transcription of NK1 receptors and IL-6 increased significantly after a PD dwell. The mRNA levels for IL-6 were partially restored by treatment with the NK1 receptor blocker. The tissue expression of NK1 receptors showed a trend towards an increase following a PD dwell.

#### Conclusions

A single PD dwell induced upregulation of NK1 and a substance P dependent increase in IL-6 transcription. These effects are potentially connected to long-term changes of peritoneal morphology and function and may, hypothetically, have counterparts in the human reaction to PD fluid exposure.

## P-2

### NO RELATION BETWEEN PERITONEAL FIBROSIS AND FREE WATER TRANSPORT IN A CHRONIC MODEL OF PERITONEAL EXPOSURE IN RATS WITH RENAL FAILURE

Raymond Krediet, Carmen Vlahu, Deirisa Lopes Barreto, Dick Struijk

Academic Medical Centre University of Amsterdam, Netherlands

#### Introduction

Free water transport (FWT) during PD can easily be measured by Na<sup>+</sup> kinetics. The magnitude of FWT in long-term PD patients may reflect the severity of peritoneal fibrosis, but morphological/functional relationships have not been investigated. We developed a long-term peritoneal exposure model in rats with kidney failure (70% nephrectomy), that were daily exposed to dialysis solutions for 16 weeks. Literature suggests that long-term exposure to "biocompatible" dialysis solutions is associated with better preservation of peritoneal tissue and function.

#### Objective

To investigate peritoneal morphology and FWT in the above model after long-term exposure to conventional (CON) and "biocompatible" (BIO) dialysis solutions.

Methods: two published studies with the rat model were re-analyzed. Peritoneal transport was assessed with a standard peritoneal permeability analysis adapted for the rat. D/P creatinine was determined after 4 hours. FWT0-60 i.e.during the first hour, was calculated by Na<sup>+</sup> kinetics from dialysate and plasma concentrations, and the intraperitoneal volume. Omental tissue was stained with picosirius red (PSR) for uniform quantification of fibrosis by whole slide imaging (ImagePRO). Also, a semiquantitative fibrosis analysis was done.

#### Results

9 rats were compared after exposure to CON (Dianeal®) for 16 weeks, with 9 after exposure to BIO (Physioneal® or GLAD, which is a mix of aminoacids glycerol and dextrose in low concentrations). D/P creatinine was similar (0.62 CON, 0.64 BIO) and also FWT0-60 was not different (3.5 mL CON, 3.7 mL BIO). In contrast, the %PSR was 21% CON and 12% BIO, p<0.1. This difference was confirmed in the semiquantitative analysis. However, a marked difference in PSR positivity was found between the two studies. No correlation was present between %PSR positivity and FWT

#### Conclusion

The long-term exposure model is not suitable to study relationships between FWT and peritoneal fibrosis. Quantitative assessment of the latter is only possible when all slides are stained simultaneously

P-3

### HIGHER SERUM 7-84 PTH LEVELS IN PERITONEAL VS. HEMODIALYSIS PATIENTS: POTENTIAL ROLE IN PATHOGENESIS AND DIAGNOSIS OF RENAL BONE DISEASE

Carmen Sanchez-Gonzalez<sup>1</sup> Maria Luisa Gonzalez Casaus<sup>2</sup> Emilio Gonzalez-Parra<sup>3</sup> Victor Lorenzo<sup>4</sup> Marta Albalade<sup>5</sup> Mariano Rodriguez<sup>6</sup>

<sup>1</sup>Hospital Universitario La Princesa- Spain- <sup>2</sup>Hospital La Defensa- Spain- <sup>3</sup>Fundacion Jimenez Díaz- Spain- <sup>4</sup>Hospital Universitario de Tenerife- Spain-

<sup>5</sup>Hospital Infanta Leonor- Spain- <sup>6</sup>Hospital Universitario Reina Sofia- Spain

#### Background and Objectives

The prevalence of low turnover bone disease (LTBD) in peritoneal dialysis (PD) patients is higher than in hemodialysis (HD). LTBD may be at risk for vascular calcification, and cardiovascular disease. On the other hand, intact PTH (iPTH) assays do not reliably identify patients with LTBD and bone biopsy is not used in routine clinical care. We investigated the distribution of PTH fragments in hemodialysis vs. peritoneal dialysis (PD)

#### Methods

In this cross-sectional study from a population-based cohort, we investigated the distribution of PTH fragments in 129 hemodialysis and 73 peritoneal dialysis (PD) patients of two dialysis units at tertiary care hospitals. Measurements: serum iPTH (1-84PTH plus 7-84PTH) and bioPTH (1-84PTH); total serum calcium (tCa), ionized calcium (iCa) and carboxy-terminal telopeptides of collagen type I ( $\beta$ CTx). 1-84PTH/7-84PTH ratio was calculated.

#### Results

HD and PD patients presented similar iPTH values. However, 1-84 PTH/7-84 PTH ratio were lower in PD than in HD ( $P < 0.001$ ). It was corroborated by regression analysis. iCa was higher in PD than in hemodialysis ( $p < 0.001$ ) and it showed an inverse correlation with 1-84PTH/7-84PTH ratio. Use the criteria proposed by Herberth et al. for diagnosing bone turnover, PD patients predicted to have a higher percentage of low turnover bone disease (LTBD) (coexistence of 1-84PTH/7-84PTH ratio  $< 1$  and iPTH  $< 420$  pg/mL) vs. hemodialysis patients (72.7% vs. 16.3%,  $p < 0.001$ ). Serum  $\beta$ -CTx was also lower in PD patients ( $p < 0.001$ ) and it correlated with 1-84PTH.

#### Conclusions

PD was associated to higher 7-84PTH, lower 1-84PTH and lower 1-84PTH/7-84PTH ratio. PD patients predicted to have LTBD more frequently. Higher levels of 7-84PTH might have some role in developing LTBD in PD patients. Assessment of the different PTH fragments may provide information about bone turnover in dialysis patients.

P-4

### POST-TRANSPLANT FOLLOW-UP OF PATIENTS TRANSPLANTED FROM A SINGLE PERITONEAL DIALYSIS CLINIC

Terez Kurfis, Wanda Rakossy, Tamas Szabo

B.Braun Avitum Hungary Dialysis Network, Hungary

#### Objectives

Renal transplantation is the most effective way of renal replacement therapy. Patients can live a more comfortable life without the need of dialysis treatment.

We have conducted a single centre survey among 15 patients who have received kidney transplant during the last 10 years from our peritoneal dialysis program. Questions were regarding their well being since they left dialysis, what are the changes for the better and if there are any aspects that has worsened.

#### Methods

11 of the 15 patients has returned the questionnaire. Patients could answer the questions using a 1 – 5 scale as they felt before and after transplantation. Two average scores to each question were calculated

#### Results

Patients well being has improved a lot since their transplant. Physical fitness, mental fitness, sports activity and sexual life has all improved significantly.

Education on their disease, available information and the availability of the staff were about the same in the patients' opinion during dialysis and since transplantation.

The patients felt that there were less opportunity for dietary consultation and psychological support after transplantation.

The post-transplant score has decreased most in following aspects: crowdedness and waiting time at the clinic, difficulty of parking at the down-town transplant clinic.

#### Conclusions

We could conclude from our survey that our patients has benefited from organ transplantation in many aspects. Negative feelings were mostly related to the crowded location of the transplant clinic. This is due to the fact that post-transplant follow-up is continued only at the transplant centres at the university hospitals.

Making follow-up available at the local nephrology clinics could lead to further improvement for the transplant patients' care. This seems feasible past the most intense follow-up period of the first year after the surgery and requires a close working relationship between the local clinic and the transplant centre.

## P-5

### THE EFFECTS OF PERITONEAL DIALYSIS WITH ALKALINE DIALYSATE IN PERITONITIS CARCINOMATOSIS: AN EXPERIMENTAL STUDY IN MICE

Emin Zümrütdal<sup>1</sup>, Tevfik Tolga Sahin<sup>1</sup>, Özgül Kùlahç<sup>1</sup>, Tuna Bilecik<sup>1</sup>, Özge Temiz<sup>2</sup>, Süleyman Çetinkunar<sup>1</sup>, Nevin Türüt<sup>3</sup>, Kenan Daglioglu<sup>2</sup>, Yaser Canbolat<sup>1</sup>

<sup>1</sup>Adana Numune Research and Training Hospital Türkiye <sup>2</sup>Cukurova University Türkiye <sup>3</sup>Veterinary Control and Research Institute Türkiye

#### Objective

We investigated the effect of neutralization of acid pH in mice with intraperitoneal carcinomatosis using an alkaline dialysate for continuous ambulatory peritoneal dialysis (CAPD) and the effects of pH change on liver oxidative stress, liver and kidney histopathology and the lifespan.

#### Methods

A dialysate which was suitable for the interstitial fluid compartment was prepared. A total of 38 mice were randomly divided into 4 groups and PC was developed in all mice. During the first 7 days, the mice in the 1st and 3rd groups were given the dialysate(0.03ml/gr). Following the formation of acid in the same groups, acidic liquid sample was taken and the same volume of dialysate was administered to the mice once a day until death. Nothing was given for the mice in 2nd and 4th groups. On the 9th day, mice in the 1st and 2nd groups, and ascites, liver tissue (right lobe) and left kidney were taken for the biochemical and histopathological examination. The groups 3 and 4 were followed up until death.

#### Results

In the Group-1 receiving CAPD, the pH levels of acidic liquid were higher( $p<0.001$ ); and the levels of liver TBARS were lower( $p=0.007$ ) with higher reduced glutathione levels( $p=0.03$ ). The histopathological examination of the liver showed an increase in connective tissue( $p=0.042$ ), granulation tissue(0.048), necrotic cells( $p=0.031$ ) and vascular congestion( $p=0.041$ ). Mononuclear cell infiltration( $p=0.079$ ) was lower in Group-1 as compared to Group-2. Group-1 indicated less mesangial matrix accumulation in the glomeruli( $p=0.003$ ), tubular damage with dilatation( $p=0.014$ ) and adhesions between the Bowman's capsule( $p=0.12$ ) in comparison with Group-2. In Group-3 receiving CAPD, the average survival time extended by 10.9%( $p<0.001$ ), mean survival time extended by 24%.

#### Conclusions

This study indicated that applying CAPD with alkaline dialysate in PC contributed to the neutralization of acidosis of the intraperitoneal acid structure; had favorable effects on oxidative stress markers in liver tissue; prevented histopathological injury in liver and kidney tissues, and extended the life span of the body in mice.

## P-6

### MALNUTRITION, INFLAMMATION AND OVERHYDRATION- THE RELATION IN A DIALYSIS POPULATION

Rachele Escoli, Ivan Luz, Hernâni Gonçalves, Francisco Ferrer, Paulo Santos, Ana Vila Lobos

Centro Hospitalar do Médio Tejo, Portugal

#### Objectives

Chronic fluid overload is frequently present in haemodialysis (HD) and peritoneal dialysis (PD) patients. In the present study, we investigated the relationship between nutrition and inflammation in HD and PD patients and analyzed their impact on body fluid measured by bioimpedance analysis (BIA).

#### Methods

Forty-seven HD and 21 PD prevalent patients were enrolled. In each group, demographic and clinical factors were evaluated. Volume status was established by measuring overhydration (OH), extracellular water (ECW) and OH/ECW. An OH/ECW>15% was the cut-off used to define OH. Serum albumin, normalized protein catabolic rate (nPCR), total cholesterol, triglycerides and body mass index (BMI) were used as nutritional markers and serum C-reactive protein (CRP) and ferritin as inflammatory markers

#### Results

On this study, HD patients were older ( $72.7\pm 12.9$  versus  $55.3\pm 14.5$ ,  $p<0.05$ ), with a higher proportion of diabetes ( $p=0.013$ ) and stroke ( $p=0.011$ ). Concerning the proposed outcomes, we found that HD patients had a higher inflammatory status compared to PD: CPR ( $2.1\pm 3.7$  versus  $0.42\pm 0.41$  mg/dL,  $p=0.001$ ) and ferritin ( $396.4\pm 284.9$  versus  $207.4\pm 197.2$  mg/L,  $p=0.002$ ) but there was no statistically significant difference between both groups in nutritional analysis. In correlation analysis, both CPR and ferritin status had a positive correlation with OH/ECW ( $r:0.516$ ,  $p=0.029$  and  $r:0.505$ ,  $p=0.036$ , respectively). With regard to nutritional status, only albumin and BMI were correlated with OH/ECW, although it was a negative correlation ( $r: -0.709$ ,  $p=0.016$  and  $r: -0.509$ ,  $p=0.032$ , respectively).

#### Conclusion

The results of this study suggest that HD patients have a higher inflammatory status and we found a close relationship between OH and four markers: CPR, ferritin, albumin and BMI, indicating that overhydrated patients are more inflamed and consequently more malnourished. However, given the significant difference of ages between both groups, further studies should be conducted with larger samples.

## P-7 Moderated Poster Session 5

### DEVELOPMENT OF A SENSITIVE AND NON-INVASIVE METHOD FOR THE IN VIVO ANALYSIS OF PERITONEAL MEMBRANE PERMEABILITY IN SMALL ANIMALS

Andrea Fernández Carrera, Carla Regueiro Rodríguez, Eva María Vigo Gago, David Olivieri, África González Fernández, Luiz Stark Aroeira

University of Vigo, España

The peritoneal membrane permeability can be altered by different pathologies. During peritoneal dialysis therapy, the peritoneal membrane will develop fibrosis and ultrafiltration failure (UFF). While UFF can be easily detected in human patients, it is much more difficult to perform the monitoring in small animal models, due to the absence of a natural tracer.

The objective of this work was the development of a non-invasive method, using a fluorescent tracer followed by in vivo images in regions of interest (ROIs), allowing the quantification of the peritoneal membrane permeability.

Methods. Two models of peritoneal membrane permeability alteration were used: 1) acute inflammation induced by intraperitoneal administration of incomplete Freund adjuvant; 2) chronic exposure to PDF. FITC-dextran was used as a fluorescent tracer.

The diffusion of FITC-dextran into circulation was determined by imaging in the mouse nose and paws, and by quantifying the tracer in serum, compared with a control curve. This curve allowed the quantification of serum FITC-dextran concentration through ROI imaging.

The results demonstrate that the method is able to quantify the tracer serum levels in vivo. The circulating concentration of FITC-dextran increases linearly over the time at a constant rate. The slope of the line represents the rate of the tracer's diffusion through the peritoneal membrane ( $\mu\text{g}/\text{min}$ ). This method could be used at different times in the same animal undergoing peritoneal dialysis, and to allow evaluate a therapeutic intervention.

In conclusion, the study reported here shows the efficacy of a novel, non-invasive imaging analysis-based measurement method that significantly improves the quantification of tissue membrane permeability in small animals, while at the same time mitigating the adverse effects experienced by the animals under study. Importantly, the possibility of using several times the method in the same animal, may reduce the number of animals to be used in the experiments.

## P-8

### PHOSPHOCALCIC PROFILE OF PERITONEAL DIALYSIS PATIENTS OF CHU PARNET ALGERS ALGERIA: MONO CENTRIC STUDY

Lilia Aklil, Taib Ouled Sidi Amar, Yamina Bousdira, Ibtissem Arbaoui, Taher Rayane

Nephrology Service Chu Parnet, Algeria

#### Objectives

Adequate management of peritoneal dialysis (PD) patients requires comprehensive management of the complications of end-stage renal disease (ESRD). Mineral and bone metabolism disorders (MBD) are among the complications of the ESRD, their metabolic, bone and especially cardiovascular consequences justify prevention and treatment based on pathophysiological knowledge and international recommendations.

#### Methods

It is a retrospective, observational, mono centric study done in May 2016 analyzing the phosphocalcic profile of 49 patients purified by PD including 41 patients in CAPD and 08 in ADP.

#### Results

There were 49 patients including 22 women and 27 men with an average age of 38 years, Initial nephropathies: 17 Indeterminate nephropathies, 14 Diabetic nephropathy, 07 Malformative uropathies, The average duration in PD is two and a half years.

71.4% of patients had normal Calcium; 26.5% hypocalcemia and 02% hypercalcemia. Phosphoraemia was normal in 44.8% of cases; Hyperphosphoremia 51%, hypophosphoremia 4%. PTH was between 2 and 9 times normal in 32.6% of cases; Hypoparathyroidism 30.6% of cases and hyperparathyroidism 36.7% of cases. Vitamin D was normal in 10.2% of cases versus 89.7% in deficiency.

#### Conclusions

The MBD of peritoneal dialysis patients have a large number of biochemical and hormonal abnormalities.

The optimal management of these disorders should reduce the morbidity and mortality of patients with ESRD.

These data allowed us to adjust the patient's treatments, hence the value of a therapeutic approach based on a diagnosis, a physiological approach and recommendations.

## P-9

## VITAMIN D IN PATIENTS WITH CHRONIC TERMINAL RENAL FAILURE TREATED WITH PERITONEAL DIALYSIS CHU PARNET: MONO CENTRIC STUDY

Lilia Aklil, Yamina Bousdira, Taib Ouled Sidi Amar, Ibtissem Arbaoui, Taher Rayane

BNephrology Service Chu Parnet, Algeria

## Objective

In peritoneal dialysis (PD), disorders of mineral and bone metabolism are associated with high morbidity and mortality from cardiovascular disease. The deficiency of vitamin D and calcitriol is very common. The aim of our study is to evaluate the profile of vitamin D and the phosphocalcic balance of PD patients.

## Methods

A mono centric observational retrospective study in Months of May 2016 analyzing the vitamin D and phosphocalcic profile of 49 patients treated with DP including 41 patients in DPCA and 08 in DPA.

## Results

49 patients including 22 women and 27 men with an average age of 38 years, Nephropathies: 17 undetermined nephropathies, 14 diabetic nephropathies, 07 Malformative Uropathies, The average duration in DP 02 and a half years.

Of the 49 patients 44 (49.79%) had vitamin D deficiency, with 63% of patients had normal serum calcium, 34% hypocalcemia and 2% hypercalcemia. Hyperphosphatemia in 54.54% of patients, 38.6% normal phosphor and 6% hypophosphatemia. In 36.36% of patients the PTH is between 2 to 9 times normal, 36.36% was in Hyperparathyroidism and 27.27% in Hypoparathyroidism.

## Conclusions

In our study of 44 patients with vitamin D deficiency most had normal calcium and hyperphosphatemia and 36.36% had PTH as recommended.

An adequate stage of PD patients requires a perfect knowledge of their phosphocalcic profile and vitamin D in order to correct anomalies and prevent complications especially cardiovascular complications.

## P-10

## SUSTAINING HIGH SERUM MAGNESIUM (sMg) AND CINACALCET USE MAY BE NEGLECTED TOOLS IN CLINICAL MANAGEMENT OF VASCULAR CALCIFICATION IN PERITONEAL DIALYSIS (PD) PATIENTS

Dimitra Bacharaki<sup>1</sup>, Olga Balafa<sup>2</sup>, Marios Theodoridis<sup>3</sup>, Anastasia Georgoulidou<sup>4</sup>, Myrto Kostopoulou<sup>5</sup>, Dimitra Galitsiou<sup>5</sup>, Kostas Perakis<sup>6</sup>, Kostas Stylianou<sup>6</sup>, Spyros Katsoudas<sup>1</sup>, George Tsirpanlis<sup>5</sup>, Kostas Mavromatidis<sup>4</sup>, Ploumis Passadakis<sup>3</sup>, Demetrios Vlahakos<sup>1</sup>, Ioannis Kyriazis<sup>7</sup>

<sup>1</sup>Attikon University Hospital, Greece, <sup>2</sup>University Hospital of Ioannina, Greece <sup>3</sup>University Hospital of Alexandroupoli, Greece, <sup>4</sup>General Hospital of Komotini, Greece, <sup>5</sup>"G.Gennimatas" General Hospital, Greece, <sup>6</sup>University Hospital of Heraklion, Greece, <sup>7</sup>General Hospital of Chios, Greece

## Objectives

To identify factors potentially capable of preventing the progression of abdominal aortic calcification (AAC), a surrogate of cardiovascular risk in PD patients.

## Methods

We studied 65 stable PD patients, 36 men 29 women, mean age 63 ± 13 years. Twelve (19%) patients had diabetes mellitus and 54 (83%) arterial hypertension. Median dialysis vintage was 37 (interquartile 19-64) months. The degree of AAC was evaluated with Leena Kauppila (LK) score (range 0-24) on plain lateral abdominal radiographs. Given that a LK score of 0-4 was associated with the best event free survival of patients in the CORD study (CJASN 2011), patients were divided, according to the degree of calcification, in Group 1 (LK score 0-4) and Group 2 (LK score 5-24), each comprising 26 (40%) and 39 (60%) patients, respectively. Univariate and multivariate regression analysis were used for analysis.

## Results

Mean LK score was 6.77±5.83. Traditional risk factors for vascular calcification as dialysis vintage, diabetes, hypertension, smoking, calcium, phosphate, parathormone, cholesterol, use of calcium phosphate binders or vitamin D analogs were not associated with LK score. The only significant independent predictors of AAC identified by multiple regression analysis were age (B=0.11; p<0.01), sMg (B=-3.76; p<0.01), serum albumin (sAlb) levels (B=-4.55; p<0.001) and cinacalcet use (B=-2.93; p<0.05). Specifically, patients with LK score (0-4) were younger in age (56±14 vs.68±10 years; p<0.001), had higher sMg (2.27±0.50 vs.1.99±0.31 mg/dl; p<0.01) and sAlb levels (3.64±0.40 vs.3.41±0.50 mg/dl; p<0.05) and higher use of cinacalcet (34.6% vs.12.8; p<0.05). 83% of PD patients had sMg levels were below 2.5mg/dl. sMg also significantly correlated with Mg concentration (0.75/0.50/0.25 mmol/L) in the dialysate (r=0.461; p<0.001)

## Conclusion

Sustaining higher sMg levels, as by using higher Mg dialysate concentration, treating secondary hyperparathyroidism with cinacalcet and fighting malnutrition may potentially lower the AAC burden and, thus, improve cardiovascular risk in PD patients.

P-11

## PERITONEAL DIALYSIS TARGETED TO AMELIORATE MORBIDITY OF CONGESTIVE HEART FAILURE: ONE YEAR FOLLOW UP

Panagiotis Pangidis<sup>1</sup>, Andreas Bozikas<sup>1</sup>, Foteini Lazaridou<sup>2</sup>, Eleni Kitoukidi<sup>1</sup>, Iliana Kiriakoutzik<sup>1</sup>, Theotokis Kaltzidis<sup>2</sup>, Pinelopi Pisanidou<sup>1</sup>, Styliani Vakiani<sup>1</sup>, Antigoni Martika<sup>1</sup>, Ioannis Tsounos<sup>2</sup>, Nikolaos Georgilas<sup>1</sup>, Sofia Spaia<sup>1</sup>

<sup>1</sup>Nephrology Department, "Agios Pavlos" General Hospital of Thessaloniki, Greece <sup>2</sup>Cardiology Department, "Agios Pavlos" General Hospital of Thessaloniki, Greece

### Introductions and Aims

Peritoneal dialysis (PD) applied to patients (pts) with congestive heart failure (CHF) resistant to diuretic therapy, could improve their clinical status. We examined the effect of PD, as an alternative subtle ultrafiltration treatment to pts with CHF, NYHA IV and CKD>IIIb. We applied detailed Cardiac Echo (CE) in an effort to identify markers to distinguish population that might benefit of early PD application.

### Methods

We enrolled 18pts (mean age 80.3 years) in PD. Inclusion criteria were NYHA IV symptoms and deterioration of renal function. Assessment of cardiac function by (CE) on initiation of PD and 6-12 months later were performed.

We compared: Ejection Fraction(LVEF), Relative Wall Thickness(RWT), Left Ventricular Mass Index(LV), E/E'; Left Atrium Volume Index(LA), Pulmonary Artery Systolic Pressure(PASP), Tricuspid Annular Plane Systolic Excursion(TAPSE).

### Results

Patients were mainly on APD with a mean time of 10.1(6 - 12) months. Hospitalizations due to CHF decompensation were eliminated and there was a remarkable improvement of NYHA class. Body weight decreased ( $p=0.0083$ ), along with improvement of eGFR ( $p=0.026$ ), decrease of bilirubin levels ( $p=0.0475$ ) and decrease of diuretic use.

At the end of follow up, significant reductions of LA & LV ( $p<0.05$ ) were noted. The rest of the parameters showed non-significant improvement.

### Conclusions

As a result of the gradual-continuous removal of excess fluid all pts improved their clinical status. There was improvement of left cardiac function. However LVEF changes were ambiguous and cannot be used as an objective marker for this population. Markers of right cardiac function didn't change significantly, probably due to technical or individualized causes. The results of this prospective, but small, study encourage the application of PD in selected pts with CHF because it leads to dramatically diminished hospitalizations, due to cardiac events, and restores pts autonomy. Presently, selection of pts should be made on clinical grounds.

P-12

## INCREMENTAL PERITONEAL DIALYSIS IN CARDIORENAL SYNDROME AND IN REFRACTORY HEART FAILURE: TWO CLINICAL CASES

Katia Cannas, Simonetta Caria

SC Service and Regional Nephrology Dialysis ASSL Cagliari, Italy

### Objectives

Patients with severe cardiomyopathy and heart failure (HF) are not always responsive to pharmacological therapy due issues related to tolerability (ace-inhibitors and  $\beta$ -blockers) and resistance (diuretics). The aim of this study is to demonstrate that peritoneal ultra-filtration (PUF) in heart-failure non-conventional therapy can be performed in those patients with an estimated , estimated glomerular filtration rate (eGFR) between  $< 50 \text{ ml/min/1.73m}^2$  and  $> 10 \text{ ml/min/1.73m}^2$ , leading to a heart failure functional classification reduction, decreased cost of hospitalization, improved patient's lifestyle and increased patient's survival rate. It is a retrospective, observational, mono centric study done in May 2016 analyzing the phosphocalcic profile of 49 patients purified by PD including 41 patients in CAPD and 08 in ADP.

### Methods

This was a prospective cross-sectional study in which patients' data that started peritoneal dialysis in 2013 were included. Patients' medical history included HF (III-IV New York Heart Association -NYHA) refractory to pharmacological therapy, cardio-renal syndrome  $\text{GFR}>10\text{ml/min/1.73m}^2$  and implanted cardiac defibrillator. The assessment of cardiovascular risk was performed through cardiovascular medicine heart failure (CVM-HF) index and estimated as 18 for one patient (high cardiovascular risk) and 12 for the other patient (medium cardiovascular event). For peritoneal treatment icodextrin were used.

### Results

During 4 years of follow-ups no hospitalization occurred due to heart failure. Furthermore, a possible patients' anaemia improvement as well as fluid retention avoidance was observed.

### Conclusion

Incremental Peritoneal Dialysis might be a new and efficacious therapy in patients with refractory heart failure. Furthermore, a slightly improved in patients' lifestyle was observed.

## P-13

## PROBNP AND BIOIMPEDANCE IN PERITONEAL DIALYSIS PATIENTS

Melissa Cintra, Nuria Aresté, Maria Castillo Páez, Maria Ángeles Rodríguez, Miguel Ángel Ramírez, Maria Ángeles Ojeda, Concepción Gómez, Mercedes Salgueira

Hospital Virgen Macarena, Spain

## Objectives

ProBNP in peritoneal dialysis (PD) predicts cardiovascular events and mortality. We studied the relation in PD patients between ProBNP levels, nutritional-inflammatory parameters, and bioimpedance.

## Methods

Observational study of our PD program patients (n=35), mean age 61.5 years and mean time on dialysis 16.6 months. Continuous ambulatory peritoneal dialysis (CAPD) patients: 15(42.8%), and automatic peritoneal dialysis (APD): 20(57.2%); 10(50%) patients "dry day" and 10(50%) "wet day". A cross section was made measuring: ProBNP, residual diuresis, ultrafiltration, overhydration values, albumin, natremia, hemoglobin, hematocrit and CRP.

## Results

Statistically significant relation between ProBNP and residual diuresis ( $p = 0.034$  and  $r = -0.359$ ). Also between ProBNP and: ultrafiltration ( $p = 0.004$   $r = 0.472$ ); C-reactive protein (CRP) ( $p = 0.004$   $r = 0.477$ ); Albumin ( $p = 0.031$   $r = -0.365$ ) and hemoglobin ( $p = 0.010$   $r = -0.432$ ). There is also between ultrafiltration and CRP ( $p = 0.024$   $r = 0.380$ ). We found that bioimpedance overhydration values were not related to: ultrafiltration ( $p = 0,331$   $r = -0,169$ ); residual diuresis ( $p = 0.706$   $r = -0.066$ ); ProBNP ( $p = 0.319$   $r = 0.173$ ); CRP ( $p = 0.419$   $r = 0.141$ ); hemoglobin ( $p = 0.173$   $r = -0.236$ ); sodium ( $p = 0.538$   $r = -0.108$ ) and albumin ( $p = 0.445$   $r = -0.133$ ). There was no statistical relation between E/I and ProBNP ( $p = 0.719$   $r = -0.071$ ) or residual diuresis ( $p = 0.371$   $r = -0.176$ ).

## Conclusions

Patients who maintain residual diuresis had lower levels of ProBNP, because of the tendency to volume overload in patients with less diuresis. ProBNP and CRP were correlated with the increase in patients with a inflammatory and water overload status. With albumin and hemoglobin, ProBNP is negatively related, due to poorer nutritional status. Bioimpedance did not obtain statistically significant relation with the clinical and analytical variables.

## P-14

## ANALYSIS OF PROGNOSTIC FACTORS IN PATIENT SURVIVAL IN PERITONEAL DIALYSIS IN ANDALUCIA: COHORTE ANDALUZA OF 2743 PATIENTS DURING 17 YEARS

Verónica De La Espada Piña, Pedro Luis Quirós Gang<sup>2</sup>, Cesar Remon Rodríguez

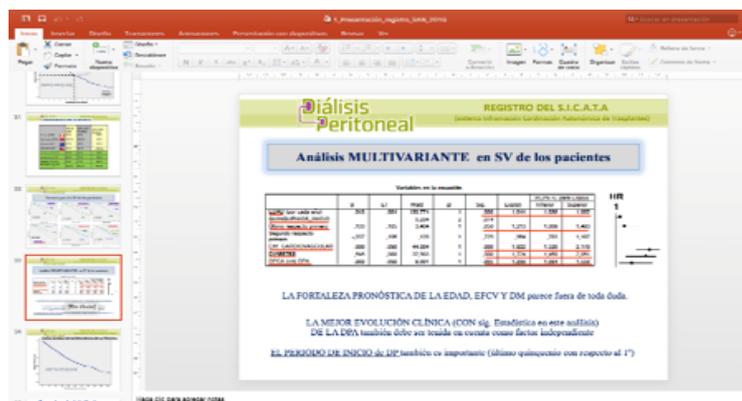
University Hospital of Puerto Spain, Spain

## Introduction, methods and objectives

Analysis of 17 years of follow-up of all peritoneal dialysis (PD) patients in Andalusia collected in the Information System of the Autonomous Coordination of Transplants of Andalusia (SICATA) from January 1999 to December 2016. The objectives Were to analyze the patients' overall survival (SV), comorbidity at the start of treatment and its impact on survival, as well as the influence of the period of onset in the technique (before and after 2004). Statistics: frequencies, Kaplan-Meier curves, log-rank test and multivariate Cox risk model.

## Risk factors at the onset of PD

Cardiovascular disease (30.3%), diabetes mellitus (28%) and advanced age (22.7% patients > 70 years years). Categorization by Charlson Index (CI): 41.9% low risk profile ( $CI \leq 3$ ); 33.9% mean risk ( $CI = 4-6$ ), and 24.2% high risk ( $CI \geq 7$ ). One fifth of the patients left the technique by death. Patient survival curves (Figure 1): median 57 months (95% CI: 52-62) and mean 62 months (95% CI: 67-77), results comparable to other national and international registries. After multivariate analysis (Figure 2), we demonstrate the independent and significant influence of the following factors at the start of treatment: older age (OR = 1.44), diabetes (OR = 1.72), or cardiovascular disease (OR = 1.82); As well as the type of technique (DPCA vs DPA: OR = 1.299), and the onset period, with better survival for those included in PD after 2004 vs. before 2004 (OR = 1.21), probably in relation to A greater protection of the peritoneal membrane in the last years, using more biocompatible solutions, and with less concentration of glucose and by a greater experience and quality in the treatment.



P-15

PROBABILITY OF TRANSFER OF PERITONEAL DIALYSIS (PD) TO HEMODIALYSIS (HD) TIME AND TECHNICAL FACTORS: STUDY OF 17 YEARS IN COHORTE ANDALUZA OF 2743 PATIENTS

Veronica De La Espada Piña, Cesar Remon, Pedro Luis Quiros

Nephrology Hupr, Spain

Introduction, methods and objectives

Survival (SV) of the PD technique is clearly inferior to that of HD, which is a concern of professionals. In Andalusia all patients in TRS are included in the Information System of the Autonomous Coordination of Transplants (SICATA). The objectives of the present study are to analyze the causes of PD to HD transfer, the VS of the PD technique and what factors influence it in the population incident on PD (1999-2016). Statistics: means, frequencies, Kaplan-Meier curves, log-rank test and Cox multivariate-risk model.

Results

n = 2743. Among the causes of peritoneal dialysis, in addition to death (27.5%) and transplantation (36.8%), the transfer to HD still represents more than a third (35.6%). In turn, this was mainly due to peritonitis (9.5%) and failure of the technique (11.2%). Survival curves of the technique show that 50% of patients remain in the technique at 57 months (CI: 51-63), comparable results or to other Registries. After bivariate and multivariate analysis (Figure 1), the negative influence was demonstrated, and independent of the following factors: Start before 2004 (OR = 5.2, CI = 3.2-8.5), as well as the uses of More biocompatible solutions, OR for DP without bicarbonate = 1.4 (CI = 1.2-1.7); The type of technique (DPCA / DPA) was also significant. The use of solutions with less glucose concentration was not significant. OR for DP without icodextrin = 1.077 (CI = 0.90-1.2);

Conclusions

The SV of the PD technique has improved in Andalusia, probably through minimizing membrane alterations (biocompatible solutions), minimizing infections, using APD and with more appropriate treatment of complications.

P-16

CARDIOVASCULAR DISEASE AT THE ONSET OF PERITONEAL DIALYSIS IS AN INDEPENDENT PREDICTOR FOR DEATH AND FAILURE OF THE TECHNIQUE

Veronica De La Espada, Cesar Remon, Pedro Luis Quiros

University Hospital of Puerto Real, Spain

Cardiovascular disease (CVD) is common in patients with end-stage renal disease and is the main cause of morbidity and mortality in this population.

Objectives

To test in a selected population of patients in Peritoneal Dialysis (PD) in Andalusia, the relationship of CVD prior to initiation of dialysis with patient survival and dialysis technique.

Patients and Methods

2743 patients included in PD in Andalusia between 1/1/1999 and 12/31/2016. Of these, 30% had CVD at the onset of PD (whether heart failure, peripheral vasculopathy, cerebral vasculopathy or cardiac arrhythmias). Statistics: means ± ds, frequencies, chi2, RR and IC95%, Kaplan-Meyer curves, Cox model.

Results

CVD was one of the most common comorbidity factors at the onset of PD (30.3%), mainly by Insuf. Cardiac (17.9%) and peripheral vasculopathy (16.9%). The CVD is followed by advanced age (22.7%) and diabetes mellitus (28%). The presence of CVD had a significant influence on patient survival, but not on failure of the technique, regardless of the other factors of comorbidity (RR: 1.82, 95% CI: 1.5-2.1 ). Both cardiac insufficiency and peripheral vasculopathy, inf. Cerebral vascular and arrhythmias were significantly related to poorer patient survival according to the univariate models (p <0.0001). In the multivariate model they were also demonstrated as independent factors for patient survival (fig 1).

Conclusion

ECV at the onset of PD is an independent predictor for death and failure of the technique, emphasizing heart failure, peripheral vasculopathy and arrhythmias. This should make us think that the most important is the prevention of CVD by an aggressive and early intervention on traditional risk factors.

Age (for each year)	95.0% IC para Exp (B)							
	B	ET	Wald	gf	sig	Exp(B)	Inferior	Superior
QUINQUENIOS	,043	,004	130,774	1	,000	1,044	1,036	1,052
Last respect to first	,193	,105	5,204	2	,074			1,489
			3,604		,090	1,213	1,008	
Second with respect to the first	-,037	,106	,120	1	,729	,964	,783	1,187
Cardiovascular	,600	,090		1	,000	1,822	1,526	2,176
	,545	,088	44,004	1	,000	1,724	1,450	2,051
			37,903					
	,262	,092	8,061	1	,005	1,299	1,084	1,566

P-17 Moderated Poster Session 5

## EFFECT OF ALANYL-GLUTAMINE ON CELLULAR INJURY AND CYTOPROTECTIVE RESPONSES IN ENDOTHELIAL CELLS DURING PERITONEAL DIALYSIS FLUID EXPOSURE

Klaus Kratochwill<sup>1,2</sup>, Silvia Tarantino<sup>1</sup>, Rebecca Herzog<sup>1,2,3</sup>, Maria Bartosova<sup>4</sup>, Anton Lichtenauer<sup>1,3</sup>, Claus-Peter Schmitt<sup>4</sup>, Christoph Aufricht<sup>1</sup>

<sup>1</sup>Department of Pediatrics and Adolescent Medicine, Medical University of Vienna, Austria, <sup>2</sup>Christian Doppler Laboratory of Molecular Stress Research in Peritoneal Dialysis, Medical University of Vienna, Austria, <sup>3</sup>Zytoprotect, Austria, <sup>4</sup>Center for Pediatric and Adolescent Medicine, University of Heidelberg, Germany

Neovascularization and diabetes-like damage of vessels are important factors limiting PD. During PDF exposure, relevant cellular pathomechanisms might be similar to those in hyperglycaemic diabetic conditions. This study focuses on characterization of endothelial cell injury and stress responses to PDF with or without addition of the cytoprotective dipeptide alanyl-glutamine (AlaGln).

Primary human umbilical vein endothelial cells (HUVEC) were exposed to PDF. We compared cell viability (LDH-release) and protein profiles of HUVEC exposed to medium-diluted PDF with/without 8mM AlaGln. Proteins were analysed by a 2D-gel-based proteomics approach and compared to transcriptomics findings in clinical omental biopsies from children on PD or healthy controls.

Of 993 detected protein spots, 261 and 131 were significantly changed following exposure to PDF or PDF with AlaGln, respectively. 104 spots were common in both comparisons, whereas 27 spots exclusively changed with AlaGln. Marked cellular injury by PDF was associated with a molecular landscape of the enriched biological process clusters 'glucose catabolic process', 'cell redox homeostasis', 'RNA metabolic process', 'protein folding', 'regulation of cell death', and 'actin cytoskeleton reorganization'. AlaGln in PDF preserved endothelial cell integrity shown by decreased LDH release and by restored control levels of proteins in PDF-perturbed processes, especially enhancing protein folding capacity and response to stress. Direct comparison of proteomes of cells exposed to PDF and PDF with AlaGln revealed 55 differentially abundant spots, of which 58.2% were restored with AlaGln. Cross-omics comparison confirmed overlapping gene regulation between endothelial cells in-vitro and in clinical biopsies.

The combined omics approach proves harmful effects of PDF on endothelial cells leading to drastic changes of the cellular process landscape. Cellular damage and proteome changes were effectively counteracted by AlaGln in-vitro. Cross-omics indicates that cytoprotective effects of AlaGln in endothelial cells might be relevant in the clinical setting, offering therapeutic targets to reduce side effects of PD.

## P-18

## CORRELATION OF BIOCHEMICAL NUTRITIONAL PARAMETERS AND BODY COMPOSITION PARAMETERS IN HAEMODIALYSIS AND PERITONEAL DIALYSIS PATIENTS

Emina Kostic, Branislav Apostolovic, Jelena Kostic, Jasmina Radivojevic, Branka Mitic

Clinic for Nephrology, Clinical Center Nis, Serbia

Protein energy wasting (PEW) is an important risk factor for morbidity and mortality in dialysis patients. The assessment of PEW is not easy: albumin, one of the most often used biochemical parameters is influenced by inflammation, losses into dialysate and fluid status. Body mass index (BMI) is also not a reliable marker of nutrition in dialysis patients due to its variations connected to hydration status.

Our objective was to correlate biochemical parameters of nutritional status (creatinine index, albumin, cholesterol) with body composition parameters-lean tissue index (LTI) and fat tissue index (FTI); and the parameters of nutritional status to mortality in dialysis patients.

Our study included 101 patients- 37 patients on peritoneal dialysis (PD) and 64 on haemodialysis (HD). We found a statistically significant correlation of LTI and creatinine index in HD patients, and a statistically significant correlation of LTI with albumin and creatinine index in PD patients. There has been a significant correlation of FTI and cholesterol in HD patients, but no biochemical parameters correlated significantly with FTI in PD patients.

There was no significant differences of LTI and FTI between HD and PD patients.

Values of LTI and FTI didn't show a correlation to mortality in HD patients, but there was a significant correlation between LTI and mortality in PD patients.

P-19

## SODIUM BALANCE AND BLOOD PRESSURE CONTROL IN PERITONEAL DIALYSIS PATIENTS

Najla Dammak, Hichem Mahfoudh, Hanene Chaker, Mounir Hdiji, Fatma Mseddi, Faical Jarraya, Khawla Kammoun, Jamil Hachicha

Nephrology Department, Tunisia

## Objective

Peritoneal dialysis (PD) provide better patient independence but it is associated with sodium balance deregulation especially in hypertensive patients. The aim of our study was to establish the difference of sodium and water removal between CAPD and APD and their influence on blood pressure control.

## Methods

This is a prospective interventional study including patient in CAPD and APD. We measured serum sodium concentration, residual renal function, daily urinary sodium losses and the net ultrafiltration. Twenty four hour ambulatory blood pressure readings were recorded. We determine the need for anti hypertensive therapy. These data were compared between the two groups.

## Results

A total of 13 sodium balances were performed (7 in APD and 5 in CAPD). The 24-hour net removal of sodium was calculated as follows:  $M = ViCi - VdCd$ , where Vd is the 24-hour drained volume, Cd is the solute sodium concentration in Vd, Vi is the amount of solution used during a 24-hour period, and Ci is the sodium concentration in Vi. Peritoneal sodium removal was higher in APD than in CAPD patients (-44 mEq vs -63 mEq,  $p=0,402$ ). The net ultrafiltration was higher in APD patients ( $570 \pm 415$  ml/j vs  $332 \pm 395$  ml/j). The blood pressure was higher in CAPD patients ( $p=0,030$ ) and the need for anti hypertensive therapy was higher in this group ( $p=0,550$ ). There were no significant differences in residual renal function, serum sodium concentration, and urinary sodium losses between groups. Although, as known, the higher net ultrafiltration is associated with better blood pressure control but no significant relationship between blood pressure values and amount of peritoneal sodium removal was found.

## Conclusions

APD patients have higher sodium removal than CAPD and there is a trend towards better blood pressure control in APD related to high ultrafiltration. Thus, the hypertension control and ultrafiltration are important to consider for the choice of peritoneal dialysis modality.

P-20

## HEART FAILURE AND PERITONEAL DIALYSIS - CAN WE MAKE IT BETTER?

Ana Oliveira, Rute Carmo, Ana Nunes, Ana Beco, João Frazão, Manuel Pestana

São João Hospital Center, Portugal

## Background and objectives

Heart failure (HF) is present in up to a third of patients reaching end-stage renal failure. Peritoneal Dialysis (PD) is increasing among chronic kidney disease (CKD) patients with HF albeit the challenge in their care. We aimed to describe our experience with this complex group of patients.

## Methods

We retrospectively analysed incident PD patients with HF between 2010-2016 and their outcomes after a year

## Results

Twenty-eight patients were included. Twenty-two were male (79%), mean age of  $65.46 \pm 9.85$  years old. Diabetic nephropathy (28.6%) and cardio-renal syndrome (25%) were the most frequent CKD aetiologies. At PD start, 19 (68%) patients had HF with moderate to severe systolic function depression. Three patients also had hepatic failure and two were heart transplant patients. All started with continuous ambulatory PD. After a year, 6 patients (21.4%) were on APD. There was an increased icodextrin prescription (64% vs 82%) and of higher glucose concentration PD solutions (29% vs 59%), with a rise on median ultrafiltration (650 (IQR: 200-1000 mL) vs 910 mL (IQR: 430-1400)). Median Kt/V (2.05 (IQR: 1.8-2.95) vs 2.1 (IQR: 1.8-2.85)) and total creatinine clearance (174 (IQR: 136.5-236) vs 161.5 L/Wk (IQR: 111.2-217.2)) remained similar. There was a residual renal function (RRF) ( $10.32 \pm 5.62$  vs  $7.67 \pm 4.85$  mL/min) and median diuresis (1250 (IQR 775-1825) vs 900 mL (IQR 450-1800)) decrease. In one year, 4 patients had a left ventricular ejection fraction reduction and none had an improvement. Seven patients dropped out PD. Four died, however none related to PD complications and only one due to cardiovascular disease. Two non-compliant patients transitioned to haemodialysis and one was transplanted.

## Conclusion

Albeit good dialysis efficiency and mild RRF and diuresis decrease, there wasn't a systolic ejection fraction improvement. However, only one cardiovascular event resulted in PD drop-out.

## P-21

## MODIFICATIONS OF WEIGHT, BODY COMPOSITION AND LIPID PROFILE IN PATIENTS WITH PERITONEAL DIALYSIS

Jose Ramón Rodríguez Palomares<sup>1</sup>, Paola Milena Villabon Ochoa<sup>2</sup>, Inmaculada Nieto Abad<sup>2</sup>, Sra Maria Antonia Corcho Robleda<sup>3</sup>, Luis Alberto Blazquez Collado<sup>2</sup>, Gabriel de Arriba de la Fuente<sup>1</sup>

<sup>1</sup>University Hospital of Guadalajara, Medicine Department, Alcala de Henares University, Spain, <sup>2</sup>University Hospital of Guadalajara, Spain, <sup>3</sup>Hospital Principe de Asturias, Spain

## Introduction

Patients on Peritoneal Dialysis (PD) are undergo metabolic changes due to glucose uptake: Hyperinsulinism, obesity, modification of body composition and lipid metabolism. We wanted to check if these changes occur in our population.

## Materials and Methods

Two-year follow-up study after the onset of PD. Weight, nutrition and body composition (albumin and Bioimpedance), diuresis, lipids, peritoneal transport and glucose uptake were recorded at the beginning of therapy and at 3, 6, 12, 18 and 24 months. We analyze the observed changes over time.

## Results

We analyzed 66 patients. (25 women and 41 men) age  $54.3 \pm 14.4$  years. All with biocompatible solutions and 45 with solution of Icodextrina. The evolution of the parameters is shown in Table 1.

Against the literature we did not find a significant increase in weight. Only 15 patients increased their body weight more than 3 kg after 6 months and only 12 a year. Those who increased their weight did during the first year with subsequent stabilization. In the first months we observed a decrease in albumin and a slight increase in cholesterol, HDL and LDL, which later stabilized. Before treatment 15 patients had cholesterol values above 200, no patient had a lipid increase greater than 20% throughout the treatment. We found a progressive decrease in residual diuresis. We found no changes in body composition, lean or fat mass. Peritoneal permeability remained globally stable the first year with a slight increase after two years and an increase in peritoneal glucose uptake without statistical significance. We found no correlation between glucose uptake or peritoneal transport with changes in weight or lipid profile.

## Conclusions

Despite the changes described in the literature, in our patients we did not find any significant changes in body weight or composition or lipid profile in relation to PD. One possible explanation is the widespread use of more biocompatible solutions, the use of icodextrin and the restriction of hypertonic solutions.

## P-22

## EFFECTS OF ABSORPTION OF GLUCOSE

Aranzazu Sastre, GeorgeSstefan, Benjamin de Leon, Cristina Lucas, Elena Monfa, Santiago Mariño, Mario Prieto

Caule, Spain

## Introduction

Absorption of glucose from peritoneal dialysis solutions may favor the onset of insulin resistance, obesity, hypertriglyceridemia and hyperglycemia.

## Materials and Methods

We performed a retrospective observational study with 98 patients on peritoneal dialysis of the University Hospital of Leon, from January 1, 1998 to March 31, 2015. We analyzed the glycolipid profile, weight, diuresis and dialysis volume at baseline and 24 months after initiating dialysis. All had a low glucose and low PDG solution regimen. The results are expressed in percentage for the qualitative variables and the quantitative ones in mean and standard deviation. For the comparison of means, the Student's T statistic was used for paired data, a value of  $p < 0.05$  was considered statistically significant.

## Results

98 patients were studied, with a mean age of  $59.73$  years  $\pm 17.64$ , range 22-99. 39 women (39.8%). At baseline 25 (25.51%) patients in APD and at 24 months 49 (50%) patients in APD. Basically 20 (20.4%) had glycemia greater than 110 mg / dl and at 2 years 30 (30.6%) patients. Table 1 shows the results.

	Mean $\pm$ baseline	SD Mean $\pm$ SD 24 months	p
Weight (years)	67,41 $\pm$ 15,46	69,25 $\pm$ 16,16	<0,001
Glucose mg/dl	95,78 $\pm$ 37,14 1	06,38 $\pm$ 44,7	<0,001
Cholesterol mg/dl	169,79 $\pm$ 36,4	173,71 $\pm$ 39,5	0,26
HDLmg/dl	50,58 $\pm$ 18,3	49,62 $\pm$ 20,5	0,5
LDLmg/dl	90,43 $\pm$ 35,4	92,83 $\pm$ 35,2	0,34
Triglycer mg/dl	115,4 $\pm$ 62,4	140,62 $\pm$ 124,2	0,04
Diuresis ml	1069,13 $\pm$ 845,2	615,61 $\pm$ 702,9	<0,001
Dialysis volume	9653,0 $\pm$ 3612,9	12232,32 $\pm$ 5059,1	<0,001

## Conclusions

Being 2 years in PD, the volume of diuresis decreases significantly, consequently increases the volume of dialysis. It increases weight, glycemia and triglycerides. There are no changes in cholesterol. 10 patients present with diabetes again. We can demonstrate the deleterious effects of glucose solutions in our patients.

P-23

## BIOIMPEDANCE-DEFINED OVERHYDRATION IS AN INDEPENDENT PREDICTOR OF SURVIVAL IN END STAGE RENAL FAILURE (ESRF): A SYSTEMATIC REVIEW AND SUBGROUP META-ANALYSIS

Matthew Tablinor<sup>1,2</sup>, Emma Elphick<sup>1,2</sup>, Michael Dudson<sup>2</sup>, Shing Kwok<sup>1,2</sup>, Mark Lambie<sup>1,2</sup>, Simon Davies<sup>1,2</sup>

<sup>1</sup>University Hospitals of North Midlands NHS Trust, United Kingdom, <sup>2</sup>Institute for Science and Technology in Medicine (Keele University), United Kingdom

### Objectives

Overhydration predicts mortality in dialysis patients. What remains unclear is whether overhydration is of prognostic value in predicting mortality, independent of multimorbidity. We explored whether bio-impedance defined overhydration (BIA-OH) was an independent predictor of mortality in dialysis patients.

### Methods

A systematic review was performed using a pre-specified review protocol. PubMed, EMBASE, PsychInfo and the Cochrane trial database were searched (1990-2015). Adult dialysis patients within secondary care services who had whole body bio-impedance (BIA) measurements to quantify overhydration were included. Exclusion criteria included: studies using segmental / intra-thoracic BIA; studies where only abstracts, posters or case reports were available; and studies where no English translation was available. Two independent reviewers appraised studies, including methodological quality (assessed using the QUIPS tool). Analyses were conducted using Excel (2011) and Review Manager 5.3.

### Results

Of 3663 identified citations, 33 matched inclusion criteria (29 separate cohorts; 9770 patients; 74% on haemodialysis; 26% on peritoneal dialysis; 1703 mortalities). BIA measures included phase angle (45%), overhydration index (30%), extracellular water ratio (20%) and BIA vector (5%). 27 out of 29 cohorts had multivariable analyses (MVA), with adjustment for age (89%), gender (74%), diabetes mellitus (70%), albumin (59%), inflammation (CRP/IL6 – 26%) and non-BIA nutritional markers (22%). BIA-defined overhydration (BIA-OH) was independently predictive of mortality in 24 cohorts and hospitalisation in 1. Within 3 cohorts adjusting for echocardiographic data, BIA-OH remained predictive of mortality in 2. Subgroup meta-analysis revealed overhydration >15% (4 cohorts, HR 2.11, 95%CI 1.63-2.74, p<0.001) and a 1-degree decrease in phase angle (3 cohorts, HR 1.74, 95%CI 1.29-2.34, p<0.001) were both predictors of mortality.

### Conclusions

BIA-OH predicts mortality in dialysis patients independent of the influence of multimorbidity, including structural cardiac disease. Further research is needed to explore the relationship between fluid overload, cardiac dysfunction and mortality in the dialysis population.

P-24

## THE IMPACT OF AIR POLLUTION ON HOSPITALIZATION IN PATIENTS UNDERGOING PERITONEAL DIALYSIS: A PROTOCOL OF 4-YEAR RETROSPECTIVE STUDY BASED ON TIME SERIES ANALYSES FROM TIANJIN, CHINA

Hongtao Yang, Shouci Hu, Ming Pei

Department of Nephrology Committee in China Society of Integrated traditional Chinese and Western Medicine, China

### Background

With vigorous development in economy and urbanization, air pollution has become a public health problem in China. Piled up studies indicate that air pollutants are associated with premature death, CVD events, respiratory diseases and hospital admissions. So far, no study has assessed the impact of air pollution on hospitalization in patients undergoing PD before.

### Design

Retrospective, observational study.

### Patients

We reviewed all cases of hospital admissions in our PD center from February 1, 2013 to February 28, 2017. The demographic feature, basic characteristics, clinical response and the length of hospital stay were also collected.

### Meteorological and Environmental Data

Daily air pollution data on PM2.5, PM10, SO2 and NO2; daily mean temperature/sea level pressure/relative humidity were all obtained from the Tianjin Environmental Monitoring Center, from February 1, 2013 to February 28, 2017.

### Data Analyses

GAM with a log link is applied to our time series analyses, additionally, penalized smoothing spline approach is used to adjust for seasonal patterns and long-term trends. The results will be expressed as the relative risks (RRs, 95% CI) of hospital admissions for every interquartile range (IQR)  $\mu\text{g}/\text{m}^3$  increase in the concentrations of pollutants, according to different pollutant models. Analyses will be conducted using the MGCV package in R (version 2.10.0), all statistical tests are 2-sided, and values of P<0.05 values are considered statistically significant.

### Objectives

The aim of this study is to assess the role of air pollution in hospitalization, including cardiovascular events, PDRI, non-infectious PD-related complication, respiratory tract infections, anaphylaxis cases, among patients undergoing PD, and the impact will be described as exposure-response curves to illustrate the association. Further more, we tend to explore whether there is any connection between categorical features of PD patients and air-pollution related hospitalization.

## P-25

## CAROTID INTIMA MEDIA THICKNESS BUT NOT FGF-23 LEVELS PREDICT CARDIOVASCULAR MORBIDITY AND MORTALITY IN PERITONEAL DIALYSIS PATIENTS: A 7-YEAR FOLLOW-UP STUDY

Seda Bas, Ebru Ascioglu, Basar Aykent, Arzu Velioglu, Hakki Arika, Serhan Tuglular, Cetin Ozener

Marmara University School of Medicine, Turkey

## Objectives

Cardiovascular morbidity and mortality is increased in end-stage renal disease. FGF-23 is associated with vascular calcifications, left ventricular hypertrophy and anemia in peritoneal dialysis (PD) patients. However there is no data regarding cardiovascular morbidity and mortality in PD. We assessed the effect of FGF-23 on cardiovascular morbidity and mortality in PD patients.

## Methods

Forty-nine PD patients and forty healthy controls were included. FGF-23 levels were determined from plasma samples. Atherosclerotic disease was assessed by carotid intima media thickness (CIMT). Patients were followed for 7 years.

## Results

Demographics and laboratory data are shown on Table-1. FGF-23 (83.7 (14.3-2410) vs 7.0 (3.7-35.3) pg/mL,  $p < 0.01$ ) and CIMT ( $0.68 \pm 0.21$  vs  $0.57 \pm 0.01$  mm,  $p < 0.01$ ) levels were increased in PD patients compared to controls. During follow-up, 19 patients transferred to hemodialysis (38.8%), 18 patients received renal transplant (36.7%), while 3 patients (6.1%) died from cardiovascular causes. Four patients experienced a cardiovascular event. Due to low event number, morbidity and mortality were assessed together. Cardiovascular morbidity and mortality was positively correlated to CIMT whereas there was no correlation regarding FGF-23 levels.

## Conclusions

There was no correlation between FGF-23 and cardiovascular morbidity and mortality in PD patients. Only CIMT predicted morbidity and mortality, which is in accordance with current literature. One strength of the study was the long time of follow-up, whereas low number of patients and cardiovascular events were major limitations.

## P-26

## CARDIO-ANKLE VASCULAR INDEX IS ASSOCIATED WITH HIGH HEMOGLOBIN A1c AND LOW SERUM ALBUMIN IN CONTINUOUS AMBULATORY PERITONEAL DIALYSIS PATIENTS

Belda Dursun, Ahmet Baki Yagci, Aysen Kardesler, Hande Senol

Pamukkale University Medical School, Turkey

## Objectives

Cardiovascular (CV) diseases are major causes of death in patients with chronic kidney disease (CKD) and chronic dialysis patients. To measure the stiffness of the aorta, femoral artery and tibial artery noninvasively, cardio-ankle vascular index (CAVI) which is independent of blood pressure was newly developed and has been proposed as an alternative to aortic pulse-wave velocity (PWV). The CAVI is independent of the pressure and vascular reflection between the heart valve and the ankle. In the present study CAVI levels were determined to explore the factors associated with arteriosclerosis in continuous ambulatory peritoneal dialysis (CAPD) patients, as well as non-dialytic chronic kidney disease patients and non uremic controls.

## Methods

35 CAPD patients, 46 CKD and 44 non-uremic controls were enrolled in the study. Serum hemoglobin A1c, albumin, uric acid, total calcium, phosphorus, parathormone, lipid levels, C-reactive protein, fibroblast growth factor-23, s-klotho concentrations were measured.

## Results

CAVI levels were  $8.09 \pm 1.94$  m/sec in CAPD patients and was higher than controls and CKD patients. FGF-23 levels were highest in CAPD patients (median: 647) and s-Klotho levels were lowest in CAPD patients (median: 241) compared to CKD patients and controls. In CAPD patients, CAVI was positively correlated with age ( $r=0.718$ ,  $p=0.000$ ), and hemoglobin A1c ( $r=0.464$ ,  $p=0.022$ ) and negatively correlated with the serum albumin concentration ( $r=-0.492$ ,  $p=0.007$ ). Stepwise regression analysis showed that both the serum albumin concentration ( $\beta=-0.424$ ,  $p=0.019$ ) and the serum hemoglobin A1c level ( $\beta=0.433$ ,  $p=0.015$ ) were independently associated with the CAVI.

## Conclusions

Our results indicate that age is a major determinant of CAVI. Apart from age, an increase in CAVI was independently associated with both decreasing serum albumin levels and increasing hemoglobin A1c levels in CAPD patients. These results may suggest the importance of malnutrition and deranged metabolic status in development of arteriosclerosis in chronic peritoneal dialysis patient population.

P-27

### DOES CHRONIC CYTOMEGALOVIRUS INFECTION INCREASE ARTERIAL STIFFNESS IN PERITONEAL DIALYSIS PATIENTS?

Necmi Eren<sup>1</sup>, Fatma Tugba Catan<sup>1</sup>, Ceyla Eraldemir<sup>1</sup>, Sibel Gokcay Bek<sup>2</sup>, Serkan Bakirdogen<sup>3</sup>, Neset Nuri Gonullu<sup>1</sup>, Betul Kalender Gonullu<sup>1</sup>

<sup>1</sup>Kocaeli University School of Medicine, Turkey, <sup>2</sup>Kocaeli State Hospital, Turkey, <sup>3</sup>Canakkale Onsekiz Mart University School of Medicine, Turkey,

#### Objectives

Arterial stiffness (AS) increases cardiovascular disease (CVD) risk. Pulse wave velocity (PWV) is the gold standard method for assessing AS. Augmentation index (Aix) may also be used for AS evaluation. Studies on chronic CMV infection for its role in CVD pathogenesis through increased inflammation have yielded controversial results. CMV seropositivity increases with age. An association between chronic CMV infection and CVD especially in transplant patients on immunosuppression has been demonstrated. Also a recent study showed an association between AS and chronic CMV infection in CKD patients. We also investigated whether there is a correlation between chronic CMV infection and AS in peritoneal dialysis (PD) patients.

#### Methods

A cross-sectional observational study was conducted in PD patients aged between 18 and 75 years. Minimum PD history of 3 months was inclusion criterion. Exclusion criteria were atrial fibrillation, valvular disease, cardiac failure, history of cerebrovascular or peripheral arterial disease, peritonitis within 3 months and malignancy. PWV and Aix measurements were performed using a Mobil-O-Graph PWA device. Routine biochemistry and CMV IgG determinations were performed.

#### Results

Fifty PD patients (female, n=26) out of 112 were eligible (Mean age 51 ± 12). The mean PWV was 7.96±1.83 m/sec, and the median Aix was 26.5% (18.75-35.5). CMV IgG titer positively correlated with PWV and Aix (r=0.290, p=0.043; and r=0.317, p=0.027, respectively). PWV also positively correlated with age and BMI (r=0.912, p<0.001; and r=0.466, p=0.001, respectively), and negatively with albumin (r=-0.411, p=0.003). But no significant correlation between CMV IgG and age, BMI, albumin were found.

#### Conclusions

In our study AS was increased by age, obesity and hypoalbuminemia while CMV IgG was not influenced by them. Based on significant association between increased CMV IgG and AS, it might be assumed that chronic CMV infection represents an independent risk factor for AS development.

P-28

### RELATIONSHIP BETWEEN EPICARDIAL ADIPOSE TISSUE AND CORONARY ARTERY CALCIFICATION IN PERITONEAL DIALYSIS PATIENTS

Roberta Russo<sup>1</sup>, Gennaro Argentino<sup>1</sup>, Massimo Imbriaco<sup>2</sup>, Immacolata Maresca<sup>1</sup>, Andrea Memoli<sup>1</sup>, Silvia Migliaccio<sup>1</sup>, Andrea Postiglione<sup>2</sup>, Giuseppina Sannino<sup>1</sup>, Domenico Russo<sup>1</sup>

<sup>1</sup>University Federico II; Public Health Department, Italy, <sup>2</sup>Department Advanced Biomedical Science, University Federico II Naples, Italy

#### Objectives

Coronary artery calcifications (CAC) are frequent in ESRD patients and reduce coronary flow. Epicardial Adipose Tissue (EAT) produces cytokines and adipokines that are linked to endothelial dysfunction and atherosclerosis. Therefore, CAC may reflect severity of atherosclerotic vascular disease and EAT may be potent source of inflammatory substances leading to accelerated atherosclerosis. This study aims at evaluating potential relationship between EAT and CAC in peritoneal dialysis patients (PD-Patients). PD-Patients have increased body fat mass and are more exposed to inflammatory risk-factors.

#### Methods

PD-Patients (on PD for at least 12 months) and patients with chronic kidney disease not on dialysis (CKD-patients) were evaluated. Exclusion criteria were: congestive heart failure; active infection; neoplasia; arrhythmia. Written informed consent was obtained. CAC-score and EAT-score were measured by CT scans that were evaluated by 2 blinded radiologists.

#### Results

Evaluations were performed in 18 PD-Patients (11 Male; 7 Female) and in 18 CKD-patients (13 Male; 5 Female). PD-Patients had significant higher serum PTH, phosphorus, calcium levels compared to CKD-patients. CAC-score was 220±403 and 110±166 Agatston unit in CKD-patients in and PD-Patients, respectively; EAT-score was 93±37 and 110±57 cm<sup>3</sup> in CKD-patients in and PD-Patients, respectively. These differences were not significant. In CKD-patients, CAC and EAT were not associated to any variable of interest. In PD-Patients, EAT was significantly associated (in univariate analysis) to age, diabetes and hypertension vintage, BMI, CAC score, C-reactive protein, fibrinogen; no association was found with PTH or phosphorus levels. Age, BMI and CAC remained significant predictors of EAT (p < 0.01) in multivariate analysis.

#### Conclusion

This study indicates that CAC-score and EAT-score are not different in PD-Patients compared to CKD-patients suggesting that PD-Patients are exposed to similar inflammatory and atherosclerotic risk factors. Age, BMI and CAC are predictors of higher EAT. Larger studies are mandatory to confirm these preliminary data.

## P-29 Moderated Poster Session 5

### REPLACEMENT MODALITY CHOICE KNOWLEDGE IN THE NON-RENAL MULTIDISCIPLINARY TEAM - EXPERIENCE FROM A SINGLE UK CENTRE

Fatima Abdelaal, Hatem Ali, [Jyoti Baharani](#)

Heart of England NHS Foundation Trust - Heartlands Hospital, United Kingdom

#### Introduction

Chronic Kidney Disease (CKD) is a common health problem which is on an upward trend. Dialysis treatment remains the mainstay for patients with End Stage Renal disease (ESRD). In the UK there has been a significant decline in home dialysis despite its benefits and cost effectiveness. There are many reasons for this including lack of awareness about availability and effectiveness of home dialysis by both patients and healthcare professionals.

#### Objectives

Patients with CKD often have multiple co-morbidities and are known to other medical specialties who they may continue to consult when approaching the need for dialysis. We wished to assess home dialysis awareness among the non-renal Multi-Disciplinary Team (MDT).

#### Methods

Home dialysis awareness was assessed by an on-line survey sent to the choosing specialties likely to deal with CKD patients at our centre. The questionnaire aimed to assess knowledge of these individuals regarding home dialysis and establish whether further targeted education was warranted.

#### Results

364 questionnaires were sent out with a 26.4% response rate. 69.32% of respondents were working in common specialties dealing with CKD patients (geriatrics 15.9%, cardiology 14.8%, haematology 10.2%, endocrinology 10.2%, urology 10.2% and vascular surgery 8%). 81.5% of non-renal MDT didn't feel confident in discussing home dialysis options with patients despite seeing a large number of CKD patients. 70% felt that their knowledge about Home Haemodialysis (HHD) was poor and 74.5% felt that they needed further education about home dialysis.

#### Conclusions

Knowledge of home dialysis among the non-renal MDT is poor and they lack the confidence to discuss this with CKD patients. In our sample, respondents felt they would benefit from further education. This may increase the uptake of home dialysis by the multi-morbid CKD patient who has a consistent message delivered to them by all relevant healthcare teams about the benefits of home dialysis.

## P-30

### INDICATIONS FOR THE TRANSFER OF PATIENTS FROM PERITONEAL DIALYSIS TO HEMODIALYSIS: MONO-CENTRIC STUDY CHU PARNET ALGIERS ALGERIA

[Lilia Akliil](#), Taher Rayane

Chu Parnet Alger Algérie, Algeria

#### Objectives

Peritoneal dialysis PD and hemodialysis HD are considered as two complementary treatment methods of chronic end-stage renal disease (ESRD). Transfer of PD to HD is relatively frequent. This study will tell us the cause of transfer.

#### Methods

This is a retrospective, monocentric observational study focused on a series of 166 patients who left PD from 2001 to 2017.

#### Results

Of the 166 patients 78 died, 62 transferred to HD, 19 transplanted and 7 Have recovered their renal function.

Of the 62 transferred in HD, there are 29 men and 33 women with an average age of 44 years and average duration in PD of 1.87 years; Initial nephropathies: indeterminate nephropathies 35%, diabetic nephropathies 17%, probable nephroangiosclerosis, 17% glomerular nephropathy 8%

The reasons for transfer were mainly the infectious causes including peritonitis in 25 patients, especially refractory peritonitis, followed by loss of ultrafiltration 19 patients, technical causes 08 patients, psychosocial causes 05 patients non-functional catheter 3patients

#### Conclusions

These results correspond to the results of the literature whose peritonitis is far the most frequent cause of transfer of peritoneal dialysis to hemodialysis.

P-31

## EFFECT OF BMI ON OUTCOME IN PERITONEAL DIALYSIS PATIENTS; A SINGLE SAUDI CENTER REVIEW

Jamal Alwakeel, Saira Usama, Mohammad Alkhowaiter, Ahmed Tarakji, Mohamed Alghonaim

King Saud University, Saudi Arabia

## Objective

To evaluate the effect of obesity (taken as BMI at the time of starting PD), on patients receiving peritoneal dialysis as renal replacement therapy, in terms of patient and technique survival, incidence of infectious and non-infectious complications, and mortality

## Methods

This was a retrospective cohort analysis, comparing groups of patients on the basis of BMI. A total of 98 patients, treated in the peritoneal dialysis unit between January 1st 2005 and December 31st 2014, were included in the study. The BMI was calculated on the start of PD therapy according to the World Health Organization (WHO) classification

## Results

Primary patient outcome was death and the secondary outcomes included transfer to HD, and renal transplant. 25 patients were continuing PD till end of study period. The Mortality and infection rates were calculated by calculating the total time on dialysis as patient months. The mean age of obese patients was higher (52.14 range: 16-77 years) compared with overweight (49.83, range: 16-84 years) and normal weight patients (47.53, range: 19-86 years). Peritonitis rate was 0.38 per patient years in normal weight patients, 0.22 per patient years among overweight patients and 0.35 per patient years among obese patients (p value 0.67). The mortality rate was 0.09 per patient years in normal weight patients, 0.07 per patient years among overweight patients and 0.06 per patient years among obese patients (p value 0.82)

## Conclusions

Our results revealed that there were no significant differences between different groups on basis of peritonitis rates (p value 0.67), ESI (p value 0.41) catheter related complications (p value 0.42) and patient mortality (p value 0.82). However, in terms of outcome of peritoneal dialysis, the obese patients were more likely to be transferred to HD (p value 0.045) and less likely to undergo renal transplant (p value 0.020).

P-32

## SEVEN YEARS OF PERITONEAL DIALYSIS TREATMENT IN CHILD WITH CONGENITAL NEPHROTIC SYNDROME OF THE FINNISH TYPE - FIRST CROATIAN EXPERIENCE

Adela Arapovic<sup>1</sup>, Marijan Saraga<sup>1</sup>, Sandra Prgomet<sup>1</sup>, Eugenija Marusic<sup>1</sup>, Jasna Slavicek<sup>1</sup>, Josipa Radic<sup>2</sup><sup>1</sup>Pediatric Clinic, University Hospital Centre Split, Croatia, <sup>2</sup>Department of Nephrology and Dialysis, Internal Clinic, University Hospital Centre Split, Croatia

## Introduction

Congenital nephrotic syndrome of the Finnish type (CNF) is a rare autosomal recessive disorder that is present at birth or within the first three months of life, caused by mutations in the NPHS1 gene, coding for nephrin. The nephrotic syndrome is severe; it is resistant to corticosteroids and immunosuppressant drugs and progresses to end-stage renal disease. Infectious and nutritional complications are common, due to the massive protein loss.

## Methods

Here we presented a nine years old boy with CNF due to homozygously missense mutation (c.1096A>C, p.Ser366Arg) in exon 9 of NPHS1 gene on peritoneal dialysis (PD) for seven years. He started PD treatment at 22 months of age due to bilateral nephrectomy because of resistant nephrotic syndrome. Also, he is on PD for seven years because he does not have a living related or unrelated kidney donor and did not receive cadaver kidney.

## Results

During seven years of PD (three years of continuous ambulatory PD and four years of automated PD) he was treated for five episodes of acute peritonitis. During treatment with PD his height and body weight were around 50th percentile. At the present his erythrocyte count is 4.17x10<sup>12</sup>/L, haemoglobin level 135 g/L, serum albumin 36 g/L, cholesterol level 3.8 mmol/L, iron 6 µmol/L and body mass index 17.2 kg/m<sup>2</sup>. Furthermore weekly Kt/Vurea is 2.71 and creatinine clearance is 54.9 L/1.73 m<sup>2</sup>. According bioelectrical impedance analysis he is not in overhydration state. During seven years of PD he was also treated because of episode of scrotal oedema due to peritoneal fluid leaks and episode of pericatheter peritoneal fluid leaks.

## Conclusions

A nine years old child with CNF on successful PD treatment for seven years has been described. To the best of our knowledge, this is the first report from Croatia and also the longest duration of PD.

### P-33 Moderated Poster Session 5

#### MAINTAINING A PERITONEAL DIALYSIS PROGRAMME – ADDRESSING THE REASONS FOR THERAPY DROP OUT – SINGLE CENTRE EXPERIENCE FROM THE UK

Maaz Babiker, Hatem Ali, Jyoti Baharani

Birmingham Heartlands Hospital, United Kingdom

##### Introduction

Peritoneal dialysis (PD) is an underused dialysis modality worldwide. Several studies have demonstrated that PD has higher early survival rates compared to haemodialysis (HD). These favourable outcomes are observed not only in elderly population, but also in patients with unplanned starts on dialysis. Despite this, there has been a constant decline in the rate of peritoneal dialysis utilization. Even in units where the initial rate of PD uptake is high it is difficult to maintain a balance of patients commencing and dropping off therapy.

##### Objectives

We aimed to identify our local PD dropout rate at 6, 12 and 24 months and to explore the reasons behind this dropout.

##### Methods

Home dialysis awareness was assessed by an on-line survey sent to the choosing specialties likely to deal with CKD patients at our centre. The questionnaire aimed to assess knowledge of these individuals regarding home dialysis and establish whether further targeted education was warranted.

##### Results

100 patients were included in the study (Male= 68, Female=32, Caucasians 74% diabetics 31% and mean age 60 years). At 6 months follow up the total dropout rate was 26% this included: 14% transferred to HD, 5% had renal transplant, 5% died and 2% renal failure recovered. At 12 months follow up the dropout rate doubled to 50%. At 2 years follow up the dropout rate was 74 % (39 patients transferred to HD, 22 patients had renal transplant, 8 patients died, 5 patients became off dialysis). The reasons for PD dropout to HD were multi-factorial. The most common reason for modality related drop out was infection (61.5%), ultra filtration failure (20.5%), PD leak (10%) and patient choice (8%).

##### Conclusions

The incidence of PD dropout rate increased significantly during the period of 6 months to 24 months after treatment initiation. The main reason of PD drop out is transfer to HD because of infection (peritonitis or exit site infection). Strategies to prevent and manage peritonitis, ultra-filtration failure, PD leak and education of patients may all help with maintaining the patient on PD.

### P-34 Moderated Poster Session 4

#### QUALITY IMPROVEMENT TO GROW AND MAINTAIN A PD PROGRAMME

Jyoti Baharani<sup>1</sup>, Ann Cole<sup>2</sup>

<sup>1</sup>Heart of England Foundation Trust, United Kingdom, <sup>2</sup>Baxter Healthcare, United Kingdom

##### Objectives

Having kidney failure can be devastating and life changing. We owe it to our patients to support them to make the best treatment choices that will minimise the impact of their disease. A target was set to grow and maintain the Peritoneal Dialysis (PD) programme at Heart of England NHS Foundation Trust (HEFT)

##### Methods

Each patient sees multiple members of the Renal Unit multi-disciplinary team over many months and years of their disease progression. To support the growth of PD, multiple service and quality improvements are required

To identify these improvements, a review of the patient pathway; from referral to the Renal Unit to end of life, was undertaken to identify bottlenecks and inconsistencies that may impact the goal of more patients dialysing at home. Lean methodologies were used empowering the whole team to maximise their potential, with a focus on identifying value-added interventions and eliminating waste to maximise patient flow.

The process identified barriers along the pathway that prevented patients starting home therapies: a lack of PD champions, staff attitude, patients having "free" choice, PD catheter insertion waiting time, late presenters defaulting to haemodialysis, and capacity available for in centre treatment.

##### Results

Quality improvements were made to the pre-dialysis pathway including patient education, a PD first policy and a Peer Educator Support programme. PD pathway improvements introduced acute start and assisted PD programmes, an increase in the number of PD medical catheter insertion operators, and streamlining of clinics

The changes were evaluated through use of run charts, patient and staff feedback

The prevalent PD population grew from 8% in 2014 to 19% by the end of 2016

##### Conclusions

Changing the culture, attitude and belief of a Renal Unit to support implementation of service and quality improvements along the patient pathway can achieve significant sustainable growth in a PD programme.

## P-35 Moderated Poster Session 1

### ROUTINE GERIATRIC ASSESSMENT CAN IMPROVE CARE FOR OLDER PATIENTS ON PD

Titus Chelapurath, Carol Bartholomew, Edwina Brown, Seema Singh, Michelle Willicombe

Imperial College Health Care NHS Trust, United Kingdom

#### Objectives

To assess older PD patients' needs for support services and the impact on nurses workload following the introduction of routine geriatric assessments by a specialist renal elderly care nurse (RECN).

#### Methods

PD patients aged 70 years and older, those perceived to be frail or on assisted PD were assessed by the RECN using a modified GA commencing September, 2015. Assessments included frailty (Canadian Study of Health and Ageing Score), memory/dementia using the Abbreviated Mental Test Score (AMTS), executive function/cognition using the Clock Drawing test (CDT), treatment satisfaction using the Renal Care Satisfaction Thermometer, and distress using The Distress Thermometer.

Referrals to older people services were recorded. PD staff time spent on organising care was analysed at start of the project and at 1-year.

#### Results

56 PD patients had initial assessments. Moderate frailty and cognitive impairment was found to be high (33% & 39%), moderate to severe distress 23 % and patients' falls 26 % in the past year. Patients' treatment satisfaction was found to be high at 87%.

70 referrals were made to various older people services following assessments. PD staff time organising care decreased; care packages by 42%, general social care by 17%, palliative care & hospice by 58%, other supportive care by 83% and GP liaison by 8%.

#### Conclusions

Routine GA has identified a number of patient care needs with subsequent referrals to support services. Dialysis staff time organising care has decreased. The creation of a specialist nurse role is an effective way of improving care of the increasing number of older patients on dialysis.

## P-36

### THE EXCESS WEIGHT GAIN IN PERITONEAL DIALYSIS IN THE FIRST YEAR AND ITS CONSEQUENCES ON THE LOSS OF RESIDUAL RENAL FUNCTION

Lilia Ben Lasfa, Yosra Guedri, Awatef Azzebi, Wissal Sahtout, Dorsaf Zallema, Sanda Mrabet, Salma Toumi, Manel Chouchène, Samira Amor, Ferdaous Sabri, Abdellatif Achour

Department of Nephrology CHU Sahloul, Tunisia

#### Objectives

Excess weight gain (EWG) is a major problem in patients beginning peritoneal dialysis (PD). If obesity is associated with good survival in hemodialysis, the results obtained in PD are not as persuasive, especially the effect of Obesity on Residual Renal Function (RRF). Our objective is to evaluate the effect of EWG on the decline of the RRF.

#### Methods

A total of 48 patients were studied retrospectively. The values of the RRF were recorded with intervals of at least 6 months for 3 years or until the total loss of the RRF. The weight was evaluated respectively one month and then one year after beginning dialysis. EWG was defined as weight gain strictly greater than 6% of the basic weight.

#### Results

Mean age was  $39.46 \pm 15.99$  years. The average rate of overweight estimated at one year was 4.17 kg or 6.79% of the initial weight. In our series, we found an association between a EWG and the risks of loss of the RRF at 2 years with a significant difference ( $p = 0.008$ ). Significant weight gain is inevitable due to increased caloric intake secondary to the absorption of dialysate glucose and decreased energy loss induced by uremia. The relationship between EWG and the loss of RRF remains unclear. However, chronic inflammation, oxidative stress and atherosclerosis can be implicated.

#### Conclusions

Excessive weight gain during the first year of DP was closely related to systemic inflammation and the rapid decline of RRF. The management of this population requires a therapeutic education concerning hygiene-dietetic measures and a control of the body mass as well as other parameters (anemia, diabetes, acidosis, ultra-filtration and inflammation).

P-37

### HOLISTIC NURSING APPROACH TO IMPROVE OUTCOME IN DIABETIC PATIENTS ON PERITONEAL DIALYSIS

Krisztina Budai, Anett Havasi, Attila B

Bbraun Avitum, Hungary

#### Objectives

Worldwide growing number of diabetic patients treated in peritoneal dialysis require diabetological intervention for glycemic correction due to glucose containing solutions. Hence, besides the PD related knowledge, it is necessary to get specialize in diabetological treatment at the dialysis unit. We developed a structured questionnaire to evaluate knowledge of prevalent diabetic patients and re-educate them on PD-related glucose control.

#### Methods

Diabetes was known in 9 patients (male / female: 6/3) of the 26 PD patients treated at the station in 2017 January. Among them 4 patients were over 70 years of age and the duration of diabetes exceeded 15 years in 5 patients. The questionnaire contained 4 blocks of teaching topics: 1 block: theoretical knowledge about diabetes and PD, 2 block: diet, physical activity, effect of diabetic treatment, 3 block: PD regimen influence on carbohydrate metabolism, adaptation options, 4 block: blood glucose measurement, diary guidance, correct use of insulin delivery devices. The results of the education were monitored in 3 months.

#### Results

The majority of patients knew carbohydrate rich foods, but only one patient could properly recall the previously proposed distribution of the exact dose per day. Their physical activity meant work around home for almost every patient. About half of the patients used technically unacceptable blood glucose meter and insulin delivery devices. All patients needed help in coordinating carbohydrate metabolism and PD-related blood glucose changes. In the second study, the number and severity of blood sugar fluctuation (although not reflected by HbA1C:  $6.2 \pm 0.39$  v.  $6.3 \pm 0.38$ ;  $P=0.58$ ) was significantly reduced by blood glucose logs, patients reported improved quality of life.

#### Conclusions

Especially important to coordinate carbohydrate metabolism with peritoneal dialysis originated glycemic load in a personalized way during patient education. The PD nurse may also propose dietary and lifestyle solutions to facilitate a diabetic PD-patient adoption within the family.

P-38

### UK WEST MIDLANDS INITIATIVE TO ENHANCE UPTAKE OF PERITONEAL DIALYSIS IN LATER PRESENTERS

Tereza Cairns, Jyoti Baharani

Heart of England NHS Trust, United Kingdom

#### Objectives

The aim of this study was to evaluate the how late presenters start dialysis in the UK and perceived barriers to offering patients peritoneal dialysis initially.

#### Methods

A survey monkey link was distributed with a questionnaire regarding current practice to middle/consultant grade doctors via email and twitter. A multidisciplinary structured program was designed to facilitate immediate start peritoneal dialysis in suitable patients.

#### Results

48% of respondents confirmed they had no education program and 62% of centres were unable to offer immediate PD.

The main barrier was lack of ability to discharge into the community safely. Our team educated 21 late presenters over 6 months. Over half (11 patients) chose to have PD. On follow up this figure had dropped to 29%.

#### Conclusions

Even in the acute setting, patient involvement in decision making for dialysis modality is feasible. Informed choice should be encouraged to achieve greater patient satisfaction and clinical outcomes.

P-39

## PERITONEAL DIALYSIS (PD) CATHETERS: A COMPARISON BETWEEN TECHNIQUES. OPEN VERSUS SURGICAL TECHNIQUE

Simonetta Caria, Katia Cannas

SC Service and Regional Nephrology Dialysis ASL Cagliari, Italy

### Introduction

PD is an efficacious treatment in patients with ESRD and its success depends on optimal peritoneal catheter (PC) functionality. Traditionally, insertion of PC was done with the "open" technique, in which a hole was performed in patients' superior abdomen. Nowadays, video-laparoscopic technique (VLS), "only one hole", is becoming more common in addressing correctly the catheter's tip in the Douglas' pouch, mostly in those patients in which previous abdominal surgical interventions have been performed.

For greater safety, our team performs the interventional methodic "three holes" that, using micro-instrumentation, allows peritoneal adhesiolysis consequent to previous interventions.

### Objectives

The aim of this study was to compare these techniques, based on the assessment of safety concerns in terms of early complications and start of early dialytic therapy.

### Methods

Between August 2013 and February 2017 (43 months), 23 peritoneal catheters have been inserted: 13 in VLTH and 10 with open technique. All patients in VLS group had previous surgically treated abdomens, while open technique patients group had not previous treated abdomens.

Potential complications (included exit-site and tunnel infection, peritonitis, peri-tube bleeding, catheter dislocation) occurred within 30 days from surgery together with the onset of therapy have been evaluated.

### Results

In the open group the only one complication observed was peri-tube bleeding that occurred in 2 out of 10 patients after 24 hours from the catheter insertion. With VLS method a case of subcutaneous tunnel pocket seroma was observed. The initiation of peritoneal dialysis treatment was started after 14.7 days of break-in in the open group and after 15.7 days for VLS group.

### Conclusions

Our conclusion, after literature review are in favor of VLTH method since it extends PD use and it is safer for those patients who have to undertake extracorporeal therapy.

## P-40 Moderated Poster Session 4

### CHRONIC PERITONEAL DIALYSIS IN DIABETIC PATIENTS: OUTCOMES AND MORTALITY

Tiago Carvalho, Patrícia Branco, Ana Rita Martins, Maria Augusta Gaspar

Hospital De Santa Cruz, Portugal

### Objectives

The purpose of this study was to compare overall and technique survival in diabetes mellitus (DM) and non-DM (N-DM) patients on chronic peritoneal dialysis (CPD).

### Methods

We reviewed the charts of patients with end-stage renal disease (ESRD) who started CPD between 1 January 2012 and 31 December 2016 in our unit and divided them into two groups: DM and non-DM. Baseline variables included demographics, kidney disease etiology, comorbidities, biochemical data (PTH, calcium, phosphate, haemoglobin), nPCR, Kt/V, hospitalizations, cardiovascular events, and peritonitis rate. The effects of these variables on survival were studied using a univariate procedure and then a multivariate Cox proportional hazards model to evaluate their independent relation to mortality.

### Results

97 patients, 32 (33%) diabetic and 65 (67%) non-diabetic. Compared to the N-DM group, the DM group was older ( $56.72 \pm 16.7$  years vs  $52.5 \pm 16.5$  years,  $p=ns$ ), had a lower body mass index (BMI) ( $25.24 \pm 4.0$  kg/m<sup>2</sup> vs  $26.04 \pm 4.5$  kg/m<sup>2</sup>,  $p=ns$ ), a lower Kt/V ( $2.22 \pm 0.46$  vs  $2.33 \pm 0.84$ ,  $p=ns$ ), and lower PTH ( $427 \pm 231$  pg/mL vs  $563 \pm 429$  pg/mL,  $p=0.046$ ).

Mean actuarial (death-censored) technique survival for the overall population was  $38 \pm 2.09$  months (95% confidence interval: 66.3-78.5); in the DM and N-DM groups mean survivals were  $38 \pm 1.4$  and  $36 \pm 1.4$  months, respectively ( $p=ns$ ). During the average 23.8-month follow-up, the 1-, 2-, and 3-year survival rates in the DM group were 95.5%, 74.6%, and 63.9%, respectively, and, in the non-DM group, 98.3%, 96.2%, and 90.5%, respectively ( $p=ns$ ). There were no differences in the incidence of hospitalizations, cardiovascular events, or peritonitis rate between the two groups. Lower initial BMI was associated with mortality in the diabetic population  $\geq 65$  years-old.

### Conclusions

Our findings indicate that CPD is a successful dialysis option for ESRD-diabetic patients. During the first 3 years of PD, DM and N-DM patients have similar survival rates. Measures to improve nutritional state could improve survival.

## P-41

## SCLEROSING PERITONITIS AFTER RENAL TRANSPLANTATION: TWO CASE REPORTS

Tiago Carvalho, Ana Rita Martins, Patrícia Branco, Ivo Laranjinha, Margarida Bruges, Domingos Machado, [Maria Augusta Gaspar](#)

Hospital De Santa Cruz, Portugal

## Introduction

Sclerosing peritonitis (SP) is characterized by fibrous thickening of the peritoneum. The major risk factor is peritoneal dialysis (PD) treatment. SP can occur as late sequelae of PD, typically after renal transplantation (RT). We present two such cases which occurred in our unit.

## Case Reports

A 69-year old male patient with end-stage renal disease (ESRD), secondary to nephroangiosclerosis, was on PD for 6 years, after which he underwent RT without complications. Immunosuppression included calcineurin inhibitors. Medical history included an umbilical hernia and two episodes of infective peritonitis. Twenty months after RT he presented with signs and symptoms of intestinal obstruction. Abdominal computed tomography (CT) scan revealed small bowel distention with air-fluid levels but no peritoneal thickening. Surgery was performed and revealed fibrotic adhesions encapsulating the jejunoileal loops, which were lysed. Three weeks later tamoxifen 20mg/day was started and maintained for 6 months. After 12 months of follow-up the patient is stable, without recurrent episodes. A 59-year old female patient with ESRD, secondary to diabetic nephropathy, was on PD for 7 years, after which she underwent RT without complications. Immunosuppression included calcineurin inhibitors. Medical history included three episodes of infective peritonitis. Five months after RT she presented with signs and symptoms of intestinal obstruction. Abdominal CT scan revealed small bowel distention with fluid content, without peritoneal thickening. She was submitted to surgery which revealed terminal ileum obstruction due to SP. Lysis of adhesions was performed. Tamoxifen 20mg/day was started one week later and continued for one month. After 9 months of follow-up there were no recurrent episodes.

## Conclusions

These cases suggest that SP can progress after the cessation of PD and successful RT, thus SP must be suspected in former PD patients presenting with intestinal obstruction after RT. Tamoxifen may be useful in the treatment of SP in these patients.

## P-42 Moderated Poster Session 1

## CHRONIC PERITONEAL DIALYSIS IN ELDERLY PATIENTS: OUTCOMES AND MORTALITY

Tiago Carvalho, Patrícia Branco, [Ana Rita Martins](#), [Maria Augusta Gaspar](#)

Hospital De Santa Cruz, Portugal

## Objectives

Our aim was to evaluate the outcomes and identify predictors of mortality in elderly patients on chronic peritoneal dialysis (CPD).

## Methods

We retrospectively reviewed the charts of patients who initiated CPD from 1 January 2012 to 31 December 2016. Patients were divided into two groups ( $\leq 64$  years,  $\geq 65$  years). Baseline variables included demographics, information on primary kidney disease, comorbidities and biochemical data such as albuminemia, calcium (corrected for protein), phosphate, hemoglobin (Hb), total cholesterol and triglycerides. The effects of these variables on survival were studied using a univariate procedure and then a multivariate Cox proportional hazards model to evaluate their independent relation to mortality.

## Results

97 patients, among whom 66 (68%) were  $\leq 64$  years old and 31 (32%) were  $\geq 65$  years old. Mean actuarial (death-censored) technique survival for the overall study population was  $51.47 \pm 2.09$  months (95% confidence interval [CI]: 66.3-78.5); in the  $\leq 64$  and  $\geq 65$  year-old groups mean survivals were  $47 \pm 2.19$  and  $54 \pm 3.10$  months, respectively. The death-censored technique survival for the elderly patients was not statistically significantly different from that in young patients ( $p=0.390$ ). In the overall study population, the mean patient survival was  $48.6 \pm 2.25$  months (95% CI 64.2-76.6), while the mean survivals for the  $\leq 64$  and  $\geq 65$ -year-old groups were  $44.98 \pm 2.70$  and  $51.58 \pm 3.20$  months, respectively. There were no differences in hospitalizations, cardiovascular events or peritonitis rates between the two groups. Surprisingly, survival of elderly patients on CPD is longer than that of younger ones. Lower initial serum nPCR as well as higher initial calcaemia were associated with mortality in the elderly population.

## Conclusions

In our cohort, CPD is a successful dialysis option for elderly patients with ESRD. Measures to improve their nutritional state and achieve normal calcaemia could improve their survival. Factors affecting mortality in elderly patients included lower serum nPCR as well as higher calcaemia at CPD baseline.

P-43

### PERITONEAL ULTRAFILTRATION FOR CLINICAL MANAGEMENT OF PATIENTS WITH CHRONIC HEART FAILURE. A MONOCENTRIC EXPERIENCE

Alex Cosaro, Maria Vitale, Giulia Frigo, Linda Gammaro

Uls9, Italy

#### Objectives

According to ESC Guide Lines (2012) on CHF, defined as a cardiac morphological and functional modifications resulting in reduced tissues oxygenation with severe metabolic abnormalities, and a set of specific symptoms or clinical signs. It turns out to have a 1-2% prevalence on adult population, 10-20% in the ultra 70- olds people with a 50% mortality in 4 years for all patients, and it is 40% within one year in case of re-hospitalization after CHF diagnosis. Furthermore represent 5% of all hospitalizations causes for acute events and 2% of health care global spending.

The re-hospitalization data are of 16, 30, > 40% at respectively 3, 6, 12 months from diagnosis. These data leading nephrologists to be involved in the CHF therapy management to be able to propose the pUF according to the criteria defined by Best Practice published on GIN of March 2012.

#### Methods

Our experience is based on the management and follow to 10 patients, began in 2010 and clinical results follow those obtained in previous experiences and described in terms of cardiac function in particular improving cardiac output, reduction of NYHA class and improve global QoL (measured with an internal audit) and overall global survival. Furthermore monitor hospitalization rate and thus reducing the overall care cost.

It is also evident as the value added to the therapeutic success is closely tied to the self-patient management or care-giver presence or patient management in an appropriate structures, substantially as it applies to PD success.

#### Conclusions

As for PD, pUF represent for us nephrologist and cardiologist a choice therapy, only manageable with an appropriated prescription and correct patient management. Therefore, their application and expansion could be a professional duty, which entail a real ability to positively affect to the global management on chronic homecare patients, not only for specific uremic.

P-44

### "DYSTROPHIC CALCINOSIS CUTIS": IN PD PATIENTS

Pietro Dattolo, Luigi Cirillo, Rossella Cannavò, Alma Mehmetaj, Marco Gregori, Giuseppe Cestone, Melania Errichiello, Annasara Sorrentino

Nephrology and Dialysis Unit Firenze II, Italy

#### Case Report

Dystrophic calcinosis cutis, a rare disease, caused by calcium salt deposits in cutaneous or subcutaneous tissues and often also in blood vessels, kidneys, lungs and gastric mucosa.

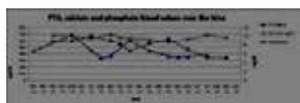
We present the case of a woman, age 47, treated by nocturnal APD (9h sessions, 6 days/ week) since 12 months. The cause of ESRD was due to membranous glomerulopathy, that did not respond to steroid and cytotoxic therapy. After 7 months of dialysis she developed painful masses on I and III phalanx of the first finger and on the fifth metacarpus of the right hand. Labs were notable for total calcium: 10.3 mg/dL ; Phosphorus: 8.9 mg/dL ; PTH: 444 pg/mL. Firstly we performed a hands X ray revealed calcifications in soft tissues of the right hand and vascular calcification bilaterally. Secondly she underwent a parathyroid scintigraphy that revealed a left parathyroid mass suspicious for hyperplasia or adenoma.

Eventhough we increased therapy with cinacalcet and phosphate binders her masses worsned and her lab results worsned: Phosphorus: 10mg/dl ; PTH: 181 pg/ml with stable Calcium. At that point her lesions were biopsed, the exam revealed deposition of amorphous material with calcific component, surrounded by foreign body giant cell reaction. We further increased dialysis treatment by adding two more daytime sessions and augmentig oral therapy. After few weeks we observed impornat regression of the masses that completely disappeared in 2 months.

#### Discussion

Treatment involves intensification of dialysis, augmentation of the non calcium containing phosphate binders and eventually surgical removal of the parathyroid glands.

Dystrophic calcinosis cutis is an uncommon complication in ESRD populations. Definitive treatment is to correct the underlying cause: altered calcium – phosphate product



## P-45

## PD: AN ALTERNATIVE THERAPY FOR CRITICALLY ILL PATIENTS WITH HIGH RISK OF BLEEDING

Zhou J,<sup>1</sup> Cao X,<sup>1</sup> Yan X,<sup>2</sup> Xie D,<sup>1</sup> Zhang Q,<sup>1</sup> Cai G,<sup>1</sup> Chen X<sup>1</sup><sup>1</sup>Department of Nephrology, Chinese PLA General Hospital, Chinese PLA Institute of Nephrology, State Key Laboratory of Kidney Diseases, National Clinical Research Center for Kidney Diseases <sup>2</sup>Peking University Clinical Research Institute**Objectives**

To evaluate the effectiveness of acute peritoneal dialysis for the critically ill patients with high risk of bleeding.

**Methods**

Newly admitted patients with kidney failure (AKI or CKD stage 5) and another organ dysfunction, and at least one of the following: 1. active bleeding; 2. thrombocytopenia; 3. liver cirrhosis with coagulation dysfunction; 4. post-operation (&lt;1 week); 5. newly onset haemorrhage (cerebral, respiratory, digestive, etc.) were selected. The patients were percutaneously inserted a catheter and underwent continuous ambulatory peritoneal dialysis. If the patient was hyper-catabolic or when the patient demand a dose of &gt;8L/day, the automated peritoneal dialysis was performed. All the patients were followed up till 90 days after dialysis initiation.

**Results**

Totally 128 eligible patients, 24 discharged within 3 days, 1 patient died within 24h, 42 patients refused to join the study, 61 patients finally enrolled. The mean age was 51.1±20.1 years, 40.8% was male, diabetes was 37.7%, AKI 11.5%, CKD stage 5 was 75.4%, the baseline creatinine was 878.72±471.38 umol/l, haemoglobin 75.1 ± 24.8 g/l, initial dose was 7.8±2.4 l/d, APACHE II scored 26.3±9.6. There were 7 types of bleeding tendency, i.e., digestive haemorrhage (29.6%), prolonged APTT (18.0%), thrombocytopenia (18.0%), cerebral haemorrhage (14.8%), cerebral haemorrhage hemoptysis (13.1%), fundus bleeding (3.3%), post-operation (3.3%). The prescribed Kt/V was 1.51 ±0.61, while delivered Kt/V was 1.34 ±0.50. The 90 day survival was 90.2%, among the 55 survivors, 6 pts (10.9%) transferred to maintained hemodialysis, 39 pts (70.9%) stayed in maintained peritoneal dialysis, 10 pts (18.2%) recovered from uremia.

**Conclusions**

In our pilot study of patients with high risk of bleeding, the 90 day survival was 90% and 16% patients recovered from uremia. peritoneal dialysis showed special advantages in this selected subgroup of critically ill patients with bleeding tendency.

## P-46

## DIABETES WAS THE MAJOR EFFECTOR OF RENAL SOLUTE CLEARANCE DECLINE IN PERITONEAL DIALYSIS PATIENTS

Zhou J,<sup>1</sup> Cao X,<sup>1</sup> Yan X,<sup>2</sup> Xie D,<sup>1</sup> Zhang Q,<sup>1</sup> Cai G,<sup>1</sup> Chen X<sup>1</sup><sup>1</sup>Department of Nephrology, Chinese PLA General Hospital, Chinese PLA Institute of Nephrology, State Key Laboratory of Kidney Diseases, National Clinical Research Center for Kidney Diseases <sup>2</sup>Peking University Clinical Research Institute**Objectives**

In the study of Efficacy and safety of Changfu peritoneal dialysis solution, we found both Kt/V and Ccr declined from baseline to 48 weeks. Solute clearance consists of renal and peritoneal parts, and the renal clearance was further more important. So we evaluated the effectors of residual renal clearance decline.

**Methods**

The data were all from the study of Changfu peritoneal dialysis solution. Kt/V and Ccr were both separated into two parts, i.e., peritoneal part and residual renal part. By comparisons of small solute clearance of peritoneal and residual renal function from baseline to 48 week, we identified the main part of clearance decline. Then, by ANOVA and logistic analysis we found diabetes was the major effector of small solute clearance decline.

**Results**

The decline of small solute clearance from baseline to 48 week was mainly from residual renal function rather than peritoneum, after baseline-adjusted analysis. The median decline rate of Kt/V was 11.9% (43.9% and 1.1% for renal and peritoneal, respectively). The median decline rate of Ccr was 13.6% (44.8% and -6.0% for renal and peritoneal, respectively). Age &gt;60 years didn't affect renal clearance significantly (p=0.6 and 0.7 for Kt/V and Ccr, respectively). Gender was not a significant effector (p=0.9 and 0.3 for Kt/V and Ccr, respectively). Hypertension was neither an effector (p=0.9 and 0.9 for Kt/V and Ccr, respectively). But diabetes significantly affected the renal clearance (p=0.04 and 0.03 for Kt/V and Ccr, respectively). Logistic analysis revealed that diabetes, rather than age, gender or hypertension, affected the residual renal clearance significantly (RR=1.8 and 1.7 for Kt/V and Ccr, respectively).

**Conclusions**

During the course of peritoneal dialysis therapy, the decline of small solute clearance (Kt/V and Ccr) was mainly from residual renal function rather than peritoneum. Diabetes was the major effector of clearance decline, the risk was nearly doubled.

P-47

### ULTRASOUND-GUIDED REPOSITION OF DISPLACED PERITONEAL CATHETERS

Zhou J,<sup>1</sup> Cao X,<sup>1</sup> Yan X,<sup>2</sup> Xie D,<sup>1</sup> Zhang Q,<sup>1</sup> Cai G,<sup>1</sup> Chen X<sup>1</sup>

<sup>1</sup>Department of Nephrology, Chinese PLA General Hospital, Chinese PLA Institute of Nephrology, State Key Laboratory of Kidney Diseases, National Clinical Research Center for Kidney Diseases <sup>2</sup>Peking University Clinical Research Institute

#### Objectives

To evaluate the efficacy and safety of ultrasound-guided reposition for displaced peritoneal catheters.

#### Methods

The inclusion criteria: 1. Maintenance peritoneal dialysis patients, with one-way drainage barrier (Inflow is good) confirmed by abdominal X ray; 2. Manual reposition, more exercise, laxative, etc, were performed and ineffective. The exclusion criteria: 1. Peritonitis; 2. Coagulopathy; 3. Cardiovascular and cerebrovascular diseases. Prophylactic antibiotics administered before operation, and the external tube was replaced after operation. The whole procedure was guided by ultrasound. The reposition criteria: 1. Both inflow and outflow was well; 2. Abdominal X ray indicated the catheter located in pelvis. The safety indices: 1. No bleeding; 2. No organ injury; 3. No peritonitis.

#### Results

1. Altogether 60 patients were included, 48 male (80.00%), 12 female (20.00%), the age ranged from 19 to 88 years, average (41.02±15.28). The causes of end-stage renal disease were as follow: 37 chronic glomerulonephritis (61.67%), 3 diabetic kidney disease (5%), 5 chronic interstitial nephritis (8.33%), 10 hypertensive nephrosis (16.67%), still 5 patients with unknown causes (8.33%). Methods of catheter insertion: 42 by laparotomy (70%), 18 percutaneously (30%). 55 patients used Tenckhoff straight catheter (91.67%), and only 5 curl catheters were used (8.33%). Catheter migration occurred in 2~288 days after insertion (median 120 days). Main reasons of catheter migration were irritable bowel (85.37%), unskilled surgical technology (4.88%), uncertain reasons (9.75%). 2. Reposition succeeded in 49 cases (81.67%), failed in 11 cases (18.33%). The failed cases by ultrasound guided reposition succeeded later by laparotomy. We found omental wrapping in all the 11 patients; 3. No bleeding, organ injury or peritonitis in these patients.

#### Conclusions

We found that ultrasound-guided reposition was a safe and effective method for peritoneal catheter migration. Migrated catheter with omental wrapping was difficult to replace, so that surgery was often necessitated. Further study was needed to confirm this results.

P-48

### ANALYSIS OF ASPECTS AND TECHNICAL CHARACTERISTICS OF PERITONEAL DIALYSIS IN ANDALUSIA IN THE LAST 17 YEARS

Cesar Remon<sup>1</sup>, Veronica De La Espada<sup>2</sup>, Pedro Luis Quirós<sup>3</sup>

<sup>1</sup>Nephrologist, HUPR PUERTO REAL, SPAIN, <sup>2</sup>Nephrologist, Chiclana De La Frontera, SPAIN, <sup>3</sup>Nephrologist, HUPR PUERTO REAL, SPAIN

#### Introduction and methods

We present the technical data of peritoneal dialysis (PD) from 1999 to 2016 of the Information System of the Autonomous Coordination of Transplants of Andalusia (SICATA). The present report was developed following its analysis in Microsoft Access and SPSS.15.

#### Summary of results and conclusions

The total number of patients treated between 1999-2016 was 2743. The most prevalent causative nephropathies were diabetic nephropathy (19.3%) and glomerular nephropathy (20.7%). Both diabetes and diabetic nephropathy decrease during the period (36% and 24.8% in 2001 to 30.5% and 19.8% in 2016, respectively). 86.7% of the patients freely chose the technique, the indication for medical reasons being the remaining 13.3%, mainly due to vascular access problems. The implantation of the catheter was surgical in 77% (parametral location in 80.9%), predominating the Swan-Neck and Tenckhoff-2C types. DPA has progressively increased in the technique, from the current 23% to 46%, although it has stabilized in recent years (Figure 1). The use of icodextrin and especially bicarbonate has also increased (in 2016: 46% and 87% respectively). The causes of departures are practically 1/3 per death, 1/3 per transplant and 1/3 due to problems in the technique, but in the last years the output by transplant increases and decreases by exodus (2016: 36% and 27 % Respectively). During the year 2016, 98 episodes of peritonitis were recorded, corresponding to 0.3 peritonitis / patient / year (rate stabilized in the last years and trend discretely descending in the period). The germ was Gram positive in 56% and Gram negative in 9.2%.

## P-49

## SAFETY OF PERITONEAL ULTRAFILTRATION IN THE TREATMENT OF REFRACTORY HEART FAILURE

Carmen Collado<sup>1</sup>, Veronica De La Espada<sup>2</sup>, Pedro Luis Quiros<sup>2</sup>, Cesar Remon<sup>2</sup><sup>1</sup>Cardiology Hupr, España, <sup>2</sup>Nephrology Hupr, España

## Introduction and methods

The implantation of peritoneal Ultrafiltration (UF) as a treatment for Insufficiency Refractory Cardiac (ICR) is indicated in patients diagnosed with Heart Failure Congestive heart failure (CHF), which present numerous episodes of Decompensation despite optimal medical treatment. The objective is to analyze the occurrence of adverse events such as peritonitis or complications due to the technique of catheter implantation, as well as death from any cause.

## Methodology

Longitudinal prospective study of patients diagnosed with RCC undergoing peritoneal UF daily ambulatory. A total follow-up of 12 months was performed in a total of 15 patients who met the inclusion criteria for the Peritoneal Dialysis (PD) program. We analyzed the incidence rate (IT) of adverse events as well as survival at one year by means of Kaplan-Meier method. The overall incidence rate of peritonitis should not exceed 0.5 episodes / year in international Society for Peritoneal Dialysis.

## Results

Fifteen patients, mainly male, were followed homogeneously for 12 months (Males n = 11) with a mean age of 66.2 years. No patient died during the follow-up so that survival at one year was 100% of the patients studied. During follow-up, one patient had 2 episodes of aseptic peritonitis that required hospitalization and another patient had a single episode of bacterial peritonitis. Other patient had 2 episodes of catheter obstruction due to entrapment of the omentum. The Incidence Rate of peritonitis was 0.11 episodes / year. The total incidence rate of adverse events were 0.17 episodes / year.

## Conclusions

Peritoneal UF is a safe technique for the treatment of patients diagnosed with RCC.

## P-50 Moderated Poster Session 5

## INCREASING UF VOLUME MIRROR THE DECLINE IN GFR AND URINE OUTPUT IN PD PATIENTS: A THREE YEAR FOLLOW-UP IN INCIDENT PD PATIENTS – DATA OF THE IPOD-PD STUDY

Claudio Ronco<sup>1</sup>, Wim Van Biesen<sup>2</sup>, Françoise Heibel<sup>3</sup>, George Tsirpanlis<sup>4</sup>, Olga González Peña<sup>5</sup>, José Manuel Gil Cunquero<sup>6</sup>, Valerio Rodrigues<sup>7</sup>, Paul Chamney<sup>8</sup>, Tatiana De Los Rios<sup>8</sup>, Christian Verger<sup>9</sup>, for the IPOD-PD Study Group<sup>10</sup>

<sup>1</sup>San Bartolo Hospital, Italy, <sup>2</sup>University Hospital Ghent, Belgium, <sup>3</sup>Hôpital Civil de Strasbourg, France, <sup>4</sup>General Hospital of Athens "G.Gennimatas", Greece, <sup>5</sup>Hospital de Basurto, Spain, <sup>6</sup>Complejo Hospitalario de Jaen, Spain, <sup>7</sup>Instituto Mineiro de Nefrologia, Brazil, <sup>8</sup>Fresenius Medical Care Deutschland GmbH, Germany, <sup>9</sup>RDPLF, France, <sup>10</sup>Bad Homburg, Germany

## Objectives

This non-interventional study involving 28 countries and 134 participating centres included 1092 incident patients. The purpose of the study was to track the evolution and association of fluid and body composition parameters over a 3 year follow-up period.

## Methods

After informed consent, baseline measurements of GFR, urine output, D/P, UF volume were obtained along with whole body fluid status and body composition using bioimpedance spectroscopy. Where possible, measurements were repeated at 3 month intervals until either patients dropped out or reached the end of the observation period. The analysis population comprised 1054 patients.

## Results

At baseline median GFR was 7.5 mL/min. At the end of the three year follow-up period the median GFR, UF volume and urine output were 4.0 mL/min, 750 mL and 800 mL respectively (table).

visit	GFR [ml/min]				daily ultrafiltration [ml]				24h urine output [ml]			
	N	Med	q1	q3	N	Med	q1	q3	N	Med	q1	q3
M0	468	7.5	5.1	10.3	0				1051	1500	1000	2000
M3	275	7.2	4.7	10.0	731	540	200	1000	730	1200	800	1800
M12	302	5.4	2.9	8.0	610	600	300	1000	610	1150	670	1600
M24	162	4.8	2.2	6.8	338	700	300	1020	338	1000	500	1500
M36	92	4.0	2.0	5.1	207	750	385	1200	206	800	250	1250

Med: median; q1: 25th percentile; q3: 75th percentile; M0: month 0 (Baseline)

## Conclusions

Preliminary results suggest that in incident PD patients a decline in GFR and urine output is mirrored by an increase in UF volume. Factors associated with the rate of decline with regard to fluid status in patient sub groups are the subject of further analysis.

## P-51 Moderated Poster Session 5

## CHANGES IN BODY COMPOSITION (BMI, LTI, FTI) OVER A 36 MONTHS PERIOD IN INCIDENT PD PATIENTS: IS THERE A NEGATIVE EFFECT OF GLUCOSE EXPOSURE ON BODY COMPOSITION? – DATA OF THE IPOD-PD STUDY

Wim Van Biesen<sup>1</sup>, Christian Verger<sup>2</sup>, Manel Vera Rivera<sup>3</sup>, Ana Ferreira Teixeira<sup>4</sup>, Jun-Young Do<sup>5</sup>, Isabel García Mendez<sup>6</sup>, Carmen Rodríguez Suárez<sup>7</sup>, Peter Wabel<sup>8</sup>, Tatiana De Los Rios<sup>9</sup>, Claudio Ronco<sup>9</sup>, for the IPOD-PD Study Group<sup>10</sup>

<sup>1</sup>University Hospital Ghent, Belgium, <sup>2</sup>RDPLF, France, <sup>3</sup>Hospital Clinic i Provincial de Barcelona, Spain, <sup>4</sup>Clinica de Doenças Renais, Brazil, <sup>5</sup>Yeungnam University Hospital, Korea, <sup>6</sup>Hospital Josep Trueta, Spain, <sup>7</sup>Hospital Universitario Central de Asturias, Spain, <sup>8</sup>Fresenius Medical Care Deutschland GmbH, Germany, <sup>9</sup>San Bortolo Hospital, Italy, <sup>10</sup>Bad Homburg,, Germany

## Objectives

This non-interventional study involving 28 countries and 134 centres included 1092 incident PD patients. The purpose of the study was to track the evolution and association of fluid status and body composition over a 3 year follow-up period.

## Methods

After informed consent, fluid status and body composition (Body Mass Index (BMI), Lean Tissue Index (LTI) and Fat Tissue Index (FTI) were measured using bioimpedance spectroscopy. Measurements were repeated at 3 month intervals until either drop-out or patients reached the end of the observation period (M0=baseline; M36=36 months). The analysis population comprised 1054 patients.

## Results

In this incident cohort, patients gained only slightly in BMI (+0.7 kg/m<sup>2</sup>) over the 36 month time period. This was associated with a slight reduction in LTI (-0.4 kg/m<sup>2</sup>) and an increase in FTI (+1.1 kg/m<sup>2</sup>).

visit	N	BMI [kg/m <sup>2</sup> ]			LTI [kg/m <sup>2</sup> ]				FTI [kg/m <sup>2</sup> ]			
		Med	q1	q3	N	Med	q1	q3	N	Med	q1	q3
M0	1054	25.2	22.5	28.7	1046	13.2	11.2	15.7	1045	11.0	7.9	14.8
M3	725	25.8	22.5	28.9	722	13.3	11.1	15.6	722	11.3	8.0	15.1
M12	604	25.9	23.1	29.6	603	13.1	11.0	15.5	602	12.2	8.6	15.8
M24	337	26.2	23.6	29.3	336	13.1	11.2	15.5	336	11.9	8.3	16.6
M36	206	25.9	22.8	29.2	203	12.8	10.6	15.0	202	12.1	9.0	16.1

Med: median; q1: 25th percentile; q3: 75th percentile; M0: month 0 (Baseline)

## Conclusions

No strong increase in FTI or BMI potentially attributable to glucose exposure is observed in this incident PD cohort. Detailed subgroup analysis and comparison to pair-matched haemodialysis patients and healthy controls will add further insights.

## P-52 Moderated Poster Session 5

## EVOLUTION OF PD TREATMENT DURING THE FIRST 3 YEARS OF DIALYSIS – DATA OF THE IPOD-PD STUDY

Christian Verger<sup>1</sup>, Wim Van Biesen<sup>2</sup>, Stanley Fan<sup>3</sup>, Carlo Crepaldi<sup>4</sup>, Mario Prieto Velasco<sup>5</sup>, Ilze Puide<sup>6</sup>, Dr. Rosa Palomar Fontanet<sup>7</sup>, Katharina Brand<sup>8</sup>, Tatiana De Los Rios<sup>9</sup>, Claudio Ronco<sup>9</sup>, for the IPOD-PD Study Group<sup>9</sup>

<sup>1</sup>RDPLF, France, <sup>2</sup>University Hospital Ghent, Belgium, <sup>3</sup>The Royal London Hospital, Barts Health NHS Trust, UK, <sup>4</sup>San Bortolo Hospital, Italy, <sup>5</sup>Complejo Asistencial de León – CAULE, Spain, <sup>6</sup>Pauls Stradins Clinical University Hospital, Latvia, <sup>7</sup>Hospital Universitario Marques de Valdecilla, Spain, <sup>8</sup>Fresenius Medical Care Deutschland GmbH, Germany, <sup>9</sup>Bad Homburg, Germany

## Objectives

One of the aims of this non-interventional study was to track the evolution and association of fluid status and PD prescription over a 3 year follow-up period.

## Methods

Following informed consent (1092 incident patient in 28 countries), information about PD treatment was obtained along with fluid status using bioimpedance spectroscopy. Where possible, documentation was repeated at 3 monthly intervals until either the patient dropped out or reached the end of the observation period.

## Results

Treatment decisions were made by the attending physician according to centre practice. A summary of the changes in PD treatment in the analysis population (N = 1054) are shown in the table below. The number of exchanges stays quite constant over the regarded time points; the median is 5 in APD and ranges between 3 and 4 in CAPD. Differences in the treatment practice according to country were observed.

visit	N	PD mode % CAPD	% Bio.	Osmotic agent			Bio.: Biocompatible solution Poly.: Polyglucose Hyper.: no polyglucose but at least 1 exchange with glucose concentration >1.5 % Other: no polyglucose and no exchange with glucose concentration >1.5 %
				% Poly.	% hyper.	% other	
M0	1054	77.2	72.8	15.0	28.6	56.5	
M3	731	71.5	72.5	17.1	35.7	47.2	
M12	610	62.0	76.2	24.1	34.6	41.3	
M24	338	62.1	77.5	23.4	36.7	39.9	
M36	207	62.8	81.2	25.1	38.2	36.7	

## Conclusions

Although the choice of the PD treatment is highly dependent on the practices of the country and centre, it can be observed that CAPD remains the preferred PD treatment.

To enhance ultrafiltration it seems that polyglucose and an increase in glucose concentration were used more often than a change of PD modality or an increase in number of exchanges.

## P-53

## RENAL TRANSPLANTATION IN PATIENTS TREATED WITH PERITONEAL DIALYSIS – MULTIANNUAL EXPERIENCE

Tatjana Djurdjevic Mirkovic, Lada Petrovic, Violeta Knezevic, Dejan Celic, Igor Mitic

Clinical Center of Vojvodina, Clinic for Nephrology and Clinical Immunology, Serbia

## Objectives

By the end of the last century, renal transplantation in patients on peritoneal dialysis (PD) was considered a high-risk procedure. The advantages of PD in renal transplantation include lower incidence of hepatitis B and C infection, reduced sensitization from transfusion, better preservation of bladder function, less frequent occurrence of delayed graft function, lesser incidence of recurrent glomerulonephritis.

## Methods

Retrospective analysis of the outcomes of renal transplant in patients on PD in our Center.

## Results

In the period 01/01/1998-01/04/2017, 20 patients underwent renal transplantation. The first transplantation was performed in 2003. Cadaveric and live-related transplants were performed in 55% and 45% patients, respectively. The majority of patients (12 -60%) were females. The average age at the moment of transplantation was 32.87 in males and 38.58 in females. The most common underlying causes of chronic renal failure included chronic glomerulonephritis and diabetes. The average duration of PD before transplant was 2.9 years. None of the patients were HBsAg and HCV positive. In addition to standard immunosuppressive therapy, 60% and 20% patients were administered cyclosporine A and tacrolimus, respectively. Average period for PD catheter removal was 14 days post transplant. In all patients, post-transplant course was without complications. One of the patients was transferred to hemodialysis 3 years post-transplant, whereas two patients died after 5 and 6 years, respectively. Gastric lymphoma occurred in one patient during post-transplant period. At the end of the research period, satisfactory graft function was observed in 14 (70%) patients.

## Conclusions

According to our experience, PD proved more advantageous in renal transplantation than Hemodialysis.

## P-54

## PERITONEAL DIALYSIS PROGRAM: HOW PATIENTS GO OUT

Veronica Duarte Gallego, Fulquet Miquel, Monica Pou, Saurina Anna, Vicent Esteve, Fatima Moreno, Irati Tapia, Manel Ramirez de Arellano

Consorci Sanitari De Terrassa, Spain

When we want to consider the quality of our peritoneal programs, we should consider how patients are going out of the program.

We describe our experience in the past ten years: from January of 2006 to December 2016.

More than a hundred patients have been treated in our unit: 102, during this period. Sixty nine of them are not, nowadays, in peritoneal dialysis. We review their cases in order to find out how they went out of the program. Exclusion criteria were: patients with cardiologic indication for peritoneal dialysis (N=4) and patients who moved to other units (N= 4).

Number of patients: 69. Most of them were men: 64,2%. Main causes of renal failure were: diabetic nephropathy 35,8%, glomerular diseases 35,8% and Poliquistosis 9,4%. Mean age were 59,9 years. Time in peritoneal dialysis was as a mean: 27,14 months. Most of the patients use DPA as a peritoneal dialysis modality (79,2%).

Main causes of peritoneal cessation were: Transfer to hemodialysis 30,2% (because of Peritonitis 12,5%, Catheter disfunction 6,5%, Peritoneal-Pleural communication 31,3%, Abdominal surgery 18,8%, Inadequacy 18,8% and Patient election 12,5%); Renal Transplantation 50,9% and patient Exitus 18,9%.

We found two interesting results:

First of all, we found a relationship between time in peritoneal dialysis and the cause of peritoneal cessation. We mean, patients who had to be transferred to hemodialysis had less time in our program. Patients who died, had more time in peritoneal dialysis (50,53 months in peritoneal program versus 18,94 months among those who were transferred to hemodialysis  $p=0,027$  U-M).

Second, we found that patients transferred to hemodialysis had a native vascular access in a high proportion: 40,6%.

As a conclusion: We consider that Quality Indicators in peritoneal programs should consider the way our patients leave the technique. We should prioritize the transfer to hemodialysis when peritoneal dialysis had not enough results to improve our patients survival. And, that transfer to hemodialysis need the planning of a native vascular access to improve our patient conditions

P-55

## AN EVALUATION OF THE CHALLENGES INVOLVED IN DELIVERING A COMPLEX MULTI-CENTRE PERITONEAL DIALYSIS COHORT STUDY

Cheryl Bailey, Louese Dunn, Martin Wilkie

Sheffield Teaching Hospitals NHS Foundation Trust, United Kingdom

### Objective

To learn from the practical experience of the set-up and delivery of the multicentre UK Catheter and Peritoneal Dialysis Outcomes and Practice Patterns Studies (PDOPPS) in order to develop resources for future use.

### Methods

Information was obtained from a number of sources including a systematic review of accrual and data returned from sites; review reports provided by Arbor Research to identify local problems; monitoring visits supplemented by active communication with sites; investigator and steering group meetings and teleconferences. Several assessments will be made including the relationship between site engagement and data quality and completeness; level of understanding of the protocol and any communication issues.

### Results

Funding was awarded in May 2014 and the study started recruiting in July 2015. To date, 889 participants, with 610 of those being incident, have been recruited from 44 centres across the UK, at an average rate of 44 per month. We learned the following key points – centralising the team improves study co-ordination and communication; high level support depends on access to a dedicated, knowledgeable staff member with close access to the Chief Investigator; a flexible approach to each individual site helps facilitate delivery; unambiguous information through close site contact, newsletters, teleconferences, visit and investigator meetings reduces misunderstandings regarding the protocol and data requirements. Through these processes we documented an improvement in data quality and completeness.

### Conclusions

The UK Catheter/PDOPPS is a complicated study to deliver and maintain. We were surprised by the opportunities that arose for misunderstandings in data collection and return, and learned through the course of the study various approaches to resolve these.

## P-56 Moderated Poster Session 2

### OPTIMISATION OF VANCOMYCIN ADMINISTRATION IN PD PERITONITIS

Sunny Eloot<sup>1</sup>, Clement Dequid<sup>1</sup>, Veronique Stove<sup>2</sup>, Thien Thanh Ho<sup>3</sup>, Wim Van Biesen<sup>1</sup><sup>1</sup>Nephrology - Ghent University Hospital, Belgium, <sup>2</sup>Clinical Biology - Ghent University Hospital, Belgium, <sup>3</sup>Nephrology - CHU Charleroi, Belgium

### Objectives

In PD, intraperitoneal administration of vancomycin is a suitable way to achieve sufficient antibiotic levels at the site of infection. However, the high peak concentrations during the vancomycin-containing dwell might be toxic, and still sub-therapeutic intraperitoneal concentrations might occur during the subsequent vancomycin-free dwells, giving rise to a creeping resistance. We studied vancomycin kinetics during intraperitoneal administration in order to optimise antibiotic therapy.

### Methods

During a 240min vancomycin-containing dwell (2g/2L) in a PD patient with peritonitis (male, residual eGFR 9mL/min, 70kg), blood and dialysate were drawn at 0, 15, 30, 60, 120 and 240min for determination of vancomycin concentration. A two-pool model (pool 1 equal to dwell volume) was calibrated for pool volume 2 (V<sub>2</sub>), renal clearance (Kr), and clearance among both pools (K<sub>12</sub>). To validate the model, 12 patients were treated using the regular vancomycin protocol. Vancomycin concentrations as measured in serum 55±22h after the vancomycin-loaded dwell were compared to those as case-specifically simulated with the calibrated kinetic model. Subsequent simulations were done to derive an optimised administration scheme.

### Results

At the end of the 240min vancomycin-containing dwell, serum vancomycin concentration was 29.7mg/L, while dialysate vancomycin concentration was reduced from an initial 1095 to 643mg/L. Kinetic modelling revealed V<sub>2</sub>=0.53\*(body weight), Kr=0.7\*eGFR, and K<sub>12</sub>=47mL/min. Median differences of 4.3mg/L between measured and simulated serum levels implied further fine-tuning of the kinetic model. Kinetic simulations found that a continuous 24h therapy (e.g. 1 dwell 4h, 2 dwells 6h, 1 long dwell 8h) of each 40mg vancomycin in 2L resulted in a more optimal TAC dialysate of 13.7mg/L, while TAC serum was only 1.1mg/L.

### Conclusions

To avoid nephrotoxic blood levels as well as sub-therapeutic dialysate levels, continuous vancomycin therapy is preferred. The present calibrated kinetic model is a useful tool for patient-specific treatment optimisation.

P-57

### COULD A BETTER FLUID CONTROL ADVERSELY AFFECT THE RESIDUAL RENAL FUNCTION?

Maria Del Carmen Felipe, Rosario Manzanedo, David Menendez, Consolación Rosado, Dolores Barreda, Jesús García

Nephrology. Complejo Asistencial De Ávila, Spain

#### Introduction

Over-hydration is a common condition associated with End Stage Kidney Disease (ESKD), being a priority to control in patients on Peritoneal Dialysis (PD). Fluid management is a challenging problem as patients lose their residual renal function (RRF) and with changes in the permeability characteristics of the peritoneal membrane. Bioimpedance analysis (BIA) has been incorporated into the routine clinical practice in most PD units to improve estimations of body composition and patient's fluid and nutritional status.

#### Objective

To evaluate the BIA effectiveness avoiding over-hydration and its responsibility in losing residual renal function.

#### Material and methods

We selected two groups of patients. One with 44 patients on PD before BIA machine BCM was acquired (from October 2008 to September 2011). And another group with 26 patients on PD with BIA measurements (from October 2011 to September 2015). We studied in both groups demographic characteristics, weight variations, residual renal function, peritoneal dialysis adequacy according to KT/V urea, and variations in peritoneal membrane characteristics according to D/P creatinine among 2 peritoneal equilibration test (PET) performed in the maximum possible range. Descriptive analysis, independent sample T-test and correlation test were performed.

#### Results

Gender distribution in group 1 was 22 women (50%) and 22 men. The mean age of group 1 was 71 years. The average time between PET was 19 months in this group. The mean of weight variation was + 0.85 kg and the mean decrease in RRF was 2.74 ml/min and - 0.4 in KT/V measurement. D/P creatinine was higher, with a mean of + 0.015. In group 2, 9 participants were women (34,6%) and 17 men with a mean age of 80 years. The average time between PET was slightly higher from group 1: 21 months. Weight changes had a lower increase (mean + 0.65 kg). We observed a lower reduction of RRF (1.91 ml/min) and a lower decrease of KT/V (0.15). D/P creatinine increased in 0.02 in this group. .

#### Conclusions

Bioimpedance analysis allows a better fluid management and does not affect preservation of the residual renal function.

P-58

### BIOIMPEDANCE ANALYSIS IN THE EVALUATION OF DIABETIC PATIENTS AT THE BEGINNING OF PERITONEAL DIALYSIS

Franciso Ferrer, Alice Lança, Hernani Gonçalves, Ana Vila Lobos

Centro Hospitalar Médio Tejo - Epe, Portugal

#### Objectives

Among Peritoneal Dialysis (PD) patients, the existence of diabetes continues to challenge the practitioner. The aim of this study was to identify the main differences between diabetic patients at the beginning of PD, through the bioimpedance analysis (BIA), and to compare it with non-diabetics.

#### Methods

Observational and retrospective study enrolling 41 incident PD patients, of which 31.7% were diabetic. We analyzed for each patient demographic data, Charlson Score Index (CSI), PD modality, PD solutions, adequacy parameters (weekly kt/V urea and creatinine clearance), daily ultrafiltration (UF), PD modality, PD solutions and creatinine dialysate/plasma (D/P) at a 4-hour 3.86% peritoneal equilibration test (PET), biochemical parameters (serum albumin, total cholesterol and PCR), 24-hour proteinuria collection and baseline BIA.

#### Results

Diabetic patients had higher CSI (6.7 vs 3.4,  $p < 0.001$ ) and higher serum PCR levels (0.76 vs 0.46 mg/dL,  $p = 0.014$ ). There were no differences in terms of gender, age, PD modality, PD solutions, adequacy parameters, creatinine D/P at 4-hour PET, daily UF, serum albumin, serum total cholesterol and 24-hour proteinuria collection. Despite similar weight and body mass index, baseline BIA in diabetic patients revealed higher levels of overhydration (2.75 vs 0.78 L,  $p = 0.015$ ), relative overhydration (OH/Extracellular Water ratio: 14.8 vs 3.8,  $p = 0.013$ ), Fat Tissue Index (12.9 vs 9.1 kg/m<sup>2</sup>,  $p = 0.023$ ) and fat mass (24.4 vs 18.2 kg,  $p = 0.020$ ). Remaining BIA results (Extracellular Water, Intracellular Water, and Lean Mass and Lean Tissue Index) showed no difference among groups.

#### Conclusions

According to these results, diabetic patients on PD are frequently more overhydrated and more obese since the beginning of the technique; frailty and an inflammatory background state also seems common at this stage. Therefore, we should focus on these findings to extend technique and patient survivals.

P-59

### USE OF PRO-BNP IN PERITONEAL DIALYSIS PATIENTS

Asuncion Ferrer-Nadal, Victoria Iñigo, Rosario Bernabeu, Marilisa Guasch, Jorge Gonzalez, Juan Manuel Buades

Hospital Son Llatzer, Spain

Pro-BNP is a biomarker used in Cardiology to diagnose suspected heart failure (HF). Patients with End-Stage Renal Disease (ESRD) present a higher risk of developing a cardiovascular (CV) event, especially HF. Volume control in Peritoneal Dialysis patients is fundamental to prevent CV events and increase survival without losing residual renal function (RRF). Recent publications show how pro-BNP help to fluid control.

#### Objective

Use of pro-BNP in PD patients to control pulmonary fluid overload, hospitalizations, CV events and mortality. To achieve the better level of pro-BNP in each patient.

#### Methods

Patients from DP Unit of Hospital Son Llatzer were recruited from may of 2015 to may of 2017. Monthly control of pro-BNP in PD patients. Other variables as bioimpedance analysis (BCM), weight, ultrafiltration and clinical outcomes were recorded.

#### Results

We had 36 eligible patients. Mean age of 62,67 years (SD 10,8). 58% were men. 13,8% were anuric. Diabetic nephropathy was the main cause of ESRD. We achieved a median reduction of pro-BNP of 324 (IQR 1326 to -149). We had no CV events and 1 death not related with fluid overload.

#### Conclusions

We consider that pro-BNP is a useful biomarker in our DP patients to control pulmonary fluid overload and maintenance of RRF. It may help us to avoid poor outcomes like hospitalizations, CV events and mortality.

P-60

### CLINICIAN PD PRESCRIPTION CHANGES FOLLOWING APPLICATION OF 2-WAY CYCLER-EMBEDDED REMOTE PATIENT MANAGEMENT (RPM) TECHNOLOGY: AGGREGATE PRACTICE PATTERNS

Catherine Firanek, Mario Salas, James Sloand

Baxter Healthcare Corporation, United States

Clinicians have historically had poor visibility to treatment-related issues of their home PD patients. PD-cycler embedded 2-Way RPM platforms allow clinicians ability to securely view their patients' recently completed home dialysis-related treatment data and proactively make adjustments to home device settings. This should enable greater ability to trouble-shoot problems, optimize solute clearance, achieve euvolemia, and better accommodate prescription to patient lifestyle in a more timely manner.

#### Objectives

To evaluate the number of monthly individual prescription changes made over a period of 6 months after introduction of an Automated Peritoneal Dialysis Cycler embedded with a 2-Way Remote Patient Management (RPM) Platform (Amia or Claria with Sharesource).

#### Methods

Data from 544 US (Amia) and 189 European (Claria) APD patients with >3 months on one of these APD cyclers were examined for weekly/monthly program changes during the first 6 months on these new devices. Patients and clinicians were naïve to this technology in APD prior to introduction of these advanced cyclers.

#### Results

Within the first month on 2-way RPM-enabled-APD, US patients had a mean of 1.2 (range 0-3) program changes (N=544); European patients mean of 0.8 (Range 0-10, N=189). Subsequent months 2,3 and 6 showed a decline in mean number of program changes in both groups: US 0.8, 0.6, 0.2 and Europe 0.6, 0.5, 0.1, respectively, with a maximum of 2-3 changes by month 6.

#### Conclusions

Clinicians using a 2-Way Cycler-Embedded RPM platform demonstrate peak remote PD prescription change approximately one month following availability and application of the platform. Home device program changes subsequently declined over the following 5 months, stabilizing at 6 months. These observations suggest that availability and visibility to recently completed home dialysis-related treatment data may allow for better and more rapid accommodation to patient clinical needs and lifestyle on APD than might occur without 2-way RPM-cycler-embedded technology.

## P-61

## INFLUENCE OF AN AUTOMATED PERITONEAL DIALYSIS (APD) CYCLER-EMBEDDED REMOTE PATIENT MANAGEMENT (RPM) PLATFORM ON TIME SPENT BY NURSES ON PERCEIVED HIGHER-VALUE INTERACTIVE TASKS WITH PATIENTS

Catherine Firanek<sup>1</sup> Mary Roper Knowles<sup>2</sup> James Sloand<sup>1</sup>

<sup>1</sup>Baxter Healthcare Corporation, United States, <sup>2</sup>Loyalty Chain Ltd., United Kingdom

PD take-on by incident patients with End Stage Kidney Disease requires a sense of self-confidence and safety in performing home dialysis, in large part conveyed by nurse interaction. 2-way cyler-embedded RPM allows nurses to securely view recently completed home dialysis-related treatment data, proactively manage clinical issues, and make prescription changes remotely, potentially averting negative clinical outcomes. The impact that cyler-embedded RPM has on shifting nurse and patient training/interactions to higher-value interactions that engender patient self-confidence/safety is unknown.

### Objectives

To understand changes in nurse time used to implement perceived high-value patient-related interactions before and after RPM introduction.

### Methods

25 nurses weighted (80 points total) 8 interactive tasks on their individual value in helping patients feel confident and safe doing home dialysis. Online nursing surveys were then conducted to assess time expended for each task before and after cyler-embedded RPM introduction. Ethnographic research was also conducted on 3 PD nurses from 3 UK hospitals for 2 days to evaluate time spent performing the same 8 interactive tasks. These observations were performed before and after RPM was implemented (range 35-72 weeks, mean 57 weeks).

### Results

Eight patient-nursing interactive actions were ranked by descending priority as follows: Patient training on condition/treatment, review patient records/tests, phone support, discussing treatment options/plan/medications, physical examination, patient history, and sending letter/email to assist with dialysis. Thirty-six hrs/27 min of nursing time was observed across 8 ethnographic observations (1,114 min pre- RPM/ 1,073 min post- RPM exposure). Greater time was spent conducting the top 4 rated interactive tasks (PD training, reviewing daily records/labs, phone support, discussion of condition) post- than pre-RPM. Two of 3 tasks of lower-rated importance (physical examination\*, patient history\*, email/letter to assist patient regarding dialysis) consumed less time post- than pre-RPM.

### Conclusions

PD nurses spend more time on nurse-perceived higher-value patient-interactive tasks following implementation of cyler-embedded RPM.

## P-62 Moderated Poster Session 4

### INTRODUCING AN EDUCATIVE PROGRAM FOR RENAL PATIENTS, RISES THE USE OF PD TREATMENT AND SAVES MONEY TO HEALTH PROGRAMS

Isabel Garcia, Maria Cufi, Marcela Castillo

Hospital Trueta, Spain

### Objectives

In Spain, the prevalence of Substitutive Renal Treatment grows every year. ...Although DP has excellent clinical and economical results, in Catalonia (a region of Spain) its use is very low (7,8% in 2014). Its use is related to a free choice of the patient after having received suitable information.

We aimed to study: a) the impact of a well-organised information program about Kidney disease and its treatment in renal patients of Hospital Trueta (the hospital of reference of Girona) since 2011 to 2014 and b) if a PD growing program can result in economical benefits or not for health polices.

### Methods

We compared the use of DP in H.Trueta versus the use in Catalonia during 2011-2014 and studied its economical impact. We did the same study in Girona as if we have the same numbers of Catalonia.

### Results

The use of DP in H.Trueta was 40-50%. In Girona 13-14% (as there are three more hospital were DP is not use) more than 60% in relation to all Catalonia. This amount of DP patients represent a whole earning of 0,7 MM euros during these three years.

### Conclusions

If patients are informed about their disease and its treatment options, more DP is used and in consequence, health programs can save more money.

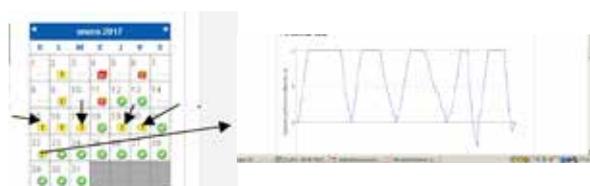
P-63

## REMOTE PATIENT MONITORING.IMPROVING APD RESULTS

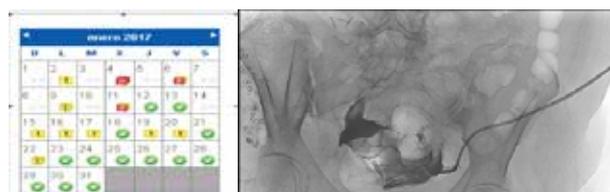
Isabel Garcia, Torguet Pere, Noboa Cristina, Martin Nadia, Barros Xoana, Calabia Jordi

Hospital Trueta, Spain

Remote patient monitoring (RPM) is an important and strategic movement in the healthcare field, as it allows physicians to keep track of patients' vital signs while they are at home and may prevent more serious health risks by observing any warnings. In APD treatment, this issue is extremely important as it would allow intervention prior to development of more significant problems. In extended geographical regions where visits to hospital may represent many hours of travelling, RPM becomes more useful. Our hospital is reference for more than 750.000 inhabitants and the larger distances to the hospital are 80 Km more or less. We started RPM with Sharesoure-Claria System (Baxter) with all APD incident patients during January 2017. We describe a clarifying example: The first one was a 74 years-old woman who started Hemodialysis six months before but asked for changing to PD. A peritoneal catheter was inserted without technical problems. The patient learned how to do the treatment at hospital and after 5 sessions, she went home under RPM. She was anuric. The graphics with results of APD are shown in Table 1



The patient was asked to come to the hospital to check catheter function. A catheterography was done. The tip of the catheter was obstructed. Radiologists could solve the problem and the next APD treatments were as shown.



P-64

## GOOD PLACEMENT OF PERITONEAL CATHETER

Isabel Garcia<sup>1</sup>, Arantxa Gelabert<sup>2</sup>, Jaume Codina<sup>2</sup><sup>1</sup>Hospital Trueta, Spain, <sup>2</sup>Hospital Trueta, Spain

## Introduction

The success of the treatment with DP depends on the correct placement of the peritoneal catheter. Various methods had been developed to do it but none has demonstrated its superiority above others. Historically, in our hospital, catheters have been placed by laparoscopy. Increasing health care pressure has made very difficult to maintain such activity. Puncture-placement by Radiologist was the easiest method for us to try and get experience. After nearly two years, we are using both techniques

## Methods

All catheter-placement procedures since 2008 until December 2016 were reviewed. The first catheter placed by puncture under fluoroscopy was performed in June 2015. 185 catheters were placed: 156 by surgeons and 29 by radiologists. The group consisted of 107 men and 78 women. Average age was 57 years (range 18-91). Used catheters were straight with double cuff and those placed by surgeons are self-located ones.

## Results

During this period, only 12 cases of re-intervention were needed. Ten of twelve, were placed by surgeons and two by radiologists. So, re-intervention was needed in: 6,4% in surgery and 6,8% radiologists. It is important to say that 95% were due to omental wrapping. And 5% due to initial malposition (one by surgeons and two by radiologists). None case of immediate infection, peritonitis, or haemorrhage were reported. More leakage problems were reported on those catheters placed by radiologists although none of them required more actions. Survival in this period: surgery is 110 months (105,8-114,9m) and 29,7m (26,8-32,7) by radiologist

## Conclusions

In our experience, both methods, have very good results. Nowadays, puncture method is used and surgery is indicated in some special cases (obesity, previous abdominal surgeries). The good results are a consequence of the good harmony between teams and desire to improve.

P-65

### QUALITY OF LIFE AND PSYCHOLOGICAL PROBLEMS IN PD PATIENTS

Isabel Garcia, Nadia Martin, Xoana Barros, Noboa Cristina, Torguet Pere, Cordoba Christian, Jordi Calabia

Hospital Trueta, Spain

#### Objectives

Although PD treatment has really good results, our patients continue suffering many extra-dialysis problems. New stressful and threatening situations in relation with a new live due to PD must be carried out. As nephrologists we are not prepared to solve those problems but we have detect them and try to help patients. The aim of this study is to discover the prevalence of psychological problems; to know the Quality of life of our patients and to demonstrate the need of a Psychologist in our unit

#### Methods

50 patients with more than 6 months under PD were studied. Depression and anxiety were measured by Hamilton Scale. Two tests to know Quality of Life were measured: SF-36 and EQoL. Those patients with very low punctuation were evaluated by the Psychologist.

#### Results

Median age was 75y. 22 women. Charlson Index was 2,5. Symptoms of depression were present in a 64% and anxiety in 40%. SF-36 and EQoL showed that 50% of patients considered to have a bad quality of live. 5 patients related negative values (they preferred to be dead). Our Psychologist worked with different methods with this population

#### Conclusions

There is a large prevalence of psychological problems; a high amount consider that their quality of live is bad. We need to be prepared to detect this situations in relation to improve PD treatment. The presence of a Psychologist in our Units can help patients to face their changes in live due to PD treatment.

P-66

AS AN ALTERNATIVE THERAPEUTIC OPTION FOR CHRONIC CARDIORENAL SYNDROME: PERITONEAL DIALYSIS

Dilek Gibyeli Genek, Peruze Yuksel, Oksan Uyar Gazezoglu, Zuhra Toksoy, Volkan Karakus, Bulent Huddam

Mugla Sitki Kocman Faculty of Medicine Education and Research Hospital, Turkey

Objectives

Cardiorenal syndrome (CRS) type II is a serious condition in which chronic heart failure (CHF) cause worsening kidney function, leading to permanent chronic kidney damage. Current treatment consists of diuretics, renin-angiotensin-aldosterone system blockers, and restriction of salt and fluids. When medical therapy is no longer able to relieve congestive symptoms, ultrafiltration might be needed. Slow ultrafiltration by peritoneal dialysis (PD) might be an effective treatment strategy to relieve fluid overload without compromising cardiac output and thereby renal function. Furthermore, currently available trials on PD in heart failure have shown the safety and efficacy of this therapeutic modality for patients with chronic CRS and suggest that it could represent a pathophysiologically and conceptually relevant option in this setting.

Methods

We present eight cases of successful peritoneal dialysis treatment in who diagnosed with diuretic-resistant chronic heart failure and type 2 cardio-renal syndrome. The baseline clinical characteristics of the patients are shown in Table1.

Table1. The baseline clinical characteristics of the patients

Patient No	1	2	3	4	5	6	7	8
Female/male	M	M	M	M	F	M	M	M
Age	66	76	81	81	78	80	58	67
NYHA grade	3	4	4	4	4	4	4	4
MAP,mmHg	76,6	60	70	70	60	76,6	83,3	73,3
EF %	30	30	20	15	15	30	30	20
Pretibial								
Edema	++	+++	+++	+++	+++	+++	+++	+++
Ascite	-	-	+++	+++	+	-	-	-
Pleural								
Effusion	+	+	+	+	+	+	+	+
Urea,								
mg/dl	168	181	46,6	89	89	31	61	39
Creatinine,								
mg/dl	2,96	3,69	1,2	2	1	1,64	2,02	1,12
Sodium								
Mmol/L	127	136	132	139	129	139	137	137
Albumin,								
gr/dl	3,1	2,85	2,9	2,8	3	3,1	4	3,3
Hematocrit %	31	32	43	31	28	35	40	36

Results

Patients were followed up for 1 to 12 months. Peritoneal dialysis treatment with icodextrin and/or other dialysate resulted in better functional status (from IV to II/III NYHA class), nutritional status, quality of life and improvement of anemia (Table 2.)During the follow-up PD treatment was well tolerated by the patients. Five of the patients died because of heart failure, 1 patient was removed from the dialysis treatment, 2 patients still have peritoneal dialysis treatment.

Table 2. Characteristics of peritoneal dialysis treatment and evaluation of clinical response

Patient No	1	2	3	4	5	6	7	8
Dwell time	4	4	1	1	1	1	4	1
/day								
PD Solutions %	2,5	2,27	icodx	icodx	icodx	icodx	2,27	icodx
	4,25	icodx					icodx	
PD time month	7	1	8	11	3	3	12	12
NYHA grade	2	4	2	2	2	2	2	2
Pretibial								
Edema	+	+	+	+++	-	-	-	+
Ascite	-	-	+	+	-	-	-	-
Pleural								
Effusion	+	+	-	+	-	-	-	-
Sodium								
Mmol/L	132	137	135	139	132	139	139	140
Albumin gr/dl	3,2	3,1	3,2	3,1	3,6	3,5	4,2	3,6
Hematocrit %	38	30	45	35	35	40	42	41

Conclusions

This report supports that the use of peritoneal dialysis as a alternative option in patients with chronic heart failure resistant to pharmacological treatment can significantly improve clinical state of CHF patients. Beside of peritoneal ultrafiltration, peritoneal dialysis also allows for effective continuous solute clearance, including sodium and potassium, allowing better up-titration of pharmacological treatment for heart failure, in particular RAAS blockers. This observation encourages further studies in this area.

## P-67

## PERITONEAL CATHETER IMPLANTATION: SIX YEARS OF EXPERIENCE

Paloma Flores, Fuensanta Clavijo, [Francisco Gonzalez](#), Zakariae Koraichi

Torrecardenas, Spain

## Objectives

Starting in 2011, we have implanted self-locating-catheter (SLC) in 76 peritoneal-dialysis (PD), patients. Surgical technic was a lateral incision. The aim of our study was to know the ratio of migration and other catheter-related complications.

## Methods

SLC (B. Braun–Carex SpA, Mirandola, Italy) a double-cuffed, straight catheter. Intraperitoneal portion is 16 cm long and internal diameter is 2.6 mm. A 12-g tungsten cylinder coated in Silastic is attached to its internal tip during extrusion

We considered the frequency of catheter-related complications, such as dislocation, cuff extrusion, exit-site and tunnel infection (ESI), leakage, peritonitis, and number of replacements. 50 males, 26 females; 6 diabetics; mean age  $56,7 \pm 16$  years; mean follow up  $20 \pm 12$  months.

The same nephrology team implanted all catheters. The deep cuff was placed in the preperitoneal space and the exit site directed laterally, with subcutaneous tunnel.

## Results

The incidence of catheter displacement was 0. Leakage was 1,5% (1 patients). Laparoscopic technique was necessary in Eleven patients (7 male and 4 female, 14%) because of omental attachment, that procedure resolved this problem. The Dacron external cuff extrusion occurred in 2 cases. Exit-site (ESI) occurred in 15 cases (19%). Tunnel infection occurred in 4 cases (5,2%). Peritonitis rate was 0.50/patient- year. Mean peritoneal K<sub>T</sub>v  $2,2 \pm 0,68$ .

## Conclusion

In our experience, the SLC seems to be useful in preventing catheter migration by continuous gravitation of its extremity toward the pelvic cavity. Lateral incision is the best place to implant the catheter, it allows to do an enough subcutaneous tunnel long, with a curve to leave the out hole below the abdominal entrance.

There were not any catheter replacement events

The main problem was minimum abdominal discomfort that could be related to the position of small tungsten cylinder, located in Douglas cavity.

P-68 Moderated Poster Session 2

## FACTOR ASSOCIATED WITH ASSISTED PERITONEAL DIALYSIS IN NON-ELDERLY PATIENTS. DATA FROM THE FRENCH LANGUAGE PERITONEAL DIALYSIS REGISTRY (RDPLF)

[Sonia Guillouët](#)<sup>1</sup>, Clémence Béchade<sup>1</sup>, Christian Verger<sup>2</sup>, Antoine Lanot<sup>1</sup>, Maxence Ficheux<sup>1</sup>, Thierry Lobbedez<sup>1</sup>

<sup>1</sup>University Hospital of Caen, France, <sup>2</sup>RDPLF, France

## Objectives

Nurse assisted peritoneal dialysis [PD] is fully covered by the national health care insurance in France. This study was carried out to estimate the prevalence of assisted PD in non-elderly patient, to assess which individual and center factors were associated with the attribution of nurse assisted PD in this specific subgroup.

## Method

This was a retrospective study based on data from the French Language Peritoneal Dialysis Registry [RDPLF]. Only the subgroup of patients older than 18 and younger than 65 years were included. They were 2269 incident starting PD between January 2008 and December 2012 in 127 PD centers.

## Results

Of the 2,269 patients, 386 patients were assisted: 114 by a family caregiver and 272 by a private nurse. There was a significant heterogeneity between centers in the nurse assistance attribution (random effect variance: 0.12). Only 2% of the variance of the event of interest was attributable to differences between centers. At the individual level, patient age (OR: 1.79 [95%CI: 1.51-2.13]), gender (OR: 0.47, [95%CI: 0.35 – 0.64]), comorbidities and underlying nephropathy were associated with likelihood of being treated by nurse assisted peritoneal dialysis. At the center level, there was no covariate associated with the utilization of nurse assisted PD.

## Conclusions

Individual factors were associated with assisted PD in non-elderly patients. There was a significant center effect in the attribution of nurse assistance that was not explained by the centers characteristics. In view of the cost associated with assisted peritoneal dialysis, specific tools and standardized evaluation of the assistance requirement must be evaluated and implemented at the center level.

P-69

**CAPD AND APD: A COMPARATIVE STUDY**Nadia Chaouchi, Moufida Hamouche, Fela Laga, Katia Amaouche, Tinhinane Yahiamessaoud, Linda Badaoui, [Atmane Seba](#)

Chu Tizi Ouzou, Algeria

**Objectives**

It is a comparative study between two techniques of peritoneal dialysis. The objective of this work is to compare CAPD versus APD on several parameters, notably on the main complication, peritonitis

**Methods**

The study will be carried out on 50 cases of treated peritoneal dialysis patients. The parameters of the study are: the technique used - age - numbers of peritonitis - the responsible germ - the duration of the technique.

**Results**

The most common technique used in our department is CAPD in 80% of cases. The average age of initiation of treatment is 41 years for CAPD and 32 years for APD. The incidence of peritonitis is higher in CAPD (40%) versus (08%) in APD, the most frequent organism is staphylococcus aureus, the duration of dialysis is greater in APD is 04 years versus 02 years in CAPD.

**Conclusion**

Automated peritoneal dialysis is a technique less used in our department, the frequency of infections is higher in CAPD by the frequency of manipulations during the exchanges. Patient education and hygiene are essential to ensure the success of the technique.

P-70

**ANEMIA IN PERITONEAL DIALYSIS PATIENTS**Fela Laga, Moufida Hamouche, Katia Amaouche, Tinhinane Yahiamessaoud, Linda Badaoui, [Atmane Seba](#)

Chu Tizi Ouzou, Algeria

**Objectives**

The majority of patients with dialysis suffer from anemia; their cardiac consequences in particular require a suitable treatment.

The objective of our study is to determine the level of hemoglobin, as well as the clinical impact and the effectiveness of the therapeutic management of our patients.

**Methods**

Our work is a retrospective study of the factors determining anemia in the dialysis. The 32 th patients on peritoneal dialysis are followed at the peritoneal dialysis in our center.

**Results**

The average age of patients is 38 years. A female predominance was noted 70% with average hemoglobin of 10.27 g / dl.

According to the KDIGO recommendations (2012), the target HB level is 10-12 g / dl, not exceeding 11 g / dl in anuric patients. In our study, 43.75% of patients have HB between 10-12 g / dl and 18.75% have a level of > 12 g / dl and 37.5% have a HB content of <10 g / l.

**Conclusion**

Peritoneal dialysis is an interesting alternative to chronic renal injury because it allows for better hemoglobin levels and therefore a better quality of life.

## P-71

## CAUSES OF THE PERITONEAL DIALYSIS FAILURE IN OUR EXPERIENCE

Nadia Chaouchi, Katia Amaouche, Tinhinane Yahiamessaoud, Fela Laga, Moufida Hamouche, Linda Badaoui, [Atmane Seba](#)

Tizi Ouzou Hospital, Algeria

## Objectives

DP is a less restrictive dialysis technique than hemodialysis, provides autonomy for the patient, but duration is limited by several factors

The objective of this work is to identify the main causes of the PD failure in order to act on its various factors.

## Methods

We report a retrospective study of 50 cases of patients on peritoneal dialysis, the parameters of the study are: age - sex - duration of dialysis - etiology - number of peritonitis - responsible germs - UF loss - loss of residual renal function - undernutrition - mechanical complication - psychological disturbances. We exclude in our study the voluntary departure of the patients and the transplant patients

## Results

Patients are aged between 15 and 45 years (50%), males (66%), the average duration of PD is 3 years The main causes of PD failure were: peritonitis (48%), loss of UF (10%), loss of residual renal function (18%) and undernutrition (6%).

## Conclusion

Every effort should be made to preserve the peritoneum and residual renal function and to avoid nutritional disorders by rigorous adherence to the rules and recommendations of good clinical practice for the adequacy of peritoneal dialysis.

## P-72

## LOW DOSE GLUCAGON LIKE PEPTIDE-1 ANALOGUE (GLP-1) IMPROVES GLYCEMIC CONTROL, MEDICAL ADHERENCE AND DTSQ IN PATIENTS WITH TYPE 2 DIABETES MELLITUS ON PERITONEAL DIALYSIS

[Takeyuki Hiramatsu](#), Yuko Asano, Masatsuna Mabuchi, Shinji Furuta

Konan Kosei Hospital, Japan

## Introduction

Diabetic patients undergoing peritoneal dialysis (PD-DM) experience an increased incidence of cardiovascular disease. To prevent cardiovascular complications, glycemic control is one of the important factors. PD-DM was usually conducted with many drugs including antidiabetic agents. Multi drugs induced poor medication adherence and poor glycemic control. In this study, we examined the efficacy the glucagon-like peptide analogue (GLP-1) in PD-DM patients.

## Materials and Methods

Twenty type 2 diabetes patients who underwent peritoneal dialysis were enrolled. Prior to GLP-1 therapy, 10 patients used insulin, 8 used oral antidiabetic agents, and 2 used both drugs. Thirteen patients were switched to 0.9mg/day liraglutide, and 7 were 0.75mg/week duraglutide. Biochemistry, diabetic treatment satisfaction questionnaire (DTSQ), medical adherence check were examined at baseline, 3, and 6 months after GLP-1 initiation. Left atrium dimension (LAD) and e/e' were evaluated at baseline and after 6months after GLP-1 initiation using echocardiography.

## Results

Hemoglobin A1c, glycated albumin, and postprandial glucose levels gradually decreased with GLP-1 use over time (baseline, 3, and 6months, 199.2±38.2 mg/dL, 165.8±30.7 mg/dL, 156.6±28.3 mg/dL, respectively, p=0.005 vs at baseline). Fasting glucose levels also significantly decreased at 6 months. Frequency of hypoglycemic attacks was significantly decreased. Moreover, DTSQ were improved significantly (19.8±3.3, 29.8±4.5, 27.2±3.5, respectively, p=0.001 vs baseline) and the number of prescribed drugs was decreased and medical adherence were also improved (75.0±10.0%, 82.3±10.2%, 80.5±8.6%, p=0.05 vs baseline).

These findings were shown in the same fashion in both liraglutide and duraglutide groups. LAD was diminished (42.8±3.3mm to 29.8±4.5mm, p=0.05) and e/e' was improved (42.8±3.3mm to 29.8±4.5mm, p=0.02) after GLP-1 initiation.

## Conclusions

These findings suggest that low dose GLP-1 therapy for type 2 diabetes patients undergoing peritoneal dialysis was effective for glycemic control, diabetic treatment satisfaction and medical adherence. There was little impact of GLP-1 on the left ventricular dilation function.

P-74

## FACTORS PREDICTING FOUR-YEAR MORTALITY IN PERITONEAL DIALYSIS PATIENTS

Dijana Jovanovic, Milan Stosovic, Natasa Jovanovic, Mirjana Stanojevic - Stosovic, Zeljka Dokic, Radomir Naumovic

School of Medicine, Clinic of Nephrology, Clinical Center of Serbia, Serbia

## Objectives

Mortality of peritoneal dialysis patients is high and there are many parameters that predict their survival. In order to evaluate parameters which predict four-year mortality of patients on continuous ambulatory peritoneal dialysis (CAPD) in Clinical Center of Serbia, survival analysis was done.

## Methods

Eighty seven patients (57 males), aged from 30 to 85 (62.9 (10.6)) years who had been treated by a chronic program of CAPD for 3 to 113 months were analyzed. The basal period lasted 3 months with a follow-up of 48 months. Clinical parameters (age, months on CAPD, residual diuresis, ultrafiltration rate, number of peritonitis, BMI, Charlson comorbidity index), dialysis adequacy (Kt/V and CCR) and laboratory parameters: hemoglobin, leukocytes, fibrinogen, erythrocyte sedimentation rate (ESR), serum urea, creatinine, albumin, calcium and phosphorus were determined for each patient. Cox regression analysis selected the parameters of univariate and multivariate survival analysis. Collinearity and proportionality were tested.

## Results

During the follow-up period, 47 patients (54 %) died. Fibrinogen and ESR were potential collinear ( $p > 0.5$ ) as well as Charlson comorbidity index and age. Univariate analysis selected the following potential mortality predictors ( $p < 0.10$ ): age, months on CAPD, residual diuresis, number of peritonitis, serum urea and albumin concentrations, fibrinogen, ESR and leukocytes. Multivariate analysis established that independent mortality predictors in this group of patients were: months on CAPD, Charlson comorbidity index and ESR

## Conclusion

It may be concluded that in this studied group treated by CAPD, dialysis duration, comorbidity and inflammation are the most significant independent mortality predictors among the analyzed parameters.

P-75

## TWO-YEAR OUTCOMES OF ACUTE PERITONEAL DIALYSIS (PD) TREATMENT VIA INSERTION OF TENCKHOFF CATHETERS UNDER LOCAL ANAESTHETIC

Dimitrios Kirmizis, Elaine Bowes, Hugh Cairns

King's College Hospital, United Kingdom

## Objectives

Although PD has significant advantages both in terms of health economics and patient outcomes, especially during the first two years on dialysis, the use of central venous catheters for haemodialysis (HD) treatment remains the standard procedure in most Units for the acute dialysis of patients with acute kidney injury (AKI) or end-stage renal disease (ESRD). We present our experience with acute PD treatment of these patients through the insertion of Tenckhoff catheters under local anaesthetic (LA).

## Methods

We studied retrospectively the two-year outcomes in 29 consecutive patients (17 male, mean age 58 years, range 23-81 years) who presented with unexpected ESRD ( $n=21$ ) or AKI ( $n=8$ ) and were treated with acute PD through the insertion of a Tenckhoff catheter under LA. PD catheters in our PD centre are coiled, two-cuff Tenckhoff catheters which are inserted as a day-case procedure under LA using the modified Seldinger technique.

## Results

PD treatment commenced either on day zero ( $n=15$ ) or within the next few days after the insertion of PD catheter ( $n=14$ ). No immediate post-procedure complications were observed in any of the patients. By the end of the two years of follow-up, 12 patients (41.4%) remained on PD. Overall four patients (13.8%) stopped PD, three as their renal function recovered and another one following renal transplantation. The remaining patients abandoned the method due to complications: 5 (17.2%) due to PD-related infections, 3 (10.3%) due to mechanical complications (scrotal/pleural leak, hernia), and 5 (17.2%) due to inadequate dialysis (3 of whom because of non-compliance to the method). The mean duration on PD of the patients who eventually abandoned the method was  $6.5 \pm 5$  months.

## Conclusion

The insertion of Tenckhoff catheters under LA enables the safe and straightforward establishment of acute PD treatment, with significant advantages for both the patients and the healthcare system.

## P-76

## PERITONEAL DIALYSIS IN PATIENTS WHO ARE NOT IN TERMINAL PHASE OF RENAL DISEASE

Dragan Klaric

Zadar General Hospital, Croatia

#### Objective

Assisted peritoneal dialysis (aPD) may be the choice of treatment to increase the ultrafiltration (UF) in the elderly, people with special needs, or in some specific conditions such as congestive heart failure (CHF), if these patients do not have end stage renal disease (ESRD). Intermittent adaptive APD procedures can also be used in dialysis centers when there is no other person to carry out the procedure.

#### Methods

We present a patient undergoing intermittent APD, 77 years of age, who has a history of severe CHF, as well as COPD, heart valve implants and an implanted pacemaker. Among medications he takes are maximal doses of the diuretic furosemid, as well as spironolactone. His CKD according to glomerular filtration was in stage III-IV. The values of blood pressure were around 100/60 mmHg. A chest radiograph obtained shows an increased shadow of the heart which is myopathically configured, signs of redistribution, as well as signs of hydrothorax bilaterally. We performed APD in our dialysis centre with high concentrations of glucose in the dialysis solution, total volume being 7600 ml. The number of treatments in the first 2 weeks was three times weekly, afterwards twice weekly, with an inflow of dialysis solution being 1500 mL per cycle.

#### Results

Our patient achieved an UF of 1300-1500 during peritoneal dialysis, after which chest radiographs showed signs of heart shadow enlargement without signs of fluid retention. CKD changed to stage III. UF did not lead to additional blood pressure drop. Our patient has been in this mode of treatment for 2 years.

#### Conclusion

Modifications in the sense of a solution of high concentration characterized by short dwell and low volume has led to an increase in UF, and the APD method has led to patient's compliance. Our experience in night aPD with icodextrin at CHF is also positive.

## P-77

## PERITONEAL DIALYSIS AS THERAPY OF MALNUTRITION AFTER RENAL TRANSPLANT FAILURE

Bojan Knap, Krištof Knap, Jadranka Buturovič – Ponikvar

University Clinical Centre Ljubljana, Slovenia

#### Objective

Renal transplant failure is connected with negative emotional state, loss of appetite, depression and clinical problems of ESRD therapy.

#### Methods

Case report of our patient was analysed. 50 year old female patient was put on Chronic Automated Peritoneal Dialysis (CAPD) ten years ago, for half a year. After successful cadaveric transplantation she has been in good shape for ten years until two years ago when renal transplant began to fail. Body composition measurements (BCM) show over-hydration (OH) (+4l), lower values of lean tissue index (LTI) (13.0kg/m<sup>2</sup>) and fat tissue index (FTI) (6.0kg/m<sup>2</sup>), and low values of Phase angle (PA) (4). Our patient selected CAPD as her preferred form of renal replacement therapy after dysfunction of renal transplant.

#### Results

After half a year of PD therapy (three lavage per day, two with weak glucose solution and one with Icodextrin, volume of all bags was 2000ml) her mood and physical performance increased. Hydration status (OH) is now +1.0l, LTI is 13.80kg/m<sup>2</sup>, FTI 7.3 kg/m<sup>2</sup>, and weight increased from 46 to 50kg. PA increased from 4° to 4.8°.

#### Conclusions

After renal transplant failure PD therapy (positive side effect of glucose solutions) can be considered as good choice of rehabilitation for patients with low bodyweight, loss of appetite and who are in danger of caloric, protein malnutrition and frailty.

P-78

## INVESTIGATION OF TOTAL AND FREE 25OHD VITAMIN LEVELS IN PATIENTS WITH CHRONIC RENAL FAILURE ON DIFFERENT DOSE OF CHOLECALCIFEROL

Laszlo Kovacs<sup>1</sup>, Iren Szakacs<sup>2</sup>, Reka Nemeth<sup>3</sup>, Imre Kulcsar<sup>1</sup>, Zoltan Locsei<sup>4</sup>, Erzsebet Toldy<sup>3</sup>

<sup>1</sup>B. Braun Avitum Hungary cPlc. Dialysis Centre No. 6 and 1st Department of Internal Medicine, Markusovszky University Teaching Hospital, Hungary, <sup>2</sup>B. Braun Avitum Hungary cPlc. Dialysis Centre No. 6, Hungary, <sup>3</sup>Central Laboratory, Markusovszky University Teaching Hospital, Hungary, <sup>4</sup>1st Department of Internal Medicine, Markusovszky University Teaching Hospital, Hungary

The total 25-hydroxy-vitamin-D (t-25OHD) level reflects the vitamin-D supply, but it is also influenced by the levels of vitamin-D-binding-proteins (DBP) and albumin. The type of dialysis influences the levels of serum proteins. The 'free-hormone hypothesis' states that only the free molecules (f25OHD) can diffuse intracellular. Our aim was to evaluate the total, calculated (c-f25OHD) and direct measured (dm-f25OHD) 25OHD levels in patients with chronic renal disease on cholecalciferol.

### Methods

100 patients [45men;55women; 69±14years: 40 on haemodialysis (HD), 26 chronic renal failure (CRF) both on 1000 IUD3/day; 34 on peritoneal dialysis (PD) on 3000 IUD3/day] were investigated. Their sera were analysed for DBP (Dako), albumin, Ca, PTHi, t-25OHD (Roche), dm-f25OHD (Future Diagnostics).

### Results

Albumin levels were significantly lower (PD:38±5 HD:40±5; CRF:43±3g/l; p<0.001) and DBP concentrations higher (390±55 CRF:352±42;HD:323±61mg/l;p<0.001) were in PD group. The t-25OHD and c-f25OHD were the lowest in PD (t-25OHD: 65±30; CRF:78±38;HD:79±45nmol/l, c-f25OHD: 14±7; CRF:18±9;HD:20±11pmol/l, p<0.05). There were no significant differences among dm-f25OHD levels (PD:16±5;CRF:16±6;HD:15±6pmol/l). The highest incidence of suboptimal vitamin D supply was found in PD patients on the bases of t-25OHD (PD:65%; CRF:42%; HD:43%) and also in c-f25OHD levels. These incidences decreased significantly into 15%-23%, when dm-f25OHD was taken into consideration. Out of the three 25OHD fractions only dm-f25OHD levels gave the opportunity to prove significant relationship between PTHi/Ca and 25OHD level (OR=3.8CI:1.024-14.4;p=0.036).

### Conclusions

t-25OHD and c-f25OHD values underestimate the vitamin D supply particularly in PD patients. Patients on PD need much higher doses of cholecalciferol, without any differences from other two groups in dm-f25OHD levels either. Patients, who have higher dm-f25OHD level have 3.8 times higher chance for normal Ca/PTHi levels. In case of dm-f25OHD there was a significant relationship proven between 25OHD level and related biomarkers. The dm-f25OHD seems to be a reliable marker for estimation of vitaminD supply in patients with chronic renal disease.

P-79

## PERITONEAL DIALYSIS PROGRAM IN B.BRAUN AVITUM HUNGARY DIALYSIS NETWORK BETWEEN 2000-2016

Imre Kulcsar<sup>1</sup>, Janos Szegedi<sup>2</sup>, Laszlo Gergely<sup>3</sup>, Istvan Kiss<sup>4</sup>

<sup>1</sup>B. Braun Avitum Hungary cPlc. Dialysis Centre No. 6 and Markusovszky University Teaching Hospital, Hungary, <sup>2</sup>B. Braun Avitum Hungary cPlc. Dialysis Centre No. 2, Nyíregyháza, Hungary, <sup>3</sup>B. Braun Avitum Hungary cPlc., Hungary, <sup>4</sup>B. Braun Avitum Hungary cPlc. Dialysis Centre No. 1, Hungary

### Introduction

The organization of B.Braun Avitum Hungary Dialysis Network has began is 1991. This network (to which belong 18 dialysis centre) is responsible for dialysis treatment in 38% of Hungarian population.

### Aim

Studying the development of continuous ambulatory peritoneal dialysis (CAPD) and automated peritoneal dialysis (APD) program in our network between 2000 and 2016.

### Method, patients

This was a retrospective data collection from national and our network-based data. We studied the incidence, prevalence and penetrance of PD patients and the drop-out rate in our network.

### Results

In 2000 we treated on PD altogether 4 patients, but in 2016 already 596 people (52% of Hungarian PD patients).

Our network got into PD program (CAPD+APD) 2064 new patients between 2000 and 2016. The incidence of PD patients our network was 4 (1 pmp) in 2000, and 162 (43 pmp) in 2016. The same data in Hungarian population (including our network) were 21 (2 pmp) and 232 (24 pmp). The half of prevalent PD patients in Hungary is treated by our network from 2008. The number (and rate) of prevalent PD patients in B.Braun Network were 4 (1 pmp) in 2000, and 449 (118 pmp) in 2016. Adequate Hungarian data were 152 (15 pmp) and 861 (88 pmp).

The PD penetrance in 2016 was 13.3% in Hungary, but 17.8% in B.Braun Network. At the end of 2016 in Hungary were treating 174 patients with APD, when the number of APD patients was 124 in our network. The 71% of all Hungarian APD patients treated by B.Braun Network.

The drop-out rate was 24% in our network in 2005 and is also the same (25%) was in 2016.

### Summary

Hungarian PD program shows a significant development, and our network plays an outstanding role in this process.

## P-80

## NUTRITIONAL STATUS AND INFLAMMATION IN PERITONEAL DIALYSIS PATIENTS

Alice Lança, Francisco Ferrer, Ana Vila Lobos

Nephrology, Portugal

#### Objectives

Peritoneal dialysis (PD) patients often suffer malnutrition due to multifactorial inflammatory associated factors that induce anorexia, muscle wasting and endothelial damage. The aim of this study was to assess the impact of inflammation on the nutritional status of PD patients.

#### Methods

Observational and retrospective study of 31 prevalent patients on PD. Clinical, laboratory (albumin, phosphorus, normalized protein catabolic rate (nPCR), total cholesterol, C-reactive protein (CRP)), anthropometric (body mass index [BMI]) and bioimpedance data were collected over 12 months.

#### Results

Data from 31 patients were available for analysis. Fifty-nine percent were male, mean age was  $50 \pm 12$  years, 68% were hypertensive, 27% had insulin-dependent diabetes mellitus, 16% had cardiac insufficiency and 9% had dyslipidemia. Seventy-seven percent were on automated PD (APD). At baseline 15% had serum albumin  $\geq 3,5$  g/dL, 7% had nPCR  $\geq 1,2$  g/kg/day and 60% had phosphorus between 3-5,5 mg/dL. Throughout time statistically significant increases in serum albumin ( $r=0.385$ ;  $p=0.032$ ), nPCR ( $r=0.04$ ;  $p=0.002$ ), BMI ( $r=0.935$ ;  $p \leq 0.001$ ) and fat tissue mass ( $r=0.885$   $p \leq 0.001$ ) levels and a decrease in CRP ( $r=0.856$ ;  $p \leq 0.001$ ) were observed with longer time on PD. CRP was inversely correlated with albumin ( $r=-0.588$ ;  $p \leq 0.001$ ) and with nPCR ( $r=0.365$ ;  $p=0.034$ ). No correlations were found with phosphorus and total cholesterol. After 12 months, 26% had serum albumin  $\geq 3.5$  g/dL, 12% had nPCR  $\geq 1.2$  g/kg/day and 56% had phosphatemia within 3-5.5 mg/dL. The type of PD solution (biocompatible vs standard) received had no significant effect on these levels.

#### Conclusion

Our findings show an important correlation between nutritional status and inflammation so that the reduction of inflammatory markers over a year was accompanied by an increase in albumin and nPCR. However, additional studies are needed to better define the relationship between these factors.

## P-81

## PREDICTORS OF RESIDUAL RENAL FUNCTION LOSS IN PERITONEAL DIALYSIS

Alice Lança, Francisco Ferrer, Ana Vila Lobos

Nephrology, Portugal

#### Objectives

Preserving residual renal function (RRF) has been shown to improve patient morbidity and mortality. We aimed to determine the predictors of RRF loss in a cohort of PD patients.

#### Methods

Retrospective, observational study of 34 prevalent PD patients over a year. Two groups were created: Group A - GFR loss  $\geq 1.5$  mL/min/1.73m<sup>2</sup> and Group B ( $<1.5$  mL/min/1.73m<sup>2</sup>). Clinical, biochemical and peritoneal parameters were analyzed.

#### Results

Thirty-four patients with a mean age of  $50 \pm 12$  years were enrolled; 61% male and the dialysis vintage of  $24 \pm 16$  months; 74% in automated PD. Diabetes mellitus (32%), chronic glomerulonephritis (29%) and unknown causes (13%) stood out among other CKD causes. Group A (48%) which showed a superior GFR decline ( $3.13 \pm 1.7$  mL/min/1.73m<sup>2</sup> vs.  $0.75 \pm 0.3$  mL/min/1.73m<sup>2</sup> ( $p < 0.001$ ) and higher diuresis reduction ( $600 \pm 593$  mL/24h vs.  $50 \pm 451$  mL/24h,  $p=0.008$ ) had younger patients ( $49 \pm 12$  vs  $52 \pm 13$  years,  $p = 0.05$ ), mostly non-diabetic male (80% vs 44%,  $p=0.038$ ) with lower body mass index (BMI) ( $25 \pm 4$  vs  $28 \pm 5$ ,  $p=0.05$ ) and a higher proteinuria both at baseline ( $3383 \pm 3715$  vs.  $856 \pm 1003$  mg/24h,  $p = 0.022$ ) as well as throughout the year ( $2031 \pm 2888$  vs.  $154 \pm 929$  mg/24h,  $p=0.028$ ). No differences were found regarding comorbidities, ultrafiltration (peritoneal and urinary), urea kt/v, creatinine clearance, peritoneal transport, type of solutions, PD modality or ARA intake. In a logistical regression model, gender was the only independent predictor of RRF loss (OR: 5.14 [95% CI 1.033-25.6],  $p=0.046$ ).

#### Conclusion

Although several factors contributed to a pronounced decline of GFR the only independent predictor of RRF loss was gender (male). However, the results may be conditioned by reduced sample size, follow-up time, or other reasons not fully understood.

P-82

## LONGITUDINAL ANALYSIS OF PERITONEAL DIALYSIS PATIENTS BODY COMPOSITION OVER A YEAR

Alice Lança, Francisco Ferrer, Ana Vila Lobos

Nephrology, Portugal

## Objectives

Bioimpedance analysis has been routinely used to assess volume and nutritional status in renal replacement therapy (RRT) patients. We aimed to evaluate changes in body composition over a year in a cohort of Peritoneal Dialysis (PD) patients.

## Methods

Observational and retrospective study of 36 PD incident patients. Body Composition Monitoring (BCM) was performed in all patients with full abdomen. Clinical, biochemical and bioimpedance parameters were analysed after the 1st month of PD and at 12 months.

## Results

Twenty-four (67%) patients were male; mean age was  $51 \pm 12$  years and 28% were insulin-dependent type 2 diabetics; 61% initiated RRT using PD, 33% were transferred from hemodialysis and 6% had graft failure. Concerning PD modality, 26 (72%) patients were started on automated PD (APD) down to 58% by the end of 1 year. Although there was a strong and positive significant correlation between time and several variables such as albumin ( $r=0.875$ ;  $p \leq 0.001$ ), urinary output ( $r=0.686$ ;  $p \leq 0.001$ ), ultrafiltration ( $r=0.788$ ;  $p \leq 0.001$ ), relative overhydration ( $r=0.707$ ;  $p \leq 0.001$ ), intracellular water ( $r=0.923$ ;  $p \leq 0.001$ ), total body water ( $r=0.897$ ;  $p \leq 0.001$ ), body mass index ( $r=0.935$ ;  $p \leq 0.001$ ), fat tissue mass ( $r=0.885$ ;  $p \leq 0.001$ ) and lean tissue mass ( $r=0.991$ ;  $p \leq 0.001$ ) the average difference was not statistically significant. Also, no statistically significant differences were found regarding nPCR, total cholesterol, the use of icodextrin or volume of solutions.

## Conclusions

Although some differences were found in body composition throughout the year, these were not statistically significant. These results may demonstrate that PD patients are able to maintain a baseline similar to that prior dialysis. Further studies, with more follow-up and patients are necessary to confirm these conclusions.

P-83

## CURRENT PRACTICE IN PERITONEAL DIALYSIS CATHETER CARES IN FRANCE: DATA FROM THE CATHETER SECTION OF THE FRENCH LANGUAGE PERITONEAL DIALYSIS REGISTRY

Antoine Lanot<sup>1,2</sup>, Clemence Bechade<sup>1</sup>, Christian Verger<sup>3</sup>, Emmanuel Fabre<sup>3</sup>, Isabelle Vernier<sup>3,4</sup>, Thierry Lobbedez<sup>1,2,3</sup><sup>1</sup>Chu Caen, France, <sup>2</sup>Normandy University, Unicaen. Medical school, France, <sup>3</sup>RDPLF, France, <sup>4</sup>Polyclinic Le Languedoc, France

## Objectives

Peritonitis is a major cause of peritoneal dialysis (PD) failure. Recommendations for the prevention of peritonitis are available, but wide variations exist in peritonitis rate between countries and PD unit. The objective of this study was to describe the different pattern of practices in France.

## Methods

This was a retrospective, multicentric study, based on data from the French Language Peritoneal Dialysis Registry. Centre practice were described, and mapped. Clusters of practices were sought in a hierarchical analysis and centres belonging to the same clusters of practices were mapped.

## Results

Data from 2770 catheters placed in 64 centres in France between 1 February 2012 and 31 December 2016 were considered. The median of catheters reported in each centre was 34, ranging from 5 to 133. Twenty-eight (43.8%) centres routinely administrated a prophylactic antibiotic prior to catheter placement, and 8 (12.5%) applied a local prophylactic antibiotic at the exit-site, though these practices are recommended by international guidelines. The presence of a PD dedicated nurse or an expert PD nephrologist was not associated with a better adherence to guidelines. Practices were heterogeneous between centres. We identified 4 clusters of centres according to their practice. Geographical proximity was not associated with homogeneity in practices.

## Conclusion

PD practices are quite heterogeneous in France, even practices that are subject to international guidelines. Studies looking for associations between centre specific practices and PD patient outcomes are still mandatory. Efforts should be made to homogenize the PD standards of care in France.

P-84

## FRAILITY SYNDROME (FS) IN PERITONEAL DIALYSIS (PD) AND HEMODIALYSIS (HD). CAN IT HELP MAKE CLINICAL DECISION IN THE ELDERLY?

José Luis Lerma, Elena Ruiz, G Delgado, Karen Rivero, G González, J Sebastià, M Sánchez-Jáuregui, A Tyszkiewicz, A Martin Arribas

University Hospital, Spain

### Introduction

Increasing life expectancy poses challenges in nephrology care. In the last 25 years, we have expanded the criteria for inclusion in the program of dialysis and/or transplantation, while chronological age was previously restricted.

While octogenarian dialysis was frequent, transplantation began in elderly patients (>75 years) that were in good clinical condition. The significant clinical variability based on the subjectivity on life expectancy is due to the lack of tools to differentiate chronological and biological age.

From the experience of Geriatrics, we have attempted to incorporate the frailty syndrome into Nephrology in order to facilitate homogenous treatment decisions, more successful in the changing epidemiological challenges.

### Materials

1) 26 patients over 65 years of age were studied in renal replacement therapy by peritoneal dialysis (n=10) and haemodialysis (n=16).

2) Evaluations:

- Strength in kilograms (dynamometer).
- Balance, coordination, speed, agility through short physical performance tests (SPPB). Scores below 10 indicating fragility and increased risk of disability.
- Fatigability, endurance, walking ability, weight loss and comorbidity by frail questionnaire. Fragile if numbered 3-5 points.
- Cognitive status by Pfeiffer Test. Cognitive impairment if 3 or more errors.

3) Fragile state correlated with subjective the clinical opinion of a second nephrologists.

### Results

8 patients had good scores on cognitive, walking speed and strength tests. There is a striking positive correlation between force, motion and reduced fragility. These patients are to be evaluated by the second nephrologist, that could be included in a transplant waiting list even though five were older than 75, and 2 aged 80. There's no difference between PD vs HD patients

### Conclusions

1. The frailty syndrome (FS) provides an objective view on the functionality in older patients with advanced CKD
2. There is a positive correlation between force, motion and cognitive status and can be measured with simple tests and reproducible in outpatient settings.
3. 30% of patients achieved good test scores and may be potential transplant candidates despite their age > 75 years.
4. FS completes the vision of elderly in Nephrology, could be a complementary study and promotes rational clinical decisions.

P-85

### PERITONEAL DIALYSIS ANNUAL DROP OUT MONITORING INCREASES PATIENT AND TECHNIQUE SURVIVAL

Dan Munteanu<sup>9</sup>, Belén Marrón<sup>1</sup>, Delia Timofte<sup>2</sup>, Michael Rosch<sup>3</sup>, Janusz Ostrowski<sup>4</sup>, Marietta Török<sup>5</sup>, Pawel Kochman<sup>4</sup>, Andreas Dillman<sup>6</sup>, Daniel Schnabel<sup>7</sup>, Attila Orosz<sup>8</sup>, Dan Munteanu<sup>9</sup>, Gustavo Moretta<sup>10</sup>, Daniel Pérez<sup>11</sup>, Luis Castillo<sup>12</sup>, Paul Stroumza<sup>13</sup>, Elisabeth Fabricius<sup>14</sup>, Alexandra Munier<sup>13</sup>, Jörgen Hegbrant<sup>15</sup>

<sup>1</sup>Diaverum Home Therapies Medical Office, Spain, <sup>2</sup>Sema Clinic, Romania, <sup>3</sup>Schlangkreye Clinic, Germany, <sup>4</sup>Wloclawek Clinic, Poland, <sup>5</sup>Rokus Clinic, Hungary, <sup>6</sup>Alter Teichweg Clinic, Germany, <sup>7</sup>Potsdam Clinic, Germany, <sup>8</sup>Bajcsy Clinic, Hungary, <sup>9</sup>Fundeni Clinic, Romania, <sup>10</sup>LA Medical Office, Argentina, <sup>11</sup>SEINE Clinic, Uruguay, <sup>12</sup>Temuco Clinic, Chile, <sup>13</sup>Marseille Clinic, France, <sup>14</sup>Visby Clinic, Sweden, <sup>15</sup>Diaverum Medical Office, Sweden

#### Introduction

PD drop out (DO) is often not routinely measured and seldom reported in the literature.

#### Objectives

To compare annual 2015 and 2016 PD DO in a large international dialysis network.

#### Methods

Observational, prospective registry in 9 countries (FR, DE, HU, PL, RO, SE, AR, CL, UR) during 2 years. Only EU countries with  $\geq 100$  prevalent PD patients (pts) [RO, DE, PL, HU] are presented here. All PD pts were tracked on a monthly basis for DO due to: TX, RRF recovery, transfer to HD (due to peritonitis, exit site or catheter issues, UFF, low adequacy, burn out or others), transferred to other centers, death or others. Total DO, controllable DO (transfer to HD and to other centers) and underlying causes are provided as percentage of pts at risk.

#### Results

565 pts (372 prevalent, 193 incident) in 47 clinics, 2015 and 813 (623 prevalent, 190 incident) in 61 clinics, 2016. DO results (2016 vs. 2015) was as follows: total annual DO (41 vs. 49%), controllable DO (18.3 vs. 19.1%), TX (5.9 vs. 9.3%), RRF recovery (0.3 vs. 0.5%), transfer to other centers (1.2 vs. 2.9%), death (14.9 vs. 18.3%) and HD (14.8 vs. 15.4%). Cardiac events deaths decreased from 50 to 47.6% (n=42 pts) and fatal peritonitis from 6 to 4.6% (n=4 pts). Causes of HD transfer in 2016 were: peritonitis 5%, low adequacy 2.4%, UF failure 2%, catheter issues 1.7%, burn out 0.3% and other reasons 3%. Results improved in all countries, in terms of total and controllable DO, death and transfer to HD. By contrast, RRF recovery and TX rate decreased in all countries.

Country specific data not shown here.

#### Conclusions

Annual DO monitoring increased quality in PD, comparisons across countries and resulted in a decreased mortality and HD transfer DO rate.

## P-86 Moderated Poster Session 2

### ROUTINE USE OF DECISION MAKING TOOLS INCREASES PERITONEAL DIALYSIS CHOICE AND TAKE ON IN AN INTERNATIONAL SETTING

Dan Munteanu<sup>8</sup>, Belén Marrón<sup>1</sup>, Janusz Ostrowski<sup>2</sup>, Delia Timofte<sup>3</sup>, Marietta Török<sup>4</sup>, Michael Rosch<sup>5</sup>, Claudia Martín<sup>6</sup>, Pawel Kochman<sup>7</sup>, Attila Orosz<sup>7</sup>, Jose C. Divino-Filho<sup>9</sup>, Dan Munteanu<sup>8</sup>, Jörgen Hegbrant<sup>9</sup>

<sup>1</sup>Diaverum, Spain, <sup>2</sup>Wloclawek Clinic, Poland, <sup>3</sup>Sema Clinic, Romania, <sup>4</sup>Rokus Clinic, Hungary, <sup>5</sup>Schlangkreye Clinic, Germany, <sup>6</sup>Barracas Clinic, Argentina, <sup>7</sup>Bajcsy Clinic, Hungary, <sup>8</sup>Fundeni Clinic, Romania, <sup>9</sup>Karolinska Institute, Sweden, <sup>10</sup>Diaverum Medical Office, Sweden

#### Background

Lack of patient choice or inability to offer high quality modality information programs remain as causes for low PD use.

#### Objectives

To analyze the impact of a structured modality information program with the use of decision making tools (DMTs) on type of modality choice and start.

#### Methods

Observational, prospective and international registry. All patients under ESRD 4-5 and/or after an unplanned dialysis start (if non-informed before) were recruited to undergo a DMTs process for RRT choice. Process included: personal values evaluation, RRT information with different tools, deliberation support and patient's modality election.

#### Results

1141 patient-aimed modality information between Aug. 2014-Dec. 2015 in 45 clinics (Poland, Romania, Hungary, Germany and Argentina). Staff considered PD as contraindicated in 32%. 800 patients (mean 59,5 y.) were considered optimal for HD/PD (48% were prone for a home therapy). Written information was largely used for 69-95% of patients; DVD in 14-30% and in centre HD/PD touring visits in 10-76%. Relatives' participation in the process was 82%. PD choice (39%) varied among countries: 16% (RO, 12 clinics), 38% (PL, 19 cl.), 41% (HU, 10 cl.), 84% (GE, 3 cl.) and 93% (AR, 1 cl.). For patients who started dialysis (n= 612), PD as chronic RRT reached 31% (10% with an unplanned HD start); 13% (RO), 30% (PL), 36% (HU), 75% (GE), 93% (AR).

#### Conclusions

Use of DMTs at the time of RRT modality choice complies with patient empowerment. A remarkable increase in PD take-on occurred in our clinic network after DMTs process introduction. Therefore, modality information should always be delivered through a structured information process based on decision sharing.

P-87

**PERITONEAL DIALYSIS ANNUAL DROP OUT IN A LARGE INTERNATIONAL SETTING**

Dan Munteanu<sup>1,4</sup>, Belén Marrón<sup>1</sup>, Gustavo Moretta<sup>2</sup>, Michael Roesch<sup>3</sup>, Janusz Ostrowski<sup>4</sup>, Marietta Török<sup>5</sup>, Daniel Pérez<sup>6</sup>, Delia Timofte<sup>7</sup>, Luis Castillo<sup>8</sup>, Paul Stroumza<sup>9</sup>, Elisabeth Fabricius<sup>10</sup>, Pawel Kochman<sup>4</sup>, Andreas Dillman<sup>11</sup>, Jose C. Divino-Filho<sup>12</sup>, Jörgen Hegbrant<sup>13</sup>

<sup>1</sup>Diaverum Home Therapies Medical Office, Spain, <sup>2</sup>Diaverum LA Medical Office, Argentina, <sup>3</sup>Schlankreye Clinic, Germany, <sup>4</sup>Wloclawek Clinic, Poland, <sup>5</sup>Rokus Clinic, Hungary, <sup>6</sup>SEINE Clinic, Uruguay, <sup>7</sup>Sema Clinic, Romania, <sup>8</sup>Temuco Clinic, Chile, <sup>9</sup>Marseille Clinic, France, <sup>10</sup>Visby Clinic, Sweden, <sup>11</sup>Alter Teichweg Clinic, Germany, <sup>12</sup>Karolinska Institute, Sweden, <sup>13</sup>Diaverum Medical Office, Sweden, <sup>14</sup>Diaverum Fundeni Clinic, Romania

**Introduction**

Peritoneal dialysis (PD) growth is limited by a high annual drop out (DO) (40-75%) which is often not routinely measured.

**Objectives**

To analyze the introduction of a new tool based on the monitoring of accumulated annual PD DO and the underlying DO causes.

**Methods**

Observational, prospective registry in 6 European (EU) countries (FR, GE, HU, PL, RO, SWE) and 3 Latin American (LA) countries (AR, CH, UR). LA provided results as a one single region. During Jan 1-Dec 31 2015, all prevalent and incident PD patients were tracked on a monthly basis for DO due to: transplantation (TX), residual renal function (RRF) recovery, transfer to HD (due to peritonitis, exit site issues, catheter problems, ultrafiltration failure, low adequacy or others), transferred to other centers or death. Total DO, controllable DO (transfer to HD and to other centers) and underlying causes are provided as result/patients at risk.

**Results**

1011 pt. (667 prevalent and 344 incident) in 61 clinics were tracked. PD withdrawal: 312 pt. Total DO and controllable DO varied among regions: 49% and 19% in EU vs. 42 and 18% in LA. TX accounted for 8% (higher in PL and lower in LA, GE and RO), RRF recovery 0.3%, transfer to other centers 4%, death 18% (lower in LA and PL). Half of deaths were attributed to cardiac events and 6% to peritonitis. Transfer to HD: 15% (peritonitis 6.5%, catheter issues 2%, low adequacy 1.3%, UF failure 0.4%, burn out 1.2%, other reasons 3.5%).

**Conclusions**

Annual accumulated DO monitoring increase quality in PD. This tool allows homogeneous comparisons across countries and provides assessment of DO causes that if promptly and efficiently resolved may improve technique and patient survival.

P-88

## ASSESSMENT OF PERITONEAL DIALYSIS PROGRAM OUTPUT CAUSES. EXPERIENCE IN OUR UNIT IN 34 YEARS

Diana Manzano Sanchez<sup>2</sup>, Manuel Lanuza Luengo<sup>1</sup>, Adoración Martínez Losa<sup>1</sup>, Inmaculada López Jimenez<sup>1</sup>, Andres Alonso Garcia<sup>1</sup>, Victor Martínez Jimenez<sup>1</sup>, Luisa Jimeno Garcia<sup>1</sup>, Irene Hurtado Carceles, Ana Hurtado Carceles<sup>1</sup>

<sup>1</sup>Hospital Virgen de la Arrixaca, Spain, <sup>2</sup>Hospital Santa Lucia, Spain

## Objectives

Identify the causes of outflow of peritoneal dialysis (PD) technique and evaluate its evolution in two periods.

## Material and Methods

Retrospective study of patients with PD for more than 3 months, starting in 1983 (beginning of the PD program in our unit) until December 2016. We identified 532 patients who left the technique, collecting clinical and demographic data, causes of Program outputs and its evolution over two periods: from 1983 to December 2006 and from January 2007 to December 2016.

## Results

**First period:** 412 patients, age 51.1±15.7years (12-87), 220 (53.4%) men, 192 (46.6%) women. Media PD duration 31.6±28.8months (3-157). Etiology of renal disease: unknown followed by diabetes.

**Second period:** 120 patients, age 53±11years (12-89), 69 (57%) men and 51 (42.5%) women. Median PD duration 25.1±14.4months (3.8-112.5). Etiology of renal disease: chronic glomerulonephritis followed by non-affiliated. Decrease in technique/year dropouts, increase in transplant output, decrease in hemodialysis by peritonitis, increase by infradialysis and stable mechanical causes.

		1° PERIOD/24 years	2° PERIOD/10 years
Departure of PD	N	412 (17,16 pat/year)	120(12pat/year)
	Hemodialysis	198 (48.1%)	47 (39.16%)
	Transplant	100 (24.5%)	57 (47.5%)
	Recover renal function	2 (0.1%)	4 (3.3%)
	Exitus	112 (27.2%)	12(10%)
step to hemodialysis			
	N	198 (8,25 pat/year)	47 (4.7 pat/year)
	Membrane loss	8(4%)	13 (27.6%)
	Ultrafiltration loss	26 (13.1%)	4 (8.5%)
	Peritonitis	122 (61.6%)	10 (21.2%)
	Mechanical cause	18 (9.1%)	6 (10.6%)
	Refuse the technique	18 (9.1%)	8(17%)
	Tunnel Infections	6(3%)	1 (2.1%)
	Others	0	2 (4.2%)
Causes of exitus			
	N	112 (4,6 pat/year)	12 (1.2pat/year)
	Cardiac	54 (48.1%)	8 (66.6%)
	Peritonitis	20 (17.9%)	1 (8.3%)
	Infectious	4 (12.5%)	1 (8.3%)
	Vascular	4 (12.5%)	1 (8.3%)
	Others	10(9%)	1 (8.3%)

## Conclusions

- Increased exit of the program by renal transplant
- Decreased reduction of peritonitis abandonment
- Main cause of death: the cardiac in both periods

P-89

### QUALITY OF LIFE IN PERITONEAL DIALYSIS: KLOTHO AND BODY COMPOSITION IMPACT

Ana Rita Martins<sup>1</sup>, Patrícia Branco<sup>1</sup>, Augusta Gaspar<sup>1</sup>, Domingos Machado<sup>1</sup>, Doutor Jesus Ejido<sup>2</sup>, Doutor Sebastian Más<sup>2</sup>

<sup>1</sup>Hospital Santa Cruz - Chlo, Portugal, <sup>2</sup>Fundation Jimenez Diás, Spain

#### Objectives

Nutritional status and quality of life (QOL) are important variables in the treatment of renal patients. Klotho deficiency is associated with chronic inflammation that compromises nutritional status. Our aim was to evaluate the impact of nutritional status and chronic inflammation in quality of life in a cohort of patients treated with peritoneal dialysis (PD).

#### Methods

Serum concentrations of klotho were measured by Elisa's test. We applied an EQ5D quality of life questionnaire to 58 patients undergoing PD (55.7 years mean age, 45 months mean time in PD, 69% men and 29% diabetes). The body composition evaluation was performed with the Body Composition Monitor 2013 Fresenius Medical Care. To determine independent association factors with Qol we used Spearman's correlation coefficients and multiple linear regression.

#### Results

In the beginning of the technique, 11 patients (19%) were obese (body mass index (BMI) > 30 kg/ m<sup>2</sup>) and 6.7% had sarcopenia (body mass index <9.5 kg/ m<sup>2</sup> in men and <8.5 kg/ m<sup>2</sup> in women). We did not find differences in quality of life related to residual renal function, blood pressure, dialysis efficacy, prevalence of hyperparathyroidism or anemia, incidence of peritonitis or PD dropouts to hemodialysis. There is a positive correlation between EQ5D and albumin and Klotho levels and a negative correlation with lean mass index (LMI). Regarding other parameters of body composition studied, no statistically significant differences were observed (fat mass index, hyperhydration and body cell mass). Using a linear regression, the quality of life was associated with higher levels of lean mass (B=2.31; IC 95% 1.03-8.16; p<0.001) and Klotho (B=2.93; IC95% 1.03-8.2; p=0.008).

#### Conclusions

Lean mass and low klotho levels were associated with low quality of life, requiring preventive strategies and individualized multidisciplinary therapeutics. On our cohort, strategies for nutritional status optimization had an impact on the quality of the patient's life.

P-90

### RENAL TRANSPLANTATION IN PERITONEAL DIALYSIS PATIENTS: PERITONEAL DIALYSIS RELATED COMPLICATIONS IN THE IMMEDIATE POST-TRANSPLANT PERIOD

Skalioti Chrysanthi<sup>3</sup>, Christina Melexopoulou<sup>1</sup>, Giorgos Spanos<sup>1</sup>, John Bokos<sup>2</sup>, Apostolos Pappas<sup>1</sup>, Chrysanthi Skalioti<sup>1</sup>, Smaragdi Marinaki<sup>1</sup>, George Zavos<sup>2</sup>, John Boletis<sup>1</sup>

<sup>1</sup>Nephrology Department and Renal Transplantation Unit, National & Kapodistrian University of Athens Medical school, General Hospital of Athens, Greece, <sup>2</sup>Renal Transplantation Unit, General Hospital of Athens, Greece, <sup>3</sup>National & Kapodistrian University of Athens, General Hospital of Athens Laiko, Greece

#### Objectives

Delayed graft function (DGF) following renal transplantation (Tx) requires support in the form of haemodialysis or peritoneal dialysis (PD). Currently, no clear consensus has emerged about whether the PD catheter should be removed at the time of transplant surgery or not in the event dialysis is required in the immediate post-transplant period. However, post-transplant PD-related complications rates are unknown.

#### Methods

Retrospective single-center study of patients who received PD at the time of kidney Tx. The rates of PD-related complications until PD-catheter removal were recorded. Data shown as mean standard deviation.

#### Results

During an 11 year period (01/01/2006-31/12/2016), 814 renal transplantations were performed in our unit. Of these patients 40 were on PD prior to Tx. At the time of Tx 27 patients were male (67.5%) and 13 were female (32.5%) with an age of 43.9 ± 13.6 years and a duration of dialysis of 3.9 ± 2.7 years. Living donation occurred in 55% of the cases. The median time of the PD catheter removal post-Tx was 4.6 ± 2.2 months. DGF was observed in 6 patients. Infectious complications associated with PD, namely peritonitis and exit site infection occurred each in one patient (2.5%). Additionally, one patient was diagnosed with encapsulating peritoneal sclerosis after Tx. Other non-PD related infections occurred in 13 patients (32.5%). All infectious complications have been successfully treated with no impact on kidney function.

#### Conclusions

PD catheter can be left in situ at the time of renal transplantation, as post-operative PD-related complications rates are low.

## P-91

## ANURIC PATIENTS – IS MALNUTRITION AND INFLAMMATION A TARGET UNDERLOOKED?

Catarina Meng, Ana Beco, Ana Nunes, [Ana Oliveira](#), Manuel Pestana

Centro Hospitalar São João, Portugal

## Introduction and objective

Anuria adversely impacts survival in peritoneal dialysis (PD) patients in which dialysis adequacy can be challenging. In this single-center cross-sectional study we aimed to evaluate dialysis efficacy targets in anuric patients (AP) and compare them with patients with residual renal function (RRF).

## Methods

Prevalent patients at the end of 2016 with a minimum time of 9 months on PD were included. Anuria was defined as urinary output <100ml. Variables were expressed in median and interquartile range (IQR) and percentage. Chi-square and Mann-Whitney tests were performed to assess differences between groups and significance was considered when  $p < 0.05$ . All tests were two-tailed.

## Results

Sixty-nine patients were enrolled, 19 of which anuric (3 at the beginning of the program). Seventeen patients were on APD and 18 were prescribed Icodextrin. Median results: Kt/V 2.1 (1.7; 2.5), total CrCl 54.3 (46.3; 63.8) and daily ultrafiltration (UF) 1200ml (900; 1450).

Compared with patients with RRF, AP had longer dialysis vintage (56 vs 29.5 months,  $p=0.003$ ) and lower total CrCl (54.3 vs 108.4;  $p < 0.001$ ) but higher UF (1200 vs 725ml,  $p=0.001$ ). No differences were found regarding age (51 vs 53 yo,  $p=0.444$ ), Mean arterial pressure (systolic 134 vs 139 mmHg,  $p=0.09$ , diastolic 81 vs 80mmHg,  $p=0.323$ ), Kt/V (2.1 vs 2.2,  $p=0.22$ ), Hemoglobin (10.9 vs 11.6 g/dL,  $p=0.13$ ), Brain natriuretic peptide (144 vs 135 pg/mL,  $p=0.629$ ), Calcium (8.8 vs 9.0 mg/dL,  $p=0.627$ ) and Phosphorus (4.8 vs 4.4 mg/dL,  $p=0.181$ ). PTH and albumin were lower in AP (326 vs 458 pg/mL,  $p=0.035$ ) and 35 vs 37 g/L,  $p=0.002$ , respectively, and levels of C-reactive protein were higher in AP (5.6 vs 3.1 mg/L,  $p=0.045$ ).

## Conclusions

Notwithstanding dialysis adequacy targets, AP patients had lower albumin and higher c-reactive protein levels, thus providing evidence of a higher inflammatory state on this population.

## P-92

## SERUM SODIUM AND OSMOLALITY IN PD PATIENTS. RELATIONSHIP WITH FLUID OVERLOAD AND ICODEXTRIN

[Jose Ignacio Minguela](#), Teresa Castellanos, Consuelo Baños, Leire García-Brizuela, Begoña Aurrekoetxea, Isabel Jimeno, Oriana Carmona, Ramón Ruiz de Gauna

Hospital Universitario Araba, Spain

## Objective

To analyze the level of sodium and osmolality in PD patients and their relationships with fluid overload and icodextrin.

## Patients and Methods

Design: Cross-sectional survey in a PD unit (between January and March/17).

Patients: Every prevalent patient of our unit, in their usual control.

Methods: We have included adequacy parameters, blood analysis and BCM data

Statistic: Data are shown as mean  $\pm$  standard deviation (if normally distributed) or median (interquartile range).

Correlations and t student for independent variables.

## Results

We have included 37 patients (78% male) with a mean age of  $62.0 \pm 13.0$  (27-86). Twenty five (67%) were on CAPD and 43% had at least one exchange of icodextrin per day (1.6-4.0 L/d) (36% of CAPD patients and 58% of APD ones).

The sodium level was  $139.08 \pm 2.37$  (132-144) and the osmolality level was  $308.54 \pm 9.99$  (285-333). Only 2 patients (5.4%) had sodium level under normal limits. There was no difference in serum osmolality between patients who receive or don't receive icodextrin;  $311.13 \pm 12.20$  vs  $306.57 \pm 9.60$  (t;  $p=0.173$ ) although there was a significant difference in the osmolal gap ( $p < 0.001$ ). However, the sodium level was lower in icodextrin patients ( $137.31 \pm 2.89$  vs  $140.43 \pm 2.04$  - [t;  $p < 0.001$ ]).

There was a significant correlation between the sodium level and the total volume of icodextrin per day ( $\rho = -0.498$ ;  $p = 0.002$ ) and the osmolal gap ( $\rho = 0.830$ ;  $p < 0.001$ ).

The median fluid overload volume was 1.60 (0.72 – 2.67) and the overhydrating related to ECW was 8.95 (4.12 – 16.12). There was no differences according to the use of icodextrin (U; OH –  $p = 0.056$  // OH% -  $p = 0.972$ ).

## Conclusions

Patients who has got icodextrin in their PD schedule has lower serum sodium, although very few patients have hyponatremia. The osmolal gap is related to the icodextrin volume. Those sodium levels are not correlated with overhydrating.

## P-93

## EVOLUTION OF BIOIMPEDANCE PARAMETERS IN PD FOR TWO YEARS

Jose Ignacio Minguela, Teresa Castellanos, Consuelo Baños, Leire García-Brizuela, Begoña Aurrekoetxea, Isabel Jimeno, Ramón Ruiz de Gauna

Hospital Universitario Araba, Spain

**Objective**

To analyze the evolution of the parameters measured with the spectroscopy bioimpedance

**Patients and Methods**

**Design:** Retrospective observational survey in our PD unit.

**Period of study:** From 2012 to apr/2017

**Patients:** We have included every patient that has been on PD during this period of time.

**Results**

The mean age was  $56.1 \pm 16.3$  (20-86) years old and 9/30 (30%) were female. The overhydration at the start of follow up was  $1.52 \pm 2.37$  (33.3% had normal volume, 30% had mild overhydration (1-2L); 16,7% moderate overhydration (2-3 L) and 20% severe (>3 L). There was no statistical difference along the study.

During the study, the patient weight was kept stable, but if we analyze the different compartments, we show a tendency to a progressive reduction in lean tissue mass (from  $15.15 \pm 2,9$  to  $12.40 \pm 1.86$  kg/m<sup>2</sup> at 4 years) ( $p=0.028$ ) with an increase in the fat tissue mass (from  $10.80 \pm 6.19$  to  $15.22 \pm 8.36$  kg/m<sup>2</sup> at 4 years) ( $p=0.046$ ).

**Conclusions**

The overhydration is mild in PD patients during a period of 2 years. There is a tendency to reduce lean tissue mass associated to an increase in the fat tissue mass. We should try to increase activity in our patients to reverse this process.

## P-94

## OCULT SOURCE OF PHOSPHORUS IN KIDNEY PATIENTS

Jose Ignacio Minguela<sup>1</sup>, Ainhoa Quintana<sup>2</sup>, Victoria Goitia<sup>2</sup>, Begoña Aurrekoetxea<sup>1</sup>, Isabel Jimeno<sup>1</sup>, Oriana Carmona<sup>1</sup>, Carlos Martinez<sup>2</sup>, Ramón Ruiz de Gauna<sup>1</sup>

<sup>1</sup>Nephrology Dpt - Hospital Universitario Araba, Spain, <sup>2</sup>Pharmacy Dpt - Hospital Universitario Araba, Spain

**Background and Objectives**

One of the main problems in dialysis patients is the control of blood phosphorus level. To control the levels of phosphorus we have to reduce the intake of phosphorus rich food and to add phosphorus binding drugs to reduce its absorption. Some patients have high blood phosphorus levels. We know that some patients neither take correctly binding drugs nor follow diet recommendations. But some times, there are other explanations to this high phosphorus blood levels: the occult sources of phosphorus. We know that processed food have higher phosphorus levels due to additives. Another occult source could be drugs. The aim of this study is to know the phosphorus levels of some drugs that are usually prescribed to our patients.

**Methods**

We have asked to the pharmacy industry about the use of phosphate as additives to the drugs they sell. We have asked about some ACEI (enalapril, lisinopril, ramipril), ARBS (telmisartan, olmesartan, candesartan), calcium antagonists (nifedipine, amlodipine, lercanidipine and manidipine), beta blocker (atenolol, carvedilol, bisoprolol, nebivolol), doxazosin, repaglinide, diuretics (furosemide, torasemide, hydrochlorothiazide, chlortalidone, spironolactone), statins (simvastatin, atorvastatin, rosuvastatin, pitavastatin), phosphorus binding drugs (sevelamer, lanthanum, calcium acetate), acetylsalicylic acid and clopidogrel.

**Results**

Amlodipine has phosphorus as an additive. The additive usually is calcium phosphate and the phosphate amount is 14-29 mg/pill. We have also found phosphate in rosuvastatin, hydrochlorothiazide and in some repaglinide pills. ECAI, ARBS, other calcium antagonists and other statins do not add phosphorus.

**Conclusions**

Although the amount of phosphorus is not too high, it should be taken into account in the election of drugs to prescribe to our patients.

P-95

### A HOLISTIC APPROACH AND MULTIDISCIPLINARY SHARING TO PERITONEAL DIALYSIS

Agata Mollica, Roberta Talarico, Rosita Greco, Teresa Papalia, Francesco Mollica, Martina Bonofiglio, Sebastiano Vaccarisi, Renzo Bonofiglio

Nephrology, Dialysis and Transplantation Dept- Annunziata Hospital- Cosenza Italy, Italy

Assistance Therapeutic Diagnostic Paths (PDTAs) are highly useful structured and management models in the diagnosis and treatment of chronic renal disease, guaranteeing a multi-professional approach to quality and continuity assistance, based on the available guidelines and on the most current scientific research lines, according to criteria of appropriateness, effectiveness and efficiency. In particular, nephrology activity should be aimed at providing targeted and tailored replacement therapy on the patient, putting on all existing options (hemodialysis, peritoneal dialysis and transplantation).

The beginning of Dialysis needs to be done in a planned way, divided into several phases of an information and training program provided to the patient and his / her family members, especially if it consists of a self-management treatment.

Therefore, PDTA becomes a clinical governance tool that overcomes the logic of delivering multidisciplinary, fragmented, disconnected and disjointed performance, forcing the patient to be the only true cling to the various specialist reports. In the various phases of chronic kidney disease, the patient interacts with different professional figures who take care of him from the conscious choice of dialysis mode, considering his clinical, logistic, familial and psychological status, to the stage of preparing access (Catheter Peritoneal / Arteriovenous fistula), and finally to assess the adequacy of treatment and prescription of medical and nutritional therapies.

About this, we created a PDTA of Dialysis Peritoneal, just approved by the management of our Hospital Direction, detailed in various phases, which have directly involved various professional figures: general medicine physician, nephrologist and nursing team dedicated to nephrology, surgeon and anesthesiologist, pediatric nephrologist and pediatric surgeon, labs and virologist, cardiologist, nutritionist, social worker, psychologist, manager of Quality and Accreditation, computer engineer.

This course happened during accredited training events with the contribution of multidisciplinary participants and subsequently built within monthly focal groups among the professionals directly involved in the peritoneal dialysis process.

P-96

### RELATIONSHIP AMONG PATIENT, CAREGIVER AND PERITONEAL DIALYSIS TEAM: BARRIERS AND RESOURCES

Marica Mulé<sup>1</sup>, Anna Bertoni<sup>1</sup>, Sara Molgora<sup>1</sup>, Massimo Sandrini<sup>2</sup>, Valerio Vizzardi<sup>2</sup>, Giovanni Cancarini<sup>2</sup>

<sup>1</sup>Catholic University, Psychology Department, Italy, <sup>2</sup>ASST-Spedali Civili, U.O. of Nephrology, Italy

#### Objectives

The psychosocial research produced still few contributes about the psychological impact of Chronic Kidney Diseases (CKD) in Peritoneal Dialysis (PD). This qualitative research aims to assess the psychological aspects in PD team, patients with CKD and caregivers. This study has two goals: to observe the role of patient, caregiver, nurse and physician in PD; to compare fatigues, resources of dialysis team, patients and partners.

#### Methods

Two Focus Groups have been conducted: The first one with PD team and the second one with patients and their caregivers. Focus Groups were videotaped and transcribed. The transcripts were analysed using the textual analysis software T-LAB. It has been performed a thematic analysis of elementary contexts.

#### Results

The thematic analysis implemented overall corpus of interviews showed a four-cluster solution. Clusters identify four thematic areas about PD team, patients and caregivers perceptions. We labelled these cluster respectively: "Incurable disease and the best possible care"; "Burden caregiver"; "Patient engagement" and "The relationship in peritoneal dialysis is an everyday challenge". Clusters explain respectively 32,3%, 27,3%, 25% and 15,4% of the data variance. The analysis showed differences through caregivers, patients and PD team. The caregivers feel most responsibility compared to the patients, who have to depend on dialysis, diet and family support. In fact, clusters evidence fatigues of care for PD team: how to promote the patient engagement, how to recognize caregiver such as resource and how to improve the collaboration among physicians and nurses.

#### Conclusions

The study shows as the CKD is a couple matter and a daily challenge for physicians and nurses. All clusters concern the life quality of patient, caregiver and Burnout risk in PD team. If the hospital offers multidisciplinary interventions also with a psychology, it could improve possible resources of patients and caregivers. This should reduce relationship's barrier with PD team too.

## P-97

## STUDY ABOUT QUALITY OF LIFE IN PERITONEAL AND HAEMODIALYZED PATIENTS

Eva Nagy<sup>1</sup>, Imre Kulcsar<sup>2</sup>

<sup>1</sup>B. Braun Avitum Hungary cPlc. Dialysis Centre No. 6, Hungary, <sup>2</sup>B. Braun Avitum Hungary cPlc. Dialysis Centre No. 6 and Markusovszky University Teaching Hospital, Hungary

## Introduction

In our centre we have made QOL investigations since years on dialysed patients.

## Objective

To compare some quality of life data between the haemodialyzed (HD) and peritoneal dialyzed (PD) patients.

## Patients, Methods

In 2015 in our dialysis centre we have been investigated 178 HD and 57 PD patients with our constructed QOL questionnaire (for this questionnaire we used data from the EQ-5D and the SF-36 tests). After a year we have repeated the investigations in the still treated patients (141 HD and 40 PD) and also done the test at the new patients (32 HD, 14 PD)..

## Results

Higher ratio of the PD patients have been attended nephrological care instead of HD patients (74 vs. 53%). The average spent time in the dialysis program was shorter in PD (2,3 vs 4,6 years). At the first review both treatment methods the 93% of the patients are felt their condition good or acceptable, but compared to the earliest 95% of the DP, and only 74% of the HD felt their condition unchanged. From the new patients 100% of the PD and just 60% of the HD felt their condition good/acceptable. If they have to decided the acceptance of the treatment now 8% of the HD and 3% of the PD rejected this treatment mode. In the self-supporting there was no difference in the earlier PD and HD patients, but at our new patients this difference was significantly huge, 93% of the PD, while the HD patients just only 50%.

## Conclusion

According to our observations the health conditions drastically decreased in one year who was treated in HD instead of PD. At our new HD patients conditions was worse at the beginning of this dialysis treatment like the PD.

## P-98

## REMOTE APD PRESCRIPTION AND MANAGEMENT BY SHARESOURCE

Loris Neri, Sara Barbieri, Giusto Viglino

Nefrologia, Dialisi e Nutrizione Clinica, Ospedale San Lazzaro - Cap 12051, Italy

## Objectives

To evaluate the effectiveness of the Homechoice Claria - Sharesource (HCCI-S) (Baxter) web-based connectivity system in customizing dialysis treatment.

## Materials and Methods

Analysis of the recording of prescriptions and treatments performed using HCCI-Sharesource in the first few months of use of the platform (20/09/2016-19/04/2017) for all our patients on APD. The analysis of the prescription-treatment ratio was limited to the 14 patients with more than 45 treatments recorded, while the analysis of alarms and compliance was limited to the last 30 days of treatment in the 12 patients in treatment as at 20/03/2017.

## Results

Patients. HCCI-Sharesource was used in all the 17 patients on APD (age: 66.1±15.8 years; M: 82.4%; MD 52.9%), 3 of whom were incident and 3 dropouts from the follow up.

The mean follow up was 5.6±2.1 months. Only 5 patients (28.4%) were self-care, 3 were followed using video dialysis, 2 in NH and 7 on assisted APD with a family member. 64.7% of the patients depended on others for transport to the Centre.

Average distance from the Centre and journey time (Google Maps, fastest route) were 15.8±11.9 km and 19.2 ±12.3 minutes respectively.

Treatments recorded. 2598 treatments were recorded (>200 in 7 pts – 100-200 in 7 pts – <50 in 3 pts), 16 patients were on Tidal treatment (40-75%), 4 with empty abdomen during the day and 17 were using icodextrin.

Compliance. Treatment compliance was 100%.

Prescription-Treatment Ratio. For 2.533 treatments, 59 prescriptions (2.3%) were sent more than once by Sharesource for a total of 276 times (10.9% of treatments) The reasons for the repeated sending of therapies were the need to modify UF or to keep the abdomen empty during agreed non-dialysis days.

## Conclusions

In our experience, Sharesource allows for the customization of the treatment, with a considerable saving in accesses to the Centre.

## P-99

## PD IN NON-PEDIATRIC PUBLIC CENTERS IN ITALY: RESULTS OF THE 5TH GSDP-SIN CENSUS 2014 (Cs-14)

Giancarlo Marinangeli<sup>2</sup>, Gianfranca Cabiddu<sup>3</sup>, Loris Neri<sup>1</sup>, Giusto Viglino<sup>1</sup>, Anna Rachele Rocca<sup>4</sup>, Alessandro Laudon<sup>5</sup>, Antonino Ragusa<sup>6</sup>

<sup>1</sup>Nefrologia, Dialisi e Nutrizione Clinica, Ospedale San Lazzaro, Italy, <sup>2</sup>Nefrologia e Dialisi, Ospedale SS Maria dello Splendore, Italy, <sup>3</sup>Nefrologia e Dialisi, Azienda Ospedaliera Brotzu, Italy, <sup>4</sup>Nefrologia e Dialisi, Policlinico Umberto I, Italy, <sup>5</sup>Nefrologia e Dialisi, Azienda Provinciale Servizi Sanitari, Italy, <sup>6</sup>Nefrologia e Dialisi, Ospedale San Vincenzo, Italy

## Objectives

To monitor PD modalities and results in Italy.

## Methods

The Census was carried out by means of an on-line questionnaire in all the 225 non-pediatric public centers which PERFORMED PD in 2014. The results were compared with those of previous Censuses (2012-2010-2008-2005).

## Results

**Incidence.** In 2014 PD was begun (first treatment for ESRD) by 1,652 pts (CAPD: 57,2%) and HD by 4,442 pts (%PD-incidence=Cs-14: 27,1%; Cs-12: 23,4%; Cs-10: 23,3%; Cs-08: 22,8%; Cs-05: 24,2% - p=NS).

For the first time incremental PD doesn't increase (Cs-14: 27,5%; Cs-12: 28,8%; Cs-10: 22,8%; Cs-08: 18,3%; Cs-05: 11,9%).

**Prevalence.** At 31/12/2014 there were 4,480 patients on PD (CAPD: 46,9%) (%PD-prevalence= Cs14: 17,1%), 24,3% of whom were on assisted PD (family members: 83,6%; paid caregivers: 11,5%; nurses: 1,1%; NH: 2,8%).

**Out.** In 2014 there was no change in the total PD drop-out rate (32,0 ep/100yrs-pt) (death: 502; transplant: 329; switch to HD: 528 pts).

The main reason for transferring to HD remained peritonitis (24,2%) although it is further down compared to previous years.

**Peritonitis.** The peritonitis rate (953 episodes) was 0.224 ep/100yrs-pt.

**EPS.** The incidence of new cases of EPS in 2013-14 (38 cases=0.433 ep/100yrs-pt) remained unchanged compared to 2011-12 (43 casi=0,505), 2009-10 (44 pts= 0.529 ep/100yrs-pt) and 2004-08 (146 pts= 0.701 ep/100-yrs-pt).

**Other results.** In 2014 the number of Centers using 3.86% for PET increased (41,3% vs 30,8% vs 15,6% -p<0.001), while the number carrying out home visits remained unchanged. This study did not take into consideration 109 pts on "non renal" PD (HF, cirrhosis).

## Conclusions

Cs-14 confirms the extensive use, stability and good results of PD in Italy.

## P-100

## FACTORS AFFECTING CHOICE OF DIALYSIS MODALITY IN THE CZECH REPUBLIC

Sylvie Opatrná<sup>1,2</sup>, Vladimira Bednarová<sup>3</sup>, Sylvie Dusilová Sulková<sup>4</sup>, Alena Paříková<sup>5</sup>, Vladimír Tesař<sup>3</sup>, Ondřej Viklický<sup>5</sup>, Jana Kolářová<sup>6</sup>, Jiří Michalík<sup>6</sup>

<sup>1</sup>Dept. of Medicine I, Charles University Medical School and Teaching Hospital Plzen, Czech Republic, <sup>2</sup>Biomedical Centre, Faculty of Medicine in Plzen, Charles University in Prague, Czech Republic, <sup>3</sup>Department of Nephrology, 1st Faculty of Medicine and General University Hospital, Charles University, Czech Republic, <sup>4</sup>HD Center, Faculty Hospital Hradec Kralove and Charles University, Faculty of Medicine in Hradec Kralove, Hradec, Czech Republic, <sup>5</sup>Dept. of Nephrology, Institute for Clinical and Experimental Medicine, Czech Republic, <sup>6</sup>Baxter, Czech Republic

## Background

Despite excellent clinical outcome (annual mortality 6%), the proportion of patients treated by Deritoneal dialysis (PD) in the Czech Republic (CZ) remains very low (7-8%) . With this in mind, we organized an opinion poll among nephrology professional to identify decision making paradigmata during the choice of dialysis modality.

## Methods

Out of the physicians addressed, 65% worked in an out patient /dialysis unit affiliated with a hospital, 21% in an independent out patient unit, 12% in a health center a 3% in a hospital. Patients with CKD stage 4, on HD and PD account for 11% of the clientele of the participating nephrologists. PD with subsequent Tx and/or preemptive Tx are considered significantly more suitable than HD ± Tx. Nephrology staff puts emphasis on the efficiency and long-term practical experience (favored HD). Nephrology staff does not perceive much difference between PD and HD with the exception of suitability for complicated patients and long-term experience in the unit (favored HD). For patients with an active life style, with excellent compliance, unproblematic education, of younger age, and for Tx candidate, PD is favored. The average time of individual predialysis education is 45 minutes.

## Conclusions

Low PD penetration in CZ might be explained by the requirement to include „ideal“ patients only, despite the fact that even patients with co-morbidity, dependent on a helper, of advanced age, not eligible as Tx candidates might benefit from PD as well. Further educational activities and raising of public awareness should be focused in this direction.

## P-101

## REMOTE PATIENT MONITORING IN PERITONEAL DIALYSIS: EVALUATING THE BENEFITS OF IMPLEMENTATION ON SERVICE RESOURCE

Teresa Patterson<sup>1,2</sup><sup>1</sup>Gloucester Royal Hospital, United Kingdom, <sup>2</sup>Baxter Healthcare, United Kingdom**Objectives**

Remote monitoring technology has the potential to increase access to care and decrease healthcare delivery costs. Incorporating remote monitoring in chronic disease management may significantly improve an individual's quality of life, allowing patients to maintain independence and prevent complications

To introduce remote monitoring to the Automated Peritoneal Dialysis population, to review the impact on planned activity, unplanned activity and patient experience with this patient group

**Methods**

Year on year the PD team have found an increase in unplanned activity with the PD patient population which was time consuming and impacting on many aspects of the service. Prior to the introduction of remote monitoring an audit of unplanned patient contact to the PD service was undertaken, to include incoming and outgoing patient phone calls to the team, ward attendance and out of hours contact with the Renal ward staff

This audit was repeated for the 12 months post remote monitoring implementation.

**Results**

Audit data from the 12 months prior to the implementation of remote monitoring to 85% of the APD population found an average of 32 incoming patient phone calls per month,

The same audit repeated for the 12 months post implementation of remote monitoring showed an average of 14.7 incoming phone calls per month and a reduction in unplanned ward attendances. Outgoing Nurse phone calls showed a slight decrease.

**Conclusions**

Introduction of remote monitoring coupled with a dedicated PD team and a regular home visit protocol has enabled the development of an increased, sustainable PD programme.

## P-102

## LAPAROSCOPIC IMPLANTATION OF THE PERITONEAL DIALYSIS CATHETER DURING THE PERIOD 2008-2016, ONE CENTRE EXPERIENCE

Martina Pejskerova<sup>1</sup>, Vladimira Bednarova<sup>1</sup>, Martina Kadlecova<sup>1</sup>, Sabina Strohalmova<sup>2</sup>, David Hoskovec<sup>2</sup>, Vladimir Tesar<sup>1</sup><sup>1</sup>Departement of Nephrology, General Teaching Hospital, Charles University, Czech Republic, <sup>2</sup>1st Departement of Nephrology, General Department of Surgery, General Teaching Hospital, Charles University, Czech Republic**Objectives**

Peritoneal dialysis can only be successful if the patient has a perfectly functioning peritoneal catheter. Its good function depends on the implantation technique and subsequent catheter care. We aimed to assess the frequency of early complications related to laparoscopic peritoneal catheter implantation.

**Methods**

We evaluated 260 subjects (155 men, 105 women), who had laparoscopic catheter implantation at our hospital from 2008 to 2016. The double cuffed dialysis catheter was implanted by experienced surgeons. The mean age of subjects was 56 ± 14 years. Diabetic nephropathy was present in 22%, glomerulonephritis in 19% and polycystic kidney disease in 9% of subjects. Mean serum creatinine concentration at implantation was 624.3 ± 164 µmol/l. We assessed complications related to the dialysis catheter occurring within the first month post implantation.

**Results**

1 patient experienced early exit-site infection and 2 patients had peritonitis. 9 (3.5%) patients suffered from tunnel bleeding. 33 (12.7%) subjects had haemorrhagic dialysis fluid. 12 subjects (4.2%) had catheter malposition and 10 patients (3.8%) had to be re-operated for catheter malposition. 9 subjects (3.5%) suffered from early leak along the catheter, in 1 patient the catheter had to be explanted due to the leak. During 9 years we had only one serious surgical complication: arterial bleeding into the rectus abdominis muscle that was treated by ex-plantation and re-implantation of the catheter. We have not found any significant differences in serum albumin, creatinine, CRP or age between the group with and without complications, however there were more diabetics in the group with complications.

**Conclusions**

Laparoscopic implantation of the peritoneal catheter is a safe method. Overall rate of early complications in our subjects was 25%. In absolute majority the complications were minor and treatable. In our group of 260 patients within the period of 9 years we noticed only one serious complication.

P-103

### PERITONEAL DIALYSIS PATIENTS EXPERIENCE BETTER QUALITY OF LIFE THAN HEMODIALYSIS PATIENTS

Georgios Vlachopoulos, [Garyfalia Perysinaki](#), Panagiota Papadaki, Maria Psoma, Helen Kladou, Triantafyllia Karamani, Georgios Manolis, Andreas Passam, Irini Ntaountaki

Rethymnon General Hospital, Greece

#### Objectives

Quality of Life (QOL) is an important outcome in patients under dialysis. We sought to explore whether peritoneal dialysis (PD) and hemodialysis (HD) patients experience different dimensions in quality of life.

To introduce remote monitoring to the Automated Peritoneal Dialysis population, to review the impact on planned activity, unplanned activity and patient experience with this patient group

#### Methods

Cross sectional, single center study. Twenty stable (10 HD and 10 PD) patients age and sex matched were studied. The Kidney Disease Quality of Life questionnaire was applied. Demographic, social, physical, comorbidity and dialysis related data were recorded.

#### Results

The median age of the patients was 64.5 years [95% Confidence Interval (CI) 58.5 – 72.6]. Thirty three percent were males. Fifteen percent were diabetic, all under PD. Patients having completed nine years of formal education reported less burden of kidney disease (p: 0.019) as compared to those with only six years of education. Females reported better general health (p: 0.042). No significant difference regarding educational level, social status, dialysis efficacy were identified between PD and HD patients. Significantly lower limitations caused by physical health problems, higher energy / less fatigue and better preserved cognitive function were reported by PD compared to HD patients (p: 0.026; p: 0.044; and p:0.029 respectively). PD patients perceive better dialysis stuff encouragement compared to the HD (p: 0.033).

#### Conclusions

Important aspects of quality of life appear significantly better preserved among PD patients. Larger prospective studies are needed for better clarification of the associations between QOL and dialysis modality.

P-104

### TREATMENT FOR RNA HEPATITIS C VIRUS POSITIVITY IN A PERITONEAL DIALYSIS PATIENT

Ana Pimentel, Anabela Guedes, Ana Margarida Vaz, Rita Ornelas, Ceu Laranjo, [Idalecio Bernardo](#), Pedro Neves

Cha, Faro, Portugal

Chronic kidney disease (CKD) patients with positive RNA virus for hepatitis C virus (HCV) should be referred to Hepatology consultation with the aim of undergoing HCV treatment. Depending on the genotype and estimated GFR being <30mL/min, treatment should be preferentially initiated before renal transplantation. HCV infection is not prevalent in Peritoneal Dialysis (PD), so the natural history of this infection is not well documented nor PD patients were selected to the published clinical trials of HCV infection newest treatments. Patients in PD that actually have hepatitis have higher titres for HCV antibody. The authors present a case of a successfully treated PD patient with documented HCV RNA negativity.

A 56 year-old patient, with past history of type 2 diabetes for 20 years, under oral anti-diabetic medication, with high blood pressure and CKD (documented diabetic nephropathy type IV). He had positive antibody for HCV since 2000, in late 2015 he started PD (PD first). The patient denies having had blood transfusions, IV drugs or any tattoos done. After starting PD, he was stable on a nocturnal intermittent PD, with a Saturday break and he was always a medium-high transporter. He was then referred to the Hepatology consultation after being genotyped for Type 1a of the HCV (viral charge of 77008 IU/mL). Therapy with ombitasprevir (25mg id), paritaprevir (150mg id), ritonavir (100mg id), dasabuvir (250mg 2id) and ribavirin (200mg id) for 12 weeks was started. He finished his treatment in December of 2016, and HCV RNA came negative. As treatment complications, he had normocytic and normochromic anaemia (Hb 90 g/L) with good response to the raising of epoetin dosage. Laboratorial follow-up showed identical peritoneal kinetics to previous measurements (kt/V, type of transporter, protein peritoneal losses, and residual renal function). No change was done in PD prescription and he is currently waiting for a kidney transplant.

Patients are considered cured by having negative HCV RNA for 12 weeks after finishing treatment.

## P-105

## REMOTE MONITORING ENHANCED PATIENT AND CLINICIAN CONFIDENCE IN HOME DIALYSIS

Cassandra E. Puig, Carmen Gómez, Daniele Vaccarella, Mario Pavone, Angel Solis, Mercedes Saiz

Hospital Can Misses, Spain

#### Objectives

PD is a home treatment which up till now has required regular visits to the referral center in order to see and analyze treatment being given to the patient and introduce any necessary modifications to the treatment.

Thanks to the new automated peritoneal dialysis cyclers with an embedded 2-way remote patient management system (Claria-Sharesource) we are now able to monitor the treatment daily. The objective is to demonstrate that in one of our patients, this system has allowed us to better manage patient care, since we have clearly been able to optimize treatment in a complicated situation on a daily basis and detect any early clinical issues.

#### Methods

A patient undergoing PD presented with scrotal edema secondary to peritoneal fluid leakage. After 1 month of rest from PD, PDI was reinitiated without any recurrence of the leakage. The remote patient management has allowed us to modify the patient's treatment schedule every few days without the need for displacement to the Dialysis Unit

#### Results

When switching from DPI to DPA with a very low infusion volume, no recurrence of the leakage could be observed. After increasing the rate in the last infusion, a UF deficiency with icodextrin could be observed, suggesting a reappearance of the leakage, which enabled us to immediately reduce the infusion volume prior to the onset of any significant scrotal oedema

#### Conclusion

The technology of the Claria-Sharesource cyclers system allows daily monitoring of data generated in the treatment given, as well as early detection of any clinical issues, thus enabling us to take immediate action and make any necessary adjustments to treatment without the need for the displacement of the patient to the dialysis unit.

## P-106

## REMOTE MANAGEMENT OF PATIENTS WITH SHARESOURCE PLATFORM: REDUCING BARRIERS TO USE OF HOME DIALYSIS

Cassandra E. Puig, Carmen Gómez, Mar Martínez, Mario Pavone, Angel Solis, Mercedes Saiz

Hospital Can Misses, Spain

#### Objectives

Peritoneal dialysis is the best option for patients not living near their referral centre, in our case, on a different island (45 min by boat). However, clinic visits are essential to measure adequacy targets & make adjustments to a patient's programme, the impact of which cannot be evaluated until the next visit. Periodic visits require displacements, increasing expenditure. Remote patient management (RPM) has broken this barrier. It has the potential to allow proactive PD prescription changes remotely, ahead of hospital and biochemistry reviews & detect early issues. We describe the case of a 50-years-old patient, with pluripathologies, including a personality disorder which greatly hinders follow-up and implementation of dialysis. Since he started PD, compliance has been good and the degree of patient-satisfaction high. However, he has had a stroke which has left him hemiplegic on his dominant side making the continuance of home care or displacement to the hospital equally difficult. Our aim was to maintain the patient on peritoneal dialysis because of all its indisputable advantages.

#### Methods

A newly available automated peritoneal dialysis cycler (APD) with an embedded 2-way RPM system (Claria-Sharesource) was implemented and follow up was instigated under the joint supervision of his nephrologist and primary care nurse.

#### Results

Thanks to this system we have achieved our goal of maintaining the patient on DP, ensuring adequate follow-up of the patient and his treatment. We have thus reduced the number of displacements to the referral centre with all the analytical tests being carried out in his home by his primary care nurse, including kt/v. From the referral centre we have monitored all his test results together with the dialysis treatments, enabling us to make the appropriate adjustments to his treatment without displacements.

#### Conclusions

We have improved patient care, at the same time significantly reducing transport costs.

P-107

## PERITONEAL DIALYSIS IN ELDERLY PATIENTS, WHEN TO OFFER THE TREATMENT? ASSOCIATION BETWEEN AGE AND RESULTS OF PERITONEAL DIALYSIS

Jose Antonio Quintanar Lartundo<sup>1</sup>, Noelia Vada Manzanal<sup>2</sup>, Rosa Palomar Fontanet<sup>2</sup>, Manuel Arias Rodriguez<sup>2</sup>

<sup>1</sup>Cruces University Hospital, Spain, <sup>2</sup>Valdecilla University Hospital, Spain

### Introduction

The number of older patients initiating renal replacement therapy is increasing. However, the proportion in Peritoneal Dialysis (PD) is low. It may be due to age-related comorbidity and functional limitations, but also to contradictory results from studies. This study seeks to examine the association between age and PD outcomes, including time to first peritonitis, overall and peritonitis-related mortality and survival of the technique.

### Methods

We performed a study in our Unit between 2004 and 2013. We divided the age into four groups (<50, 50-64.9, 65-79.9 and >80 years).

### Results

325 patients were analyzed. Time to first episode. Median peritonitis-free survival is 10.6 months(95% CI:9.6-11.6). The only significant independent predictor was cerebrovascular disease(HR: 1.8; 95% CI:1.04-43.24;p=0.038). There were no differences(p=0.3) between the different age, sex, renal disease, presence of DM, cardiovascular or peripheral vascular disease(PVD). Survival in PD was 4.6 years(95% CI:3.8-5.4), being 46.2% at 5 years. Causes of technical failure: renal transplantation(42.2%), peritonitis(23.8%), membrane failure(15.9%), abdominal surgery(11.9%), and others(6.2%). Cardiovascular(HR: 1.39, 95% CI:1.00-1.92, p=0.49) and cerebrovascular disease(HR: 2.6; 95% CI:1.46-4.63; p=0.001) were independent predictors of PD failure.

Mortality. The median survival rate was 6.8 years(95% CI:4.4-9.1). Compared with younger patients(<50 years), the remaining groups have higher risks for all-cause mortality. The other significant independent predictors were the primary renal disease, the presence of cerebrovascular disease and PVD.

Peritonitis-related mortality is low (3.2%), with an overall survival of 14.2 years. The only significant independent predictor of peritonitis-related mortality is the female sex(HR: 4.29, 95% CI:1.29-14.24, p=0.017).

### Conclusions

Except for a higher mortality expected in elderly patients with a probable relation to their own age and a greater prevalence of comorbid disease, with a technique survival, time to first episode and peritonitis-related mortality similar to younger patients, it can be concluded that PD is a valid and appropriate technique for these patients.

P-108

## IS THERE DIFFERENCES IN NUTRITIONAL STATUS BETWEEN DALMATIAN HEMODIALYSIS AND PERITONEAL DIALYSIS PATIENTS?

Josipa Radic<sup>1</sup>, Tanja Ilic Begovic<sup>2</sup>, Leida Tandara<sup>3</sup>, Dragan Ljusic<sup>1</sup>

<sup>1</sup>Department of Nephrology and Dialysis, University Hospital Split, Croatia, <sup>2</sup>Department of Intensive Care, University Hospital Split, Croatia, <sup>3</sup>Department of Medical Laboratory, University Hospital Split, Croatia

### Objectives

Malnutrition is a risk factor for morbidity and mortality in the dialysis population Maintenance dialysis patients are at increased risk of abnormal nutritional status due to numerous causative factors, both nutritional and non-nutritional. Considering the importance of malnutrition in this population of patients the aim of this study was to define the possible differences in nutritional status between stabile peritoneal dialysis (PD) and haemodialysis (HD) patients living in Dalmatia, South Croatia.

### Methods

In this cross-sectional study, the nutritional status of 45 HD and 15 PD patients was determined. To assess nutritional status serum albumin, prealbumin, urea, creatinine, cholesterol, Total Iron Binding Capacity (TIBC), Malnutrition Inflammation Score (MIS), bioelectrical impedance analysis (BIA) and anthropometric parameters (mid arm circumference, waist circumference, hip circumference and body mass index (BMI)) were used.

### Results

PD patients presented statistically significantly higher TIBC (p = 0.002), serum prealbumin (p=0.001) and cholesterol level (p=0.011). Therefore, PD patients presented statistically significantly lower MIS (p=0.020) and lower overhydration (p=0.004). Statistically significant differences in lean tissue mass, lean tissue index, fat tissue mass, fat tissue index, adipose tissue mass, BMI and other anthropometric parameters between HD and PD patients were not found.

### Conclusion

Our results suggest that there are differences in some parameters of nutritional status between HD and PD patients, but BMI and other anthropometric parameters cannot be used only as reflection of nutritional status in these patients. Other parameters of nutritional status (biochemical, clinical and BIA) should also be used in clinical practice in order to assess nutritional status and detect possible differences between HD and PD patients. Frequent assessment of the nutritional status with different parameters in these two groups of patients is mandatory for optimal nourishment.

## P-109

## COURSE OF ILLNESS OF PATIENTS WITH OR WITHOUT DIABETES IN PERITONEAL DIALYSIS PROGRAM

Iren Szakacs<sup>1</sup>, Brigitta Udvardi-Bukits<sup>1</sup>, Laszlo Kovács<sup>2</sup>, Imre Kulcsar<sup>2</sup>

<sup>1</sup>B. Braun Avitum Hungary cPlc. Dialysis Centre No. 6, Szombathely, Hungary, <sup>2</sup>B. Braun Avitum Hungary cPlc. Dialysis Centre No. 6 and Markusovszky University Teaching Hospital, Hungary

## Introduction

Continuous ambulatory peritoneal dialysis (for example CAPD) makes it easy while the absorbed glucose makes it difficult to treat patients with diabetes.

## Aim

To evaluate the course of illness of diabetic or non-diabetic patients treated with peritoneal dialysis (PD).

## Patients, method

From 2000 to 2016 87 patients (35%) had diabetes out of 164 patient treated with PD. In both groups drop out rate [due to improvement in kidney function, transplantation (Tx), switching to haemodialysis (HD) and exitus] was examined. PD techniques and patients survival rate were also observed.

## Results

The average age of diabetic (D) and non-diabetic (ND) patients at start of peritoneal dialysis was 63.9 vs. 60.7 years. In the examined period 88% of D patients and 73% of ND patients dropped out from program. The cause of drop out was different. From PD to Tx 2 patients were transferred from diabetic group while from ND group 33 patients were transplanted. 38% of diabetic patients got into HD program, while 28% of non-diabetic patients got into HD program. Death rate was 40% in diabetic patients while in non-diabetic group it was only 20%! The survival rate of technique was not different in the two groups (2.4±1.9 vs. 2.4±2.0 years). The survival (including time spent in HD and with transplanted kidney) was better (4.0±3.3 years) in non-diabetic group while D group's survival was only 3.5±2.6 years.

## Summary

PD technique gives almost same life expectancy for diabetic patients as for non-diabetic ones. Essential difference is that much more patients were transplanted from ND group which gives them a better chance for survival. A significant difference was observed in mortality: the mortality rate was almost double in D group comparing to ND group.

## P-110

## SURVIVAL OF PERITONEAL DIALYSIS TECHNIQUE AND PATIENTS

Iren Szakacs<sup>1</sup>, Brigitta Udvardi-Bukits<sup>1</sup>, Laszlo Kovács<sup>2</sup>, Imre Kulcsar<sup>2</sup>

<sup>1</sup>B. Braun Avitum Hungary cPlc. Dialysis Centre No. 6, Szombathely, Hungary, <sup>2</sup>B. Braun Avitum Hungary cPlc. Dialysis Centre No. 6 and Markusovszky University Teaching Hospital, Hungary

## Introduction

Peritoneal dialysis (PD) is an optimal renal replacement therapy for patients with residual kidney function.

## Objective

To study survival of PD technique and patients treated initially with PD as a renal replacement therapy.

## Patients, method

From 2000 to 2016 we had 251 patients treated with PD. Course of illness [improved renal function, kidney transplantation (Tx), conversion to haemodialysis (HD), exitus] time spent in PD and survival in different patient groups were examined.

## Results

At the end of the study 54 (21%) patients were treated with PD, 197 patients were dropped out: 14 patients had improved kidney function, 35 were transplanted, 80 patients got into HD, 68 had died.

Survival of PD technique is 2.9±2.2 years in case of patients treated with PD currently and that of dropped patients is 2.2±1.9 years, respectively. The average technical survival was 2.6±3.3 years in patients switched to HD program. According to the patient's survival the best result (8.4±3.0 years) was observed in PD->HD->Tx group ones, the second best group was in transplanted (Tx) group (7.5±3.7 years). In patients treated initially with PD currently with HD the average survival is 5.0±3.3 years. The shortest survival (2.1±1.7 years) was detected in patients died in PD program.

## Summary

The survival of PD technique was 0.5-8.6 (average 1.2-2.9) years in different patient groups. When renal function improved (1.2±1.0 years) and in case of transplantation (2.2±1.6 years) PD program's duration was relatively short.

Patients survival was 0.9-10.0 (average 2.1-8.4) years depending on the course of illness.

P-111

## PERITONEAL DIALYSIS OF PATIENTS WITH POLYCYSTIC KIDNEY DISEASE

Zsuzsanna Szigeti, István Balku

B.Braun Hungary 2 Dialysis, András Jósa County and Teaching Hospital Department of Internal Medicine 1, Nyíregyháza, Hungary

## Objective

The consequences of Polycystic Kidney Disease may influence the choice between dialysis methods and the incidence of PD complications.

## Methods

Between 1/1/2010 and 31/12/2015 we treated 97 patients with peritoneal dialysis in our Dialysis Centre of Nyíregyháza. Ten of them suffered from Polycystic Kidney Disease (PKD). We retrospectively studied the complications and the outcome of peritoneal dialysis among the polycystic patients and compared them with the non-polycystic patients' ones (no. 87).

## Results

The PD was primer dialysis modality for 3/10 of the PKD patients, and for 51/87 of the non-polycystic patients. The average PD treatment period was: 43.5 months for PKD patients, and 28.6 months for non-polycystic patients. The peritonitis frequency was: 1/31 and 1/33 months, respectively. The Gram negative bacteria were more common among the PKD patients: 27,3% vs 11,8%. At the end of the studied period 5/10 PKD and 18/87 (20,6%) non-PKD patients were switched to hemodialysis. The causes of technique failure of PKD patients were 2 leaks, 2 peritonitis, 1 hemoperitoneum, but mainly peritonitis among the non-polycystic patients (14/18). The mortality rate was similar in two patients group: 3/10 and 29/87, 33% in the studied period. Half of PKD patients suffered from several symptoms of increased intraabdominal pressure: 5 hernias, 2 leak/pleural effusion, abdominal or lumbar pain, elevated diaphragm, dyspnoea. These patients were treated with surgical intervention, and we changed to APD with lower dwell volume or to temporary/permanent HD. Further PKD complications: 2 diverticulosis coli, 2 recurrent urinary tract infections and 2 hemoperitoneum.

## Conclusions

The polycystic patients were successfully treated with PD for years. However, we must devote our attention to the possible complications, results of the increased intraperitoneal pressure and the peritonitis derived from unusual sources. Solving and prevention of these complications is fundamental from the point of view of peritoneal dialysis treatment.

P-112

## STILL LOW PERMEABILITY OF PERITONEAL EQUILIBRATION TEST (PET) IN LONG-TERM PERITONEAL DIALYSIS (PD) UNDERGOING FOR OVER 10 YEARS

Kazuhiro Takeda<sup>1</sup>, Masahide Furusho<sup>2</sup><sup>1</sup>Iizuka Memorial Hospital, Japan, <sup>2</sup>Aso-Iizuka Hospital, Japan

## Objectives

Long-term PD patients undergoing for over 10 years are only 3% of all Japanese PD patients at 2016. From 2001 to 2017 in our department, about 100 PD patients were induced. There are about 50% of PD patients for over 5 years with Low (L) or Low average (LA) in PET. The technical survival rate was 62.5%, and the 5-year survival rate was 82%. The aim was to investigate the PET data, volume control and laboratory data of long-term PD.

## Methods

There are 11 long-term PD patients for over 10 years, (six men, and five women; mean age 64.5±8.0y, mean PD duration 142.3± 22.3M), The 9 patients had chronic glomerulonephritis. We examined blood pressure (BP), and laboratory data. Analysis of the body fluid status; extracellular water/ total body water (ECW/TBW; IN BODYR) was performed.

## Results

In 11 long-term PD cases, mean duration volume was 1055±157 ml/day, the mean data of ECW/TBW was 0.40±0.01. The 9 patients are given 4~5-hour-haemodialysis (HD) once a week with PD. Mean KT/V was 1.98± 0.17 with HD (PD-KT/V:1.53±0.26). Mean ultrafiltration volume are 767±836 ml/HD. Also 6 cases show L, 4 show LA and 1 shows HA in the PET. BP was 117/73 mmHg. The mean data was BUN 43.8± 7.4 mg/dl, Cr 12.2± 2.6 mg/dl, Na 136± 2.5 mEq/l, K 4.0 ± 0.6 mEq/L, Ca 9.6± 0.5 mg/dl, P 4.5± 0.9 mg/dl, TP 6.0± 0.5, ALB 3.3± 0.3 g/dl, Hb 12.5± 0.8 g/dl, and intact PTH 126 ± 102 pg/dl, CTR 43.5± 2.2 %. Mean salt intake was 4.9 g/day, and BMI was 22.8± 3.2.

## Conclusions

Long-term PD patients have acceptable volume control and adequacy of dialysis with CAPD and HD once a week. They have been keeping still less permeable peritoneum.

P-113

### CHANGES IN SERUM NT-proBNP, BLOOD PRESSURE LEVELS IN PERITONEAL DIALYSIS PATIENTS WITH ANXIETY OR DEPRESSION

Professor Hulya Taskapan<sup>1</sup>, MD Serkan Kaplan<sup>1</sup>, MD Lale Gonenir<sup>2</sup>, Prof Dr Rifat Karlıdag<sup>2</sup>

<sup>1</sup>Inonu University Medical Faculty Nephrology Department, Turkey, <sup>2</sup>Inonu University Medical Faculty Psychiatry Department, Turkey

#### Objectives

In hemodialysis patients with depression more interdialytic weight gain was reported. The aim of the study was to evaluate the effect of psychiatric disorders on fluid retention in peritoneal dialysis (PD) patients.

#### Methods

In 33 PD patients Short form-36 (SF-36), Beck Depression Scale (BDS), Beck Anxiety Scale (BAS) and Pittsburgh Sleep Quality Index (PSQI) were used to evaluate life quality, depression, anxiety level, and sleep quality respectively. Current and the past 5 months results of hemoglobin, hematocrit, N terminal brain natriuretic peptide (NT-proBNP) levels, urine volume, systolic and diastolic blood pressure were collected

#### Results

Mean age and PD duration were 59,9±14,4 years, 70,5±56,3 months respectively. 33,3% of PD patients had depression disorder, 81,8% anxiety disorder, 69,9 % bad sleep quality. In patients with depression, BAS and PSQI scores were significantly higher compared to those of patients without depression (p0.05).

Current hemoglobin and hematocrite levels in the patients with anxiety were significantly lower than those of patients without anxiety while current NT-proBNP and systolic blood pressure levels were significantly higher in the patients with anxiety (p0.05). We examined associations among slopes (changes) of NT-proBNP, weight, systolic and diastolic blood pressure measurements during the past six month by using regression analysis " (defined as direction of change from baseline to final; a "positive" slope would define an aggregate rise, while a "negative" slope an aggregate fall) and depression, anxiety and poor sleep quality. We could not find any association.

#### Conclusions

PD patients with depression have higher anxiety and poor sleep quality. Low hemoglobin, high NT-proBNP levels and high systolic blood pressure are more common in patients with anxiety. However we could not find any association between presence of depression and positive slope for NT-pro BNP, weight and blood pressure measured by using regression analysis of the past 6 month measurements.

P-114

### NEW EDUCATION MODEL FOR PD PATIENTS AND THEIR CAREGIVERS

Mónika Király, Katalin Tölgyesi, Anett Havasi, Attila Benke

Bbraun Avitum Hungary Zrt, Hungary

#### Objectives

Aseptic non touch technique (ANTT) is a specific type of aseptic technique with unique theory and practice, which is originated by Stephen Rowley. In Hungary within the B.Braun Avitum Hungary network this is a well tried, safe method, which the daily practice of dialysis for nurses to avoid the infectious side effects.

#### Methods

We recognized that these rules may be also applied to the peritoneal dialysis patient and caregiver education program. Last year our dialysis centre had 25 PD patients, and we were connected with 4 caregivers. After reviewing our educational curriculum, we developed a new patient education program based on the ANTT principles. In 2016 new PD patients (n=6) were involved in this new educational process and patients and caregivers, who were earlier trained, were re-educated.

#### Results

The new education program included: hand hygiene practice according to the WHO's standards, the importance of the aseptic fields, identification of the most important key parts and sites, the proper practice of non-touch technique, and the importance of using the protective means.

#### Conclusions

Patients learned the significance of this technique, their showed more cooperative. The education process became more logical, unequivocal and clear that made teaching easier for the nurses. Among new patients, who were educated according to the new program there wasn't contamination originated infection.

P-115

## CHOOSING DIALYSIS MODALITY: WHY NOT PERITONEAL DIALYSIS?

Judit Toth<sup>1</sup>, Imre Kulcsar<sup>2</sup><sup>1</sup>B. Braun Avitum Hungary cPlc. Dialysis Centre No. 6, Hungary, <sup>2</sup>B. Braun Avitum Hungary cPlc. Dialysis Centre No. 6 and Markusovszky University Teaching Hospital, Hungary

## Introduction

Peritoneal dialysis (PD) the first offer as a dialysis modality in our nephrological centre. The prevalence of patients on PD is high enough in our county (212/1million population)..

## Aim of Study

To examine the phenomenon: why go the majority of patients into haemodialysis (HD) program?

## Patients, method

We used a survey with questionnaires at the end of 2016 between our patients who got into chronic HD program last five years and who were on nephrological care before.

## Results

There were asked 117 patients, who treated with HD (70 women, 47 men, mean age 70.3±11.2 years, average time spent on HD (2.30±1.41). 61 of them got into HD on planned and 56 on not planned way.

Nephrologists had not offered PD as dialysis modality to 49 patients. The causes of incapability were: multiple abdominal operations earlier, inadequate mental, physical and social conditions of patients and deficit of helpers.

We have offered PD to 58% of well educated and HD choosing patients, but they have refused this modality. The main causes of refusing were the fear from PD and the deficit of self-care (62%), the inappropriate home environment (14%) and negative information relating to PD (24%). Many of them (9%) have got this advice from his/her GPs.

## Discussion

However 13.7% of dialyzed patients (75 from 568) got into PD as a primary treatment in our centre during last five years, we have to more effort in order to accepting PD. Unfortunately, 62.7% of chronic dialyzed patients started the treatment via unplanned way in this period, and just few of them got into PD.

P-116

## BLEEDING AFTER TENCKHOFF-CATHETER PLACEMENT – ACQUIRED FACTOR VIII. DEFICIENCY

Brigitta Udvardi-Bukits<sup>1</sup>, Andras Szollosi<sup>2</sup>, Erzsebet Soveges<sup>3</sup>, Karoly Schneider<sup>3</sup>, Imre Kulcsar<sup>4</sup>, Laszlo Kovacs<sup>4</sup><sup>1</sup>B. Braun Avitum Hungary cPlc. Dialysis Centre No. 6, Hungary, <sup>2</sup>Erzsébet Hospital, Surgical Ward, Hungary, <sup>3</sup>MH EK Homeland Defence Hospital, Haematology & Nephrology Ward, Hungary, <sup>4</sup>B. Braun Avitum Hungary cPlc. Dialysis Centre No. 6 and Markusovszky University Teaching Hospital, Hungary

## Background

Our dialysis center has provided peritoneal dialysis (PD) since 1978. Previously, Tenckhoff-catheters were placed via an open surgical technique; subsequently, laparoscopic technique for placement have been utilized.

## Objectives

Case study

## Methods

Z.N., (female), was managed for polycystic kidney disease from 1998 She gave birth to two children (the latter in 2011).

## Results

At the start of 2015 we added ZN for renal transplantation waiting list. On the 1st of April 2014, laparoscopic placement of the Tenckhoff-catheter was performed due to the progression of her illness. Preliminary-routine examinations (thrombocytopenia, INR) did not imply blood coagulation disorder. Bleeding was not in her past history. Life-threatening bleeding occurred after the operation from the abdominal surgical area. Therefore 4 further operations were necessary. Further investigation showed her aPTI value elongated (107sec), the factor VIII (FVIII) deficiency (&lt;25%) and high immune-inhibitor level. Bleeding was controlled by the administration of transfusion (FFP, red blood cell, platelet) FVIII in combination with prednisone and cyclophosphamide.

Meanwhile, CAPD on May 12th PD-treatment has begun. We lowered, and then discontinued the dosage of immunosuppressive drugs at the end of June. The FVIII level was resolved (114%), the aPTI value decreased gradually (43sec), immune inhibitor was not detectable. The patient is well, she is on CAPD. Malignancy, infection or systemic immune disease did not appear to be the cause of the FVIII deficiency.

## Conclusion

FVIII deficiency is a rare disease. The causative agents remain unknown in 50% of the cases. The aPTI is now a routine test before surgical interventions in our facility.

P-117 Moderated Poster Session 5

## VITAMIN D IN PERITONEAL DIALYSIS PATIENTS: TO GIVE OR NOT TO GIVE

Kathrine Parker, Dr Anand Vardhan

Manchester Institute of Nephrology & Transplantation, The Royal Infirmary, United Kingdom

Vitamin D deficiency is common and results in poor bone health, muscle weakness and possibly increased risk of infection, cardiovascular disease and cancer. KDIGO recommends Colecalciferol supplementation in CKD but offers no guidance on target levels, dosing and monitoring. PD patients may be at increased risk of deficiency due to losses in peritoneal effluent.

#### Objectives

To characterise the nature and extent of Vitamin D deficiency in a cohort of PD patients. To investigate the approach and practices around Colecalciferol replacement in UK renal units.

#### Methods

Vitamin D levels were measured as part of the standard blood tests conducted every 3 months on prevalent PD patients for a year along with standard biochemical renal profile. A record of Colecalciferol, activated Vitamin D and Cinacalcet use was made. A survey of peritoneal dialysis units in the UK was conducted inviting participants to provide information on management of vitamin D deficiency in their centres.

#### Results

105 PD patients had vitamin D levels reported. Seasonal variation in levels was observed with higher levels in the summer. 24 patients were replete (> 50nmol/L) of which 7 were taking Colecalciferol supplements. 75% of patients tested were deficient of which half severely so (<25nmol/L). There was no significant difference in Calcium, phosphate, ALP and PTH levels between those that were replete and deficient. Of 20 responding UK Renal Units only 25% routinely checked vitamin D levels in PD patients. Colecalciferol replacement and dose used was variable across the centres.

#### Conclusion

Our dilemma on whether to treat Vitamin D deficiency with Colecalciferol may not be unique to us. Signs and symptoms of Vitamin D deficiency are subtle. There is lack of consensus on replacement. Should normal levels of Vitamin D be reviewed? Should there be a multi-centre trial to study benefits of Vitamin D replacement in PD patients?

## P-118

## PLEUROPERITONEAL COMMUNICATION IN PERITONEAL DIALYSIS PATIENTS WITH POLYCYSTIC KIDNEY DISEASE

Valerio Vizzardì<sup>1</sup>, Massimo Sandrini<sup>1</sup>, Annalisa Facchini<sup>1</sup>, Chiara Manenti<sup>2</sup>, Elisa Delbarba<sup>2</sup>, Giovanni Cancarini<sup>1,2</sup>

<sup>1</sup>ASST-Spedali Civili-OU of Nephrology, Italy, <sup>2</sup>University of Brescia, Italy

#### Background

Transudative pleural effusion due to pleuro-peritoneal communication (PPC) is an uncommon complication of peritoneal dialysis (PD). PPC prevalence ranges from 1.6 to 10% in PD patients. PPC is more frequent on the right side and in females. PD is often not proposed to patients with polycystic kidney disease (PKD-pts) due to either possible complications for increased intra-abdominal pressure or infectious risk due to diverticula. This study tries to analyse the outcome of PD in PKD-pts.

#### Methods

Between July 1979 and April 2017, 1025 pts started PD in our centre; 43 (4.2%) had PKD and 982 (95.8%) other nephropathy (NPKD-pts).

#### Results

Not significant difference was found between PKD-pts and NPKD-pts for age at PD initiation. Thirteen (1.3%) cases of PPC occurred (F/M:10/3), seven (F/M:6/1) in PKD-pts (16.3%): five within two months from PD initiation, one after 7 months and one after 25 months. Six cases of PPC occurred in NPKD-pts (0.7%) (p<0.001): three within two months from PD initiation, the others after 5, 28 and 62 months. The median break-in time was 15 days (I-IIIQ: 13-24) in PKD-pts with PPC and 22 days (I-IIIQ: 0-36) (p=NS) in PKD-pts without PPC. PPC was the third cause of dropout in PKD-pts (16%). The median time on PD was 24 (I-IIIQ: 9-48) months in NPKD-pts vs 35 (I-IIIQ: 21-57) months in PKD-pts (NS). Final outcome in PKD pts: 22 shifted to HD, 13 received a kidney transplant and 8 patients had died.

#### Conclusions

In our experience, PKD does not appear to be a contraindication for PD. PPC is more frequent in this population, but its prevalence does not preclude PD as a valid replacement therapy.

P-119

### NUTRITIONAL STATUS ON PERITONEAL DIALYSIS PATIENTS: VALUATION AND ALTERATION'S CAUSES

Valerio Vizzardi<sup>1</sup>, Scilla Maghella<sup>2</sup>, Massimo Sandrini<sup>1</sup>, Annalisa Facchini<sup>1</sup>, Giovanni Cancarini<sup>1,2</sup>

<sup>1</sup>ASST-Spedali Civili, Italy, <sup>2</sup>University of Brescia, Italy

#### Objectives

Malnutrition (MN) is a risk factor of increased morbidity and mortality on peritoneal dialysis (PD) patients. The aim of the study was to assess the nutritional status of PD patients, testing Malnutrition Inflammation Score (MIS) as a screening nutritional test, and evaluate the correlation between nutritional status (NS), appetite and mental-psychological state (MPS).

#### Methods

41 prevalent patients underwent to the assessment of NS, appetite and MPS. The first one was assessed by MIS, albumin, transferrin, triglyceride, lymphocytes and cholesterol; appetite was assessed by Council Nutritional Assessment Questionnaire (CNAQ); MPS by the Mental Component Scale (MCS) of short form-12 (SF-12) questionnaire. MIS and the appetite were evaluated at the first meeting (T0) and six months later (T1), MPS at T1.

#### Results

The percentage of malnourished depended on the method used for the valuation both at T<sup>0</sup> and T<sup>1</sup>. Highest MIS (worst NS) was related to lower nephelometric albumin and cholesterol both at T<sup>0</sup> (p<0,001, p<0,01) and T1 (p<0,001, p<0,05); highest MIS was also related to lower triglyceride at T<sup>0</sup> (p<0,05) and highest PCR at T<sup>1</sup> (p<0,05). At T<sup>0</sup> and T<sup>1</sup>, respectively the 73% and 71% of population presented a negative protein intake; nevertheless, the average value of phosphorous was higher than the hospital's cutoff value. Appetite resulted reduced in 46% at T<sup>0</sup> and 49% at T<sup>1</sup>, but didn't result any correlation with weight loss from T<sup>0</sup> to T<sup>1</sup>. However higher CNAQ at T<sup>0</sup> (better appetite) correlate with lower MIS at T<sup>1</sup> (better NS) (p<0,05). Another factor that can influence the NS is the PMS: lower MCS was related to highest MIS (p<0,01), lower nephelometric albumin (p<0,05) and lower CNAQ (p<0,005).

#### Conclusions

This study demonstrates that MIS can be used to evaluate the NS on PD patients which is influenced by inflammation, appetite and MPS. The latter influences also the appetite.

P-120

### A STRANGE CASE OF PERITONEAL CATHETER DISPLACEMENT

Elisa Delbarba<sup>2</sup>, Chiara Manenti<sup>2</sup>, Massimo Sandrini<sup>1</sup>, Valerio Vizzardi<sup>1</sup>, Giovanni Cancarini<sup>1,2</sup>

<sup>1</sup>ASST-Spedali Civili-OU of Nephrology, Italy, <sup>2</sup>University of Brescia, Italy

A 57-year-old patient was started on peritoneal dialysis due to end stage renal disease secondary to diabetic nephropathy. He had a history of hypertension, HCV-related liver cirrhosis with ascites (Child Pugh score: B) and non-insulin-dependent type 2 diabetes mellitus. He was on methadone due to his previous drug addiction.

A self-locating peritoneal catheter was inserted using a median mini-laparotomic technique, simultaneously a preexisting umbilical hernia was repaired.

A month later NTPD (Nocturnal Tidal Peritoneal Dialysis) was begun with a 30 mL/Kg fill volume, and a Tidal 50%, without any complication. A plain abdominal radiograph demonstrated catheter placement in the right iliac fossa. Nine months later the patient started complaining about right scrotal swelling. We hypothesized a peritoneo vaginal communication. The ultrasound demonstrated an abnormal tip catheter position in the right scrotum. To better delineate the exact abdominal wall configuration and inguinal defects, a peritoneal CT scan was performed administering intrabdominal contrast medium; the results showed omogeneous distribution of contrast medium in the abdominal cavity and showed a bilateral hydroceles.

Despite the presence of a bilateral peritoneo-vaginal communication, a unilateral, mini-invasive approach was chosen due to high ASA score. Hernia repair with a polypropylene mesh and catheter relocation were handled electively, under local anesthesia. The patient was temporarily shifted to haemodialysis. Two weeks after peritoneal dialysis recommencement, left scrotal swelling and catheter disfunction appeared. Surprisingly, a second CT-scan confirmed our suspicion: the catheter tip was dislocated, again, into the patient's scrotum, but this time in the left side. The same surgical approach was undertaken. Currently, four months after surgery, the patient is on NTPD, asymptomatic.

A sustained increase of intraabdominal pressure due to both cirrhosis and peritoneal dialysis could have played a role in the patency of processus vaginalis. We hypotize self-locating catheter could have actively contributed to dislocation.

## P-121

## CAN A SPECIFIC PERITONEAL DIALYSIS (PD) ASSESSMENT TOOL IMPROVE THE RATE OF TRAINING FAILURES IN AN AGING DIALYSIS POPULATION?

Paul Waddington, Kate Brownlow, Mary Fitzpatrick, Fiona Johnston, Sue Lazer, Jean Taylor-Sutton, Enfys Thomas, Claire Smith, Alison Wright

Baxter Healthcare UK, United Kingdom

## Introduction

Individuals undertaking dialysis are of an aging population. There is well documented evidence in decreased cognitive function from around the age of 60. These individuals will also suffer from a lowered renal threshold and associated renal comorbidities, which are known contributory factors in negatively affecting cognitive function. These issues lead to difficulties when being taught and having to learn new skills, such as PD. It has been observed and noted that patients referred for PD training may not be fully and comprehensively assessed in relation to the impact of their age/diagnosis on functional and cognitive ability, which impacts on their ability to train successfully. Patients can struggle with the required skills. This has been the major driver in the necessity to develop a comprehensive assessment tool designed specifically with the needs of this patient group in mind.

## Methods

The tool has been adapted and modified from existing and widely used tools (mRS-9Q Rankin Score (RS)). Including recommendations of aspects pertinent to PD training. Recommendations of assessment criteria in PD training assessment include Visual, cognitive dysfunction, dexterity, activities of daily life, physical needs, reading level, family support, functional impairment and. The PD Assessment Tool combines and adapts these recommendations mapping them into the RS. The physical activities required to perform the tasks are incorporated and sourced from current PD patient training competencies. In line with RS, five required aspects are assessed and then scored out of five, with the resulting number divided by five to give a mean number. The higher the score achieved the greater the level of independence. The score is then mapped onto a recommendation matrix, as per the RS. The recommendations follow established support for PD patients who are having difficulty training, making the whole process measurable and quantifiable.

## Results

The group aged 60+ scored lower in cognitive and functional ability when assessed, requiring additional training input and support. This supports the identification of cognitive decline from the age of 60, the impact of renal disease on this function, and an ever increasing aging population.

Score	All Patients (%)	60 year + (%)
5	68.8	54.7
4	31.1	45.8
3	13.3	20.8
2	4.4	8.3

## Conclusion

The initial study shows that the older the patient being trained on PD the greater need for assessment before training. Patients rarely have comprehensive skills assessment prior to training, with many starting on a PD treatment option that is not best suited to them. The need for an easy to use measurement tool is clear. Getting the patient on the right PD treatment option for them in an effective and timely manner reduces patient training failures and increases patient confidence.

P-122 Moderated Poster Session 1

## CORTICOSTEROID THERAPY IN EARLY INFLAMMATORY PHASE OF ENCAPSULATING PERITONEAL SCLEROSIS (EPS) IMPROVES SURVIVAL

YY Wong, SK Mak, PN Wong, AKM Wong, KY Lo, MW Lo, SF Chan, KC Lo, LY Ho, HK Sin, WT Kwok

Kwong Wah Hospital, Hong Kong

## Objectives

Encapsulating peritoneal sclerosis (EPS) is an inflammatory-fibrotic condition of high mortality in peritoneal dialysis (PD) patient. Corticosteroids is not yet shown useful consistently in treating EPS, most likely related to its late initiation when the disease has already reached the "full-blown" fibrotic stage. Our previous study has successfully identified patients at risk of developing "full-blown" EPS, i.e. those who had persistent sterile peritoneal inflammation after catheter removal for refractory bacterial peritonitis. Our current study aim to assess the effect of corticosteroids in this group of patients.

## Methods

This is a retrospective historical cohort study reviewing 62 patients who underwent Tenckhoff (TK) catheter removal for refractory peritonitis between January 2005 and December 2010 in Hong Kong. Thirty-nine patients (n=39) had persistent sterile peritoneal inflammation as evidenced by persistently elevated C-reactive protein despite adequate antibiotic treatment, and presence of intra-abdominal collection on Computed Tomography (CT) scan while fluid culture of the collections achieved through paracentesis were negative. Twenty-two patients were then treated with corticosteroids ("steroid" group, n=22) while the rest without ("control" group, n=17). The chance of developing "full-blown" EPS, as well as the short-term and long-term survival were assessed.

## Results

The "steroid" group (n=22) was associated with a lower chance of full-blown EPS (14% vs. 47%, p=0.033). They showed a significantly better six months ( $161.0 \pm 9.35$  vs.  $141 \pm 13.1$  days, 95% CI -18.4, -25.7 p=0.013) and one year ( $313.2 \pm 23.8$  vs.  $219.1 \pm 31.3$  days, 95% CI -46.7, -61.6, p=0.013) survival. The five years disease specific survival in the "steroid" group was also statistically better than the control group ( $1770 \pm 52.4$  vs.  $863.2 \pm 224.9$  days, 95% CI -102.5, -440.8, p=0.00%).

## Conclusion

Corticosteroids targeting at the early inflammatory phase of EPS reduces the chance of "full-blown" EPS and is associated with improved survival.

P-123

## CLINICAL CHARACTERISTICS OF DIALYSIS RELATED ENCAPSULATING PERITONEAL SCLEROSIS

Andrey Yankovoy, Irina Sheina

Moscow Regional Research Institut, Russia Federation

### Objectives

Encapsulating Peritoneal Sclerosis (EPS) is a catastrophic complication of peritoneal dialysis (PD). It is important to detect patients with an increased risk of developing EPS, there is no clinical predictor for EPS.

### Methods

A retrospective audit of all patients receiving PD over last 10 years was performed. Out of total of 563 CAPD patients, 8 case developed EPS with an overall prevalence of 1,4%.

### Results

The median age of these patients was 49, 2 years. The median duration of PD before EPS was 78 months and 75% of patients had been on PD for than 4 years. Peritonitis was the main cause of catheter removal in EPS, followed by ultrafiltration failure, and one case of CAPD leakage and exit site infection. The median number of peritonitis events before a diagnosis of EPS was 5 and cumulative duration of peritonitis was 13,4 weeks. 82% of these cases were administered b-blocker for a mean duration of 85 months. The median interval between PD removal and a diagnosis of EPS was 3 months. In 3 case showed high and high-average transporter characteristics. 5 cases were surgically treated and others were treated conservatively. The overall mortality rate was 25,6%.

### Conclusions

EPS is a serious, life threatening complication of PD. Most case had the long PD duration (more than 4 years), a history of recurrent or intractable peritonitis, and high-average transporter characteristics in PET. Therefore, to reduce the incidence of EPS, careful monitoring and treatment, including early catheter removal in patients with severe peritonitis, should be considered for long term CAPD patients with the above characteristics..

## P-124 Moderated Poster Session 2

### EFFICACY OF THE TYPE OF ANESTHESIA IN LAPAROSCOPIC FIXATED PERITONEAL DIALYSIS CATHETER: GENERAL VERSUS SEDATION ANESTHESIA

Emin Zümürtdal<sup>1</sup>, Tuna Bilecik<sup>1</sup>, Sibel Ada<sup>2</sup>, Tevfik Tolga Sahin<sup>1</sup>, Fatma Ulku Adam<sup>2</sup>, Nurten Genc<sup>2</sup>, Yesim Yagbasan<sup>3</sup>, Ihsan Guney<sup>3</sup>, Murat Gunduz<sup>4</sup>

<sup>1</sup>Adana Numune Research and Training Hospital Department of General Surgery, Turkey, <sup>2</sup>Adana Numune Research and Training Hospital Department of Nephrology, Turkey, <sup>3</sup>Adana Numune Research And Training Hospital Department of Anesthesia and Reanimation, Adana, Turkey, <sup>4</sup>Cukurova University Department of Anesthesia and Reanimation, Turkey

### Aim and Background

Chronic ambulatory peritoneal dialysis (CAPD) is cost-effective treatment in patients with end stage renal disease (ESRD). Furthermore, with the evolution of the laparoscopic techniques laparoscopic fixated CAPD catheter insertion have been the modality of choice in these patients. This technique is performed under general anesthesia (GA). In ESRD patients, concomitant diseases such as hypertension, diabetes, coronary artery disease are risk factors that preclude the use of GA. Sedation plus local anesthesia (SA) may be an alternative in these patients. The aim of the present study is to evaluate our preliminary results with GA versus SA in patients with ESRD undergoing laparoscopic fixated PD insertion.

### Patients and Methods

Between January 2016 and February 2017 18 patients (GA[n=13] versus SA[n=5]) underwent laparoscopic PD insertion. These patients were evaluated in terms of demographic data, perioperative parameters and complications observed in the postoperative period.

### Results

Mean patient age was 50.70 years. Female to male ratio was 12/6. Mean BMI of the patients was 26.44kg/m<sup>2</sup>. 83.3% of the patients had concomitant systemic illness. Mean anesthesia time in the GA group was 33(25-42) minutes; and 32(25-40) minutes in the SA group. There was no significant difference among the groups in terms of demographics, perioperative parameters and postoperative complications(p>0.05). However; postoperative ICU need was significantly lower in the SA group when compared to GA group(SA[n=0] versus GA[n=8]; p<0.05).

### Conclusions

SA is a safe an effective method in CAPD insertion in patients with ESRD and it reduces the ICU need observed following GA. It can be performed safely in patients with concomitant systemic disease. Further studies with appropriate randomization are required for efficacy evaluation.

### Keywords

End stage renal disease, Chronic ambulatory peritoneal dialysis, laparoscopy, Laparoscopic fixation, General anesthesia, Local anesthesia, Sedation

P-125

### COLONOSCOPY IN PERITONEAL DIALYSIS PATIENTS: QUESTIONABLE VALUE OF PROPHYLACTIC ANTIBIOTICS: A PROSPECTIVE RANDOMIZED STUDY

Mohamed Ahmed Nasreldin, Abdullah Alhwiesh, Ibrahim Saeed

King Fahad Hospital of The University, Saudi Arabia

#### Objective

To evaluate the need for prophylactic antibiotics in automated peritoneal dialysis (APD) patients undergoing flexible colonoscopy

#### Patients and Methods

A total of 93 patients on automated peritoneal dialysis (APD) undergoing diagnostic colonoscopy were enrolled in a prospective randomized study. Patients were randomized into two age and sex matched groups; group A (46 patients) with intraperitoneal (IP) ceftazidime prior to colonoscopy and group B (47 patients) without prophylactic antibiotics. Relation between peritonitis and different parameters were analyzed.

#### Results

Of all colonoscopies 60.2% showed normal findings, 17.2% with colonic polyps at different sites, 12.9% with angiodysplastic-like lesions, 5.4% with colonic ulcer (s), 3.2% with diverticulae without diverticulitis and 1.1% had transverse colon stricture. Post-colonoscopy peritonitis was documented in 3 (6.5%) and 4 (8.5%) patients in groups A and B respectively ( $p > 0.05$ ); the causative organisms were mainly gram negative bacteria. polypectomy was not associated with increased peritonitis episodes. With multivariate analysis Only age (OR=1.34, 95% CI=1.16-1.64, P=0.0326), diabetes mellitus (OR=0.79, 95% CI=0.68-0.11, P= 0.0279) and albumin levels (OR= 0.84, 95% CI= 1.12-1.36, P= 0.0253) but not antibiotic use were associated significantly with post colonoscopy peritonitis.

#### Conclusion

The relation between prophylactic antibiotic use prior to colonoscopy in APD patients and the risk of peritonitis was lacking. Only old age, diabetes mellitus and low serum albumin appear to be of significance. Polypectomy did not increase peritonitis episodes.

#### Keywords

APD, ESRD, diabetes, colonoscopy, polypectomy, antibiotic prophylaxis, peritonitis.

P-126

### A NOVEL THREE CUFF PERITONEAL DIALYSIS CATHETER WITH LOW ENTRY TECHNIQUE: THREE YEARS SINGLE CENTER EXPERIENCE

Abdullah Alhwiesh, Mohamed Ahmed Nasreldin, Ibrahim Saeed

King Fahad Hospital of The University, Saudi Arabia

#### Objective

To share our 3-year experience with the new, three-cuff peritoneal dialysis (PD) catheter with the low-entry technique and to study its effect on infectious and non-infectious complications as well as its impact on catheter survival.

#### Methods

This is an observational study which was carried out in a University Hospital over 3 years. The study involved 153, three-cuff PD catheter insertions in 150 incident PD patients. The study was carried out in our PD center and extended from December, 2012 till January 2016 with a mean follow-up period of 15 months. All patients used automated peritoneal dialysis (APD). Throughout the study, we analyzed survival rate, functionality and complication profile of our new catheter.

#### Results

Four patients had inguinal hernia and 1 had omental wrapping. Catheter migration, however, was 0.0% with our 3-cuff PD catheter using our new technique. A total of 25 catheters had to be removed. Indications for catheter removal were successful transplantation (n=7), hernia (n=4), omental capture (n=1), ultrafiltration failure (n=2), Psychological causes (n=4), abdominal surgery (n=1), severe tunnel infection (n=3), and unresolved peritonitis (n=3). the rate of peritonitis was as low as 0.106 per patient-year equivalent to 1 episode of peritonitis per 112 patient-months. At the end of the study, catheter survival was 91.3%.

#### Conclusion

The low entry-site of our PD catheter seems to prevent catheter migration. The 3-cuffs probably act as an additional safeguard against peritonitis.

#### Keywords

Peritoneal dialysis, three-cuff PD catheter, migration, peritonitis, catheter survival.

P-127 Moderated Poster Session 2

## THE PHANTOM OF METFORMIN-INDUCED LACTIC ACIDOSIS IN END-STAGE RENAL DISEASE PATIENTS: TIME TO RECONSIDER WITH PERITONEAL DIALYSIS TREATMENT

Abdullah K Al-Hwiesh, Ibrahiem Saeed Abdul-Rahman, Mohamed A. Nasreldin, Abdalla Abdelrahman, Khalid Al-Otaibi, Nehad Al-Audah

Department of Internal Medicine, Nephrology Division, King Fahd Hospital of the University, University of Dammam, Saudi Arabia

**Objective**

Metformin continues to be the safest and most widely used antidiabetic drug. In spite of its well known benefits; metformin use in end-stage renal disease (ESRD) patients is still restricted. Little is reported about the effect of peritoneal dialysis (PD) on metformin clearance and the phantom of lactic acidosis deprives ESRD patients from metformin therapeutic advantages. PD is probably a safe guard against lactic acidosis and it is likely that the use of this drug would be feasible in this group of patients.

**Materials and Methods**

The study was conducted on 83 PD patients with type-2 diabetes mellitus. All patients were on automated peritoneal dialysis (APD). Metformin was administered in a dose of 500 mg-1000 mg daily. Patients were monitored for glycemic control. Plasma lactic acid and plasma metformin levels were monitored on a scheduled basis. Peritoneal fluid metformin levels were measured. In addition, the relation between plasma metformin and plasma lactate was studied.

**Results**

Mean fasting blood sugar (FBS) was 10.9 + 0.5 and 7.8 + 0.7, and the mean HgA1C was 8.2 + 0.8 and 6.4 + 1.1 at beginning and end of the study, respectively ( $p < 0.001$ ). The mean body mass index (BMI) was 29.1 + 4.1 and 27.3 + 4.5 at the beginning and at the end of the study respectively ( $p < 0.001$ ). The overall mean plasma lactate level across all blood samples was 1.44 + 0.6 and plasma samples  $> 2$  mmol/L but  $< 3$  mmol/L was found in 11.8% and levels of 3-3.6 mmol/L in 2.4% plasma samples. Hyperlactemia (level  $> 2$  &  $< 5$  mmol/L) was not associated with overt acedemia. None of our patients had lactic acidosis (levels  $> 5$  mmol/L). Age  $> 60$  was a predictor for hyperlactemia. No relationship between plasma metformin and lactate levels.

**Conclusion**

Metformin may be used with caution in a particular group of ESRD who are on APD. Metformin allows better diabetic control with significant reduction of BMI. The relationship between metformin and plasma lactate levels is lacking. Peritoneal dialysis appears to be a safeguard against the development of lactic acidosis in this group of patients.

**Keywords**

Type-2 diabetes mellitus, metformin, lactic acidosis, ESRD, peritoneal dialysis, Hemoglobin A1-C, BMI, PET.

## P-128

## CAUSES AND RISK FACTORS OF TECHNIQUE FAILURE IN PERITONEAL DIALYSIS PATIENTS: A SINGLE UNIT STUDY

Lilia Ben Lasfar, Yosra Guedri, Wissal Sahtout, Awatef Azzebi, Dorsaf Zallema, Sanda Mrabet<sup>1</sup>, Salma Toumi, Manel Chouchène, Samira Amor, Ferdaous Sabri, Abdellatif Achour<sup>1</sup>

Chu Sahloul, Tunisia

**Objective**

Peritoneal dialysis (PD) has become a treatment modality for end stage renal disease with a peak of its use in 1990 s. The aim of this study was to determine, first the technique survival in peritoneal dialysis patients, and second the causes and risk factors of the technique failure.

**Methods**

This retrospective study was conducted in the Nephrology Department at Sahloul University Hospital in Tunisia. One hundred eighty five patients were included and initiated PD between January 2006 and June 2016 .Causes and risk factors of the technique failure were analysed.

**Results**

Totally among 186 patients undergoing PD, 4.5% of patients leave the technique, at the second year. Ninety eight patients ( 53,84%) had stopped DP .Fifty six patients had technique failure (30%) .Several causes were noted :3 catheter displacement, 35 cases for peritonitis, 14 cases for ultra filtration failure and 3 for catheter dysfunction. There was no association between sex, age, diabetes, initial nephropathy and technique failure but peritonitis influenced significantly PD survival. Most studies showed that Early peritonitis patients were associated with worse technique survival and clinical outcomes .Hence peritonitis patients have poor prognosis. Some other studies demonstrate that older age and lower body mass index were in the other hand associated to PD failure.

**Conclusion**

Peritonitis rate has been reported to be associated with technique failure and overall mortality in previous literatures. This is explained by the inflammatory involvement as well as the histological alterations of the membrane what highlights the importance of the prevention of this complication.

## P-129

## PERITONEAL DIALYSIS CATHETER INSERTION – A COCHRANE SYSTEMATIC REVIEW

[Victoria Briggs](#)<sup>1</sup>, James Fotheringham<sup>2</sup>, Richard Jacques<sup>3</sup>, Michael Campbell<sup>3</sup>, Martin Wilkie<sup>2</sup>

<sup>1</sup>Calderdale and Huddersfield NHS Foundation Trust, United Kingdom, <sup>2</sup>Sheffield Kidney Institute, United Kingdom, <sup>3</sup>School of Health and Related Research, University of Sheffield, United Kingdom

## Objectives

The success of peritoneal dialysis relies heavily on the function of the peritoneal dialysis catheter. This Cochrane systematic review aims to assimilate the current literature available in both adult and paediatric patients, comparing the techniques currently available to insert peritoneal dialysis catheters and to examine the benefits and harms of different PD catheter insertion techniques. The aim is also to establish whether a specific technique used to place catheters in adults and children, who are new to PD, result in any significant differences in clinical outcomes and to identify which technique minimises post-procedure complications including postoperative haemorrhage, PD catheter dysfunction, exit-site infection/peritonitis and bowel perforation.

## Methods

Included studies will examine outcomes in both adults (>18years) and paediatric patients (<18years) suitable for peritoneal dialysis treatment. Studies comparing any two of the following catheter insertion techniques will be included – a) Percutaneous PD catheter insertion b) Fluoroscopic PD catheter insertion c) Peritoneoscopic PD catheter insertion d) Open surgical PD catheter insertion e) Laparoscopic PD catheter insertion. Studies comparing other catheter insertion techniques will also be considered for inclusion including hybrid techniques such as procedures incorporating 'mini-lap' PD catheter insertion. Only randomised controlled trials or quasi-randomised controlled trials will be included in this review. Data extraction using a validated tool will be performed on all eligible studies and meta-analysis will be carried out if sufficient data is available. In those areas where sufficient data does not exist, narrative synthesis will be performed. A full protocol for this systematic review is available in the Cochrane Database of Systematic Reviews.

## Results

Full results are not currently available however preliminary review of the available studies shows marked heterogeneity between studies with marked variation in the clinical outcomes measured and the definition of those outcomes making comparison challenging. Full results will be available for presentation at conference.

## P-130

## USING WHOLE BODY BIOIMPEDANCE SPECTROSCOPY IN A PERITONEAL DIALYSIS POPULATION: ANTHROPOMETRIC EVALUATION AND OUTCOMES

[Filipa Caeiro Alves](#), Rui Silva, Rute Aguiar, David Fiel, Joana Santos, Rita Vicente, Manuel Amoedo, Carlos Pires

Hospital do Espírito Santo de Évora, Portugal

## Objective

Whole body bioimpedance spectroscopy (BIS) is commonly used to access hypervolemia in peritoneal dialysis (PD). Our goal is to understand the significance of the anthropometric data obtained by this method.

## Methods

Retrospective study including incident PD patients, between 2010 and 2016, with a BIS performed at initiation, using a Fresenius Body Composition Monitor. Measurements were repeated at 12th month. Over-hydration (OH), lean tissue index (LTI) and fat mass percentage (%FM) were analyzed, as well as the variation of these parameters, using paired samples T-test and Wilcoxon test. Outcomes (PD dropout and peritonitis) were assessed during a mean follow-up of 36.2 ±23.3 months.

## Results

60 patients, 43.3% males, median age of 51 years old, 81.7% in continuous ambulatory PD and 18.3% in automated PD. All PD prescriptions were based on biocompatible glucose, amino acid-based and icodextrin solutions. At PD initiation, median BMI was 25.0±4.4 Kg/m<sup>2</sup>, mean LTI was 12.1±2.1Kg/m<sup>2</sup> in females and 15.4±3.4 Kg/m<sup>2</sup> in males, mean %FM was 34.1±8.8% in females and 25.8±11.9% in males. The 37 patients reevaluated after first year presented a mean increase of 1.1Kg in body weight, despite the mean reduction of 0.3Kg in OH. Mean %FM and LTI show a non-significant rising trend (29.5% to 30.4%, 14.1 Kg/m<sup>2</sup> to 15.8 Kg/m<sup>2</sup>). Thirty-seven patients (61.7%) presented high %FM adjusted to gender. This group tended to have more dropouts due to multiple causes (43.2% vs 39.1%, p=0.2), a shorter time until dropout (15.7 months vs 20.4 months, ns) and higher incidence of peritonitis at first year (24.3% vs 8.7%, p=0.09). In high %FM group, 20% of patients had normal BMI.

## Conclusion

Using BIS anthropometric information can be useful to prognostic proposes in PD patients. BMI underestimates obesity compared with BIS fat mass evaluation. Reverse epidemiology theory of obesity does not apply to this population.

## P-131 Moderated Posters Session 2

## TRANSITION BETWEEN PERITONEAL DIALYSIS AND HEMODIALYSIS BENEFITS PATIENT SURVIVAL - A CALL FOR INTEGRATED DIALYSIS UNITS

Ana Castro<sup>1</sup>, Fernando Pereira<sup>2</sup>, Laetitia Teixeira<sup>1</sup>, Maria João Carvalho<sup>1</sup>, António Cabrita<sup>1</sup>, Anabela Rodrigues<sup>1</sup><sup>1</sup>Nephrology and Transplantation Department, Oporto Hospital Center, Portugal, <sup>2</sup>Nephrology and Transplantation Department, Prof. Doutor Fernando Fonseca Hospital, Portugal**Introduction**

Survival of end-stage renal disease (ESRD) patients initially treated by peritoneal dialysis (PD) is equivalent or even superior to the survival of those treated by hemodialysis (HD) in the first years of renal replacement therapy (RRT). However, technique failure can occur for a number of reasons, implying transfer to hemodialysis. There are few available data examining the outcomes, including mortality among those who change modality of dialysis.

**Aim**

To evaluate the effect of modality transition (from HD to PD and from PD to HD) on the mortality of PD patients.

**Methods**

We conducted an analysis of prospectively collected registry data as quality control measure, of incident adult PD patients admitted in University Hospital PD unit. The analysis was performed using a Cox model with time-dependent covariates. Time till death and till censure (alive or renal transplant) was considered.

**Results**

The analysis included 504 patients, 58.7% (n=296) were female, the mean age was 47.82 years (SD=15.59 years) and 22.1% (n=111) had Diabetes mellitus (DM). Two hundred and fifty five (50.6%) patients did only DP, 91 (18.1%) begin treatment with HD, before PD admission, 107 (21.2%) begin treatment with DP and change to HD and 51 (10.1%) begin with HD, change to DP and change again to HD. A Cox model was performed for the time until death considering gender, age and diabetes as baseline covariates and change of dialysis as time-dependent covariates - results are presented in Table 1.

	Adjusted HR	95% CI	p
HD Pre			<0.001
Yes	0.43	0.29-0.63	
No	1	-	
HD Pos			<0.001
Yes	0.34	0.23-0.50	
No	1	-	
Gender			0.388
Male	0.87	0.62-1.20	
Female	1	-	
Age	1.04	1.03-1.05	<0.001
Diabetes			<0.001
Yes	2.11	1.47-3.01	
No	1		

As observed, change of dialysis modality, age and diabetes are predictive factors of death in CKD. As expected both age and diabetes are detrimental, but transfer of dialysis either from HD to PD and from PD to HD protected life.

**Conclusion**

We conclude that transition between modalities, whether from HD to PD or from PD to HD, might have a positive impact on survival. Therefore, an integrated approach could be beneficial in the management of ESRD patients.

## P-132

## DEPRESSION IN ESRD ACCORDING WITH TYPE OF DIALYSIS: BETTER IN PERITONEAL DIALYSIS?

Pietro Dattolo, [Luigi Cirillo](#), Rossella Cannavò, Nunzia Paudice, Pamela Gallo, Giuseppe Cestone, Giuseppe Ferro, Chiara Somma, Alma Mehmetaj, Roberta Cutruzzulà

Nephrology and Dialysis Unit Firenze II, Italy

## Objectives

Depression is the most common psychiatric disorder among chronic dialysis patients ranging from 22.8 to 39.3% and is a risk factor for morbidity and mortality; despite of this nephrologists have just recently become aware of this problem. It is commonly assumed that peritoneal dialysis has less impact on patient's quality of life, even if there are few studies that confirm this. The aim of our study was to assess the prevalence of depression between hemodialysis (HD) and peritoneal dialysis (PD).

## Methods

PHQ-9 has been administered to all patients who have been for at least three months (HD or PD). The questionnaire, validated in dialysis setting, consists of nine questions with numeric answer (from 0 to 3), the cut-off for depression is a sum of 10, while score from 20 indicates major depression. Data have been expressed as mean standard deviation. T-test and chi-squared and ANOVA were used when appropriate. We performed statistics with SPSS.

## Results

126 patients (105 in HD and 21 in PD) were included in the study. The mean age of patients was  $66.5 \pm 30.5$  in HD, while  $56 \pm 14.5$  in PD. The dialysis vintage was  $80.9 \pm 80.9$  mo in HD and  $31.1 \pm 48.2$  mo in PD. In HD, the overall prevalence of depression was 27%, while in PD was 15%. Prevalence stratified for severity was (HD vs PD) stage 1: 40% vs 15%, stage 2: 10% vs 10%, stage 3: 11% vs 5%, stage 4 (higher severity): 2% vs 0%

Type of dialysis, age and phosphoremia have been shown to be independent factors for the severity of depression.

## Conclusion

The results confirm a lower prevalence of depression in patients undergoing PD; they also have low grade depression with slight symptoms; moreover there were no cases of major depression in PD group. Nevertheless, mean age difference between the two groups and greater dialysis age in HD patients should be considered interpreting these data.

## P-133

## PERITONEAL ULTRAFILTRATION: EFFECT ON QUALITY OF LIFE AND CAPACITY FUNCTIONAL IN PATIENTS WITH REFRACTORY HEART FAILURE

[Veronica De La Espada](#)<sup>1</sup>, [Carmen Collado](#)<sup>2</sup>, [Pedro Luis Quirós Ganga](#)<sup>1</sup>, [Cesar Remon](#)<sup>1</sup>

<sup>1</sup>Nephrology Hupr, Spain, <sup>2</sup>Cardiology Hupr, Spain

## Introduction

Refractory heart failure (CRF) is a growing health problem and one of the Main causes of global morbidity and mortality. Peritoneal ultrafiltration consists of the Exchange of solutes and water between two compartments (blood and dialysis fluid) through of a semipermeable membrane (peritoneum).

## Objective

To evaluate the quality of life and the functional class of the patients included in the Peritoneal dialysis (PD). The changes in the Fraction of Ejection of the Left Ventricle (LVEF), the glomerular filtration rate (GFR) and systolic blood pressure (SBP) at one year of follow-up.

## Materials and Methods

Prospective longitudinal study of patients diagnosed with RCC included in the program Of DP in order to evaluate the quality of life and the degree of functional class per year of tracing. Quality of life was analyzed using the SF-36 questionnaire (Short Form-36) and the CF degree According to the New York Heart Association (NYHA) classification. Fifteen patients with a diagnosis of RCC in the PD program were included and evaluated at one year of follow up. All of them fulfilled the inclusion criteria for PD. Once the Tenckhoff catheter was inserted, the usual Maturation for two weeks. Subsequently they were subjected to icodextrin exchange Alone or with dextrose according to the presence of renal disease. DP was attempted in 3 other patients in whom the peritoneal catheter was placed, but during the Two of them died from cardiac causes and another did not DP due to abdominal mechanical problems.

## Results

The results were analyzed in the 15 patients before starting PD and one year after PD. 73.3% were men with a mean age of 66.2 years. An improvement in quality of life was observed (mean score  $28 \pm 2$  vs  $58 \pm 1$ ) and the degree of Functional class (according to NYHA II 20% and IV 80% vs. II 100%). There was no worsening of the analyzed values secondarily:- LVEF (mean value  $31.6 \pm 14.4$  vs.  $41.2 \pm 10.4\%$ ) - GFR ( $37.4 \pm 18.8$  vs  $40.6 \pm 34$  ml / min / 1.73m<sup>2</sup>) - PAS (108 vs. 109 mmHg CONCLUSION: Peritoneal ultrafiltration improves the quality of life and the degree of functional capacity in Patients with RCC. There was a reduction in hospital readmissions, no worsening Of LVEF, GFR or BP.

P-134

## THE INCIDENCE OF PATIENTS IN PERITONEAL DIALYSIS GROWS ANNUALLY IN ANDALUSIA TO DOUBLE IN A DECADE

Veronica De La Espada, Pedro Luís Quirós, César Remón

Nephrology Hupr, Spain

### Introduction and objectives

Since 1999 the Information System of the Autonomous Coordination of Transplants of Andalusia collects all the data of patients in renal replacement therapy (TRS) in our Community. One of the efficiency goals known in the TRS to increase the use of peritoneal dialysis (PD). The annual analysis of this registry allows to know the evolution of this technique in our Community. We present the analysis of the PD from 1999 to 2016 to know how has been its evolution, the distribution by provinces and the rate of growth.

### Results and conclusions

The total number of patients treated between 1999-2016 was 2743. Of these, 597 during 2016; On December 31st, they remained in program 378. 59% are men and the average age is  $56.43 \pm 16.3$  (41.3% in the range of 61 to 80 years)

The evolution of the annual incidence (Figure 1) shows how, since the beginning of the registry, it has doubled, from 93 incident patients in 1999 to 200 in 2016, with a slight decrease in the last two years. With more stimulating policies on PD, this slope of growth has been accentuated.

However, not all provinces have a homogeneous incidence (Fig. 2). If we analyze the average incidence of the period per million inhabitants (ppm), it is observed that Cadiz and Jaén lead the Community (36 and 29 ppm respectively), surpassing the average Andaluza (22) and Spain (22). However, all provinces are growing in 2016 (incidence 17.5-46.6 ppm). All these data show that the PD in Andalusia has experienced a clear growth, doubling the incidence in the last decade, although it is not homogeneous, it is universal for the different provinces, especially in recent years.



P-135

## BIO IMPEDANCE MEASUREMENTS TAKEN OVER A PERIOD OF TIME MAY BE BETTER PREDICTORS OF SURVIVAL THAN BASELINE MEASUREMENTS IN PERITONEAL DIALYSIS PATIENTS

Hari Dukka<sup>1</sup>, Zanzhe Yu<sup>2</sup>, Graham Woodrow<sup>3</sup>, Martin Wilkie<sup>4</sup>, Mark Lambie<sup>1</sup>, Simon Davies<sup>1</sup>

<sup>1</sup>University Hospitals North Midlands, United Kingdom, <sup>2</sup>Renji Hospital, China, <sup>3</sup>The Leeds Teaching Hospitals, United Kingdom, <sup>4</sup>Sheffield Teaching Hospitals Foundation Trust, United Kingdom

### Objectives

Numerous recent studies have shown that a single measure of body composition estimated from bioimpedance (BI) in dialysis patients is predictive of survival. However, fluid status varies with time and it is not known whether repeated measures improve predictions when compared to a single measure.

### Methods

We analysed the long-term predictive value of baseline and longitudinal (5 measures over 12 months). BI measurements obtained from 289 patients enrolled into the UK and Shanghai BI trial (4 centres, 2009-2010). Patients were followed up until a censor date of 30 April 2016 and events such as death, Haemodialysis and transplantation were recorded. Analysis was performed using Cox model stratified for centre.

### Results

On univariate analysis, increased extracellular water to total body water ratio (ECW/TBW) and lower phase angle (PA) predicted worse survival with HR's of 1.063 (95% CI 1.030-1.097) and 0.792 (95% CI 0.671-0.933) respectively. In an analysis adjusted for age, co-morbid score, albumin and urine volume, baseline values of both ECW/TBW and PA provided estimated hazard ratios closer to 1 (HR 1.023, 95% CI 0.984-1.063, and HR 0.913, 95% CI 0.761-1.095 respectively). When time varying rather than baseline values were used in the same adjusted analysis, the goodness of fit statistics improved significantly (ECW/TBW  $\Delta$ -2LL 7.7, PA  $\Delta$ -2LL 6.2) and estimated HR's were further from 1 (ECW/TBW HR 1.063, 95%CI 1.023-1.106, PA HR 0.726, 95%CI 0.577-0.913).

### Conclusions

Our analysis demonstrates that repeated BI measurements over a period of time increases the predictive value compared to baseline measurements.

## P-136

## REASONS FOR DROP-OUT OF PERITONEAL DIALYSIS PATIENTS IN A TERTIARY CARE HOSPITAL: SINGLE CENTER EXPERIENCE

Necmi Eren<sup>1</sup>, Yasin Eryilmaz<sup>1</sup>, Serkan Bakirdogen<sup>2</sup>, Sibel Gokcay Bek<sup>3</sup>, Nuri Gonullu<sup>4</sup>, Erkan Dervisoglu<sup>1</sup>, Betul Kalender<sup>1</sup>

<sup>1</sup>Kocaeli University School of Medicine, Division of Nephrology, Turkey, <sup>2</sup>Canakkale Onsekiz Mart University School of Medicine, Division of Nephrology, Turkey, <sup>3</sup>Kocaeli State Hospital, Department of Nephrology, Turkey, <sup>4</sup>Kocaeli University School of Medicine, Department of General Surgery, Turkey

## Objectives

By the end of 2015 in Turkey the ratio of peritoneal dialysis (PD) among whole dialysis population was 5,3% showing a decline in years. Along with decline in new PD patients, increasing number of PD drop-outs and increase in renal transplantation (prevalence 17.3%) are the reasons of this decrease. In this study, we investigated the reasons of PD drop-out between 2010 and 2017.

## Methods

The study was carried out retrospectively by reviewing PD patients files. Patients with short PD duration (<3 months) or lost to follow-up were excluded. The data were analyzed with SPSS 20.0.

## Results

We found that 224 out of 354 PD patients discontinued PD therapy and 185 patients (88 women, 97 men, mean age: 53.9 ± 14.9 years) fulfilling inclusion criteria were present. The etiology of end-stage renal disease (ESRD) in these patients were DM (N = 65, 35.1%), HT (n = 59, 31.9%), unknown (n = 36, 19.5%), polycystic kidney disease (n = 6, 3.2%), glomerulonephritis (n = 6, 3.2%) and other causes (n = 13, 7.1%). The median duration of PD treatment was 39 months (25-75 percentiles: 18-71.5 months). The causes of PD discontinuation were death (n=95, 51.4%), renal transplantation (n=37, 20%), refractory peritonitis (n = 32, 17.3%), ultrafiltration failure (n = 12, 6.5%), technical failure (n = 5, (N = 1, 0.5%), patient preference (n = 1, 0.5%) and abdominal surgery (n = 1, 0.5%) respectively.

## Conclusion

In our previous study we found that refractory peritonitis and death were the first two reasons of PD drop-out. This rate due to renal transplantation was 4.5%. However in this study, we found that the length of stay of patients on PD was increased, drop-outs due to refractory peritonitis decreased significantly and those due to renal transplantation increased.

## P-137

## IMPACT OF FLUID OVERLOAD IN NUTRITIONAL AND INFLAMMATORY STATUS IN PERITONEAL DIALYSIS

Rachele Escoli<sup>1</sup>, Alice Lança<sup>1</sup>, Rita Alves<sup>1</sup>, Hernâni Gonçalves<sup>1</sup>, Paulo Santos<sup>1</sup>, Francisco Ferrer<sup>1</sup>, Ana Vila Lobos<sup>1</sup>

Centro Hospitalar do Médio Tejo, Portugal

## Objectives

Chronic fluid overload (FO) is a common and serious problem that leads to severe complications in peritoneal dialysis (PD). In this study, we investigated the relationship between nutrition, inflammation and body fluid volumes measured by multifrequency bioimpedance analysis (BIA) in PD patients.

## Methods

We recorded baseline characteristics of 45 PD patients, determined associations with volume measurements using BIA and analyzed inflammatory and nutritional parameters.

## Results

We detected predialysis fluid overload in 42.2% (n=19) of all patients with FO defined as OH/ECW $\geq$ 15%. In this subgroup, the absolute FO was 4.35 $\pm$ 5.29 L and the OH/ECW 20.36 $\pm$ 3.72%. The following variables were significantly (p<0.05) associated with FO (OH/ECW>15%): diabetes prevalence (52.6% vs. 19.2%) and peripheral arterial disease (31.6% vs. 7.7%) and average Charlson Score Index (6.11 $\pm$ 3.28 vs. 3.38 $\pm$ 1.53). Concerning inflammatory status, both CRP (0.71 $\pm$ 0.84 vs. 0.40 $\pm$ 0.47mg/dL) and ferritin (322 $\pm$ 209.48 vs. 175.15 $\pm$ 267.4\_g/L) were significantly (p<0.05) associated with FO. In nutritional analysis, statistically significant results were found with nPCR (1.18 $\pm$ 0.71 vs. 1.12 $\pm$ 0.47g/Kg/day, p=0.032) and albumin (2.70 $\pm$ 0.58 vs. 3.57 $\pm$ 0.32 g/dL, p=0,004). Correlation analysis showed that FO was negatively associated with albumin (r= -0.84, p<0.001), but no association was found with the other nutritional and inflammatory markers. Logistic regression model selected albumin (OR 0.013, CI:0.001-0.176, p=0.001) as a significant predictor of FO in the multivariate analysis.

## Conclusions

Hypoalbuminemia is an important determinant of FO in PD patients. In this study, we were able to confirm this inverse association between the degree of FO in PD patients and albumin levels.

P-138

### PERITONEAL DIALYSIS CATHETER PLACEMENT: COMPARISON OF SURGICAL AND PERCUTANEOUS TECHNIQUES

Catarina Eusébio<sup>1</sup>, Rui Castro<sup>1</sup>, Luís Oliveira<sup>1</sup>, Cláudia Bento<sup>1</sup>, Fernando Próspero<sup>2</sup>, Natália Silva<sup>1</sup>, Sofia Cerqueira<sup>1</sup>, Joana Rocha<sup>1</sup>, Catarina Prata<sup>1</sup>, Teresa Morgado<sup>1</sup>

<sup>1</sup>Serviço De Nefrologia, Hospital de Vila Real, CHTMAD, Portugal, <sup>2</sup>Serviço de Cirurgia, Hospital de Vila Real, CHTMAD, Vila Real, Portugal

#### Introduction

Infectious and mechanical catheter complications are an important cause of morbidity and drop-out in Peritoneal Dialysis. There are two methods for insertion of the catheter: surgical (laparotomy and laparoscopy) and percutaneous.

#### Objectives

The aim of our study was to review peritoneal dialysis catheters results, with analysis of mechanical and infectious complications, catheter survival and surgical and percutaneous techniques comparison.

#### Materials and Methods

A retrospective review of peritoneal dialysis catheters placed between 2014 and 2016 was performed. Data analysis was fulfilled using SPSS® (version 20).

#### Results

55 Peritoneal Dialysis catheters were introduced in a total of 52 patients. The median follow-up was 401 days. The mean age of the patients was  $56 \pm 17$  years, being 50% male. In 91% and 47% there was a history of Hypertension and Diabetes, respectively. Thirty-six percent of the patients were obese and 27% had history of previous abdominal surgery. Most catheters were placed by the surgical technique (35 laparotomies and 6 laparoscopies) and the percutaneous technique was used in 14 cases. Eleven catheters presented mechanical dysfunction (20%) and peritonitis affected 21 patients (38%). The peritonitis/catheter/year rate was 0,32. Comparing medical and surgical techniques, there was no difference in mechanical complications (21% vs 19.5%,  $p = 0.88$ ) or infections (36% vs 39%,  $p = 0.83$ ). The peritonitis rate in the first trimester after catheter placement was higher for the percutaneous technique (36% vs 12%,  $p = 0.12$ ). Mechanical and infectious complications were not different when compared the diabetic and non-diabetic population. The 12 month survival of the catheters was 85%.

#### Conclusions

In our study mechanical dysfunction in percutaneous and surgical catheter placement techniques was similar. Peritonitis in the first trimester were more frequent with percutaneous technique. However the inferior number of catheters introduced by this procedure may be an important limitation.

P-140

### OUTCOMES AFTER SIMULTANEOUS PANCREAS-KIDNEY TRANSPLANTATION AND DIALYSIS MODALITY

Miguel Verdelho, Ana Carina Ferreira, Inês Aires, Anibal Ferreira, Fernando Nolasco<sup>1</sup>

Centro Hospitalar de Lisboa Central - Hospital Curry Cabral, Portugal

The aim of our study was to compare outcomes among peritoneal dialysis (PD), haemodialysis (HD) and pre-emptive (PE) patients submitted to simultaneous pancreas-kidney transplantation (SPKT). Single-centre retrospective cohort study of patients submitted to SPKT since 2011. The study outcomes were occlusion, intra-abdominal infection, a composite of the two, and graft survival. Statistical analysis was performed using STATA.

We studied 46 SPKT patients, 63% males, 93.5% Caucasian, diabetes vintage of 25 (20-30) years, mean age  $39.2 \pm 7.5$  years, mean BMI  $22.6 \pm 3.5$ , median HbA1c 8.85 (7.65 – 10.45)%. Median dialysis vintage was 24 (15 -43) months [HD-time 24 (14 – 39) months, PD-time 20 (14-34) months]. The majority of patients were on HD ( $n=36$ , 78%); 15 patients (33%) performed PD; only 7 patients (15%) were on PD at time of transplant. PE SPKT in 3 patients. Nine patients (19.5%) presented intra-abdominal infections, 26 (56.5%) all-cause infections, and 5 (11%) occlusion episodes. At the end of follow-up [25 (14-42) months], 1 patient died, 4 loss their grafts.

Using Fisher's exact test we found no association between dialysis modality/PE and the study outcomes. In logistic regression analysis, we found a trend between dialysis and HD time and graft loss ( $p=0.07$ ), but no association with PD time. We found an association between HD time and occlusion ( $p=0.03$ ), but no association with PD time. Using survival analysis, with dialysis vintage, we found no association between the different dialysis modalities and occlusion, intra-abdominal infection, or composite outcome. Nevertheless, we found a protective association between passing through the 2 modalities and graft survival (HR 0.4). Adjusting for age, BMI and HbA1c the protective role was maintained (HR 0.13).

We know dialysis vintage associated with worse outcomes in single kidney transplantation. It seems that in SPKT saving time in HD with PD could be good option. between HD time and occlusion ( $p=0.03$ ), but no association with PD time.

P-141

## PLANNING VASCULAR ACCESS IN PERITONEAL DIALYSIS – DEFINING HIGH RISK PATIENTS

Hugo Ferreira<sup>1</sup>, Ana Nunes<sup>1</sup>, [Ana Oliveira](#)<sup>1</sup>, Ana Beco<sup>1</sup>, João Frazão<sup>1,2,3</sup>, Manuel Pestana<sup>1,2,3</sup><sup>1</sup>Nephrology Department, Centro Hospitalar de São João, Portugal, <sup>2</sup>Nephrology and Infectious Diseases Research and Development Group, INEB-(I3S), Portugal, <sup>3</sup>Faculdade de Medicina da Universidade do Porto, Portugal

## Background and Aims

Peritoneal dialysis (PD) is an effective renal replacement technique, however, every year a considerable amount of patients dropout to hemodialysis (HD). Our aim was to identify those patients in risk to timely place an arteriovenous fistula (AVF).

## Methods

Case-control study enrolling all prevalent patients in 2014 and 2015 in our clinic. Two study groups were defined from the same population.

## Results

183 patients eligible, average age of  $55.2 \pm 14.8$  years, 56,3% male, 31,1% diabetic and 49,7% on continuous ambulatory PD. The average follow-up time was  $42,1 \pm 25,6$  months. Eighty-five patients had an AVF, 47 (55,3%) used it sometime during follow-up, 8 (9,4%) were unable to use it and in 30 patients (35,3%) was never utilized. In those patients who dropped out to HD, 34 (47,2%) initiated HD by AVF, 2 (2,8%) needed a catheter due to non-functioning AVF and 36 (50%) had no AVF also needing a catheter placement. Group 1: 72 case-patients who dropped out definitively to HD, 111 control-patients (PD remaining, transplanted, recovered renal function or dead). Group 2: 101 case-patients that needed HD transiently or definitively, 82 control-patients never needing HD. In multivariate analysis, Kt/V  $<1.7$  [odds ratio (OR) 3.00, 95% confidence interval (95%CI): 1.20-7.50], albumin  $<35\text{g/L}$  (OR 4,03, 95%CI: 1,26-12,92), hospitalizations number (1 to 3: OR 2,74, 95%CI: 1,15-6,53 and 4 or more: 10,48, 95%CI: 3,62-30,36) and 2 or more peritonitis (OR 2,50, 95%CI: 1,03-6,07) were predictors of HD dropout (group 1). Additionally, residual renal function  $<2\text{ml/min}$  (OR 2,92, 95%CI: 1,18-7,19) and two or more PD-related surgery interventions (OR 3,44, 95%CI: 1,41-8,41) were associated with any need of HD (group 2).

## Conclusion

Low Kt/V, low albumin, higher number of hospitalizations and peritonitis were factors associated with HD dropout, thus, probably identifying a high-risk PD population where arteriovenous access should be weighted.

P-142

## LERCANIDIPINE ASSOCIATED CHYLOUS ASCITIS IN A PATIENT SUBMITTED TO PERITONEAL DIALYSIS CATHETER INSERTION

Hugo Ferreira<sup>1</sup>, Ana Nunes<sup>1</sup>, [Ana Oliveira](#)<sup>1</sup>, Ana Beco<sup>1</sup>, João Frazão<sup>1,2,3</sup>, Manuel Pestana<sup>1,2,3</sup><sup>1</sup>Nephrology Department, Centro Hospitalar de São João, Portugal, <sup>2</sup>Nephrology and Infectious Diseases Research and Development Group, INEB-(I3S), Portugal, <sup>3</sup>Faculdade de Medicina da Universidade do Porto, Portugal

We report a case of a 38-year-old-female patient who was referred to our clinic to start peritoneal dialysis (PD) due to hypertensive stage G5A3 chronic kidney disease (CKD). She had no other medical history.

The patient was submitted to peritoneal dialysis catheter insertion by laparoscopy, however, very cloudy ascitis in the pelvic pouch was observed during the procedure, with no other relevant laparoscopic findings. A sample was sent to cultures and the procedure was continued due to the short-expected need for dialysis. She was started on doxycycline and ceftriaxone for presumed pyosalpingitis. However, in subsequent clinic visits her peritoneal drainage continued very milky without any peritonitis signs. No history of abdominal surgery or trauma were present. Cultures came negative and new samples were sent to exclude other causes. The liquid revealed a high triglyceride (539mg/dL) and low cholesterol (68mg/dL) levels, moreover, ADA was negative, LDH was normal, cytology did not suggest peritonitis (1036 cells, 23,8% polymorfonuclear cells) and immunophenotyping was polyclonal. Blood samples were unremarkable besides CKD abnormalities and the second cultures remained negative. Her ongoing medication was revised and lercanidipine was discontinued. After this, the liquid cleared rapidly.

Chylous ascitis (CA) is a rare complication in patient undergoing PD. Milky aspect is characteristic and should raise the suspicion to this diagnosis. The causes are wide and include malignancy (commonly lymphomas), cirrhosis, tuberculosis, Whipple disease, pancreatitis and dihydropyridine calcium channel blockers (D-CCB). Several cases of D-CCB-associated CA in PD patients have been reported. The mechanisms remain obscure and D-CCB discontinuation leads to a rapid CA disappearance. Nonetheless, association of D-CCB with CA in patients not yet in PD is rare. We found two cases: one with microscopic polyangiitis and other with systemic lupus.

We report a case of lercanidipine associated CA, documented during PD catheter placement, previously to PD initiation.

## P-143 Moderated Poster Session 1

### QUALITY OF LIFE IN PERITONEAL DIALYSIS PATIENTS: ONE CENTER EXPERIENCE

Joana Gameiro, Marta Pereira, Cristina Pinto Abreu, António Gomes da Costa

Division of Nephrology and Renal Transplantation, Centro Hospitalar Lisboa Norte, EPE, Portugal

Peritoneal dialysis (PD) is a home-based therapy potentially promoting a better quality of life (QoL). The aim of this study was to evaluate the QoL in a PD center.

Forty-three patients from the PD Unit of Centro Hospitalar Lisboa Norte were included. Participants self-administered the Kidney Disease Quality of Life Instrument (KDQOL-SF), a questionnaire for dialysis patients that evaluates physical and emotional health, patient's perception of health and its impact in daily life.

Fifty one percent were female. Mean age was  $52.2 \pm 17.4$  years. Fifty eight percent of patients completed high school and 44.2% were employed. PD was the first renal replacement therapy (RRT) in 72.1%. Only 9.3% were transferred from haemodialysis due to vascular access failure. Only 27.9% were on continuous ambulatory PD. Mean RRT duration was  $2.8 \pm 3$  years.

Males had higher physical health estimates ( $49.1 \pm 6.4$  versus  $43.9 \pm 7.4$ ,  $p=0.021$ ) and better perception of overall health ( $49 \pm 16.2$  versus  $39.4 \pm 13.6$ ,  $p=0.039$ ). Females had better quality of social interactions ( $59.5 \pm 11.5$  versus  $50.8 \pm 11.4$ ,  $p=0.016$ ). Patients aged over 65 had lower physical function ( $52.9 \pm 33$  versus  $76.1 \pm 15.7$ ,  $p=0.004$ ), more limitations caused by physical ( $79.2 \pm 33.4$  versus  $100 \pm 0$ ,  $p=0.001$ ) and emotional health ( $86.1 \pm 30$  versus  $100 \pm 0$ ,  $p=0.014$ ), and lower vitality ( $45.4 \pm 18.5$  versus  $58.8 \pm 14.9$ ,  $p=0.018$ ). Patients who choose PD had better perception of overall health ( $60.8 \pm 16.1$  versus  $37.5 \pm 26.3$ ,  $p=0.013$ ), less limitations caused by physical ( $96.2 \pm 13.5$  versus  $75 \pm 50$ ,  $p=0.038$ ) and emotional health ( $98.3 \pm 7.4$  versus  $75 \pm 50$ ,  $p=0.006$ ), as well as less pain ( $71.4 \pm 25$  versus  $35.6 \pm 19$ ,  $p=0.008$ ). There was no difference in RRT duration between these groups. Patients in whom PD was the first RRT had less renal disease burden interference on daily life ( $76.2 \pm 18.3$  versus  $62 \pm 21.3$ ,  $p=0.038$ ). There were no differences between PD modalities.

Both kidney disease and patient's perception of health have negative impact in QoL, hence therapy choice and motivation are crucial factors on the QoL.

## P-144 Moderated Poster Session 1

### QUANTIFYING SLEEP IN PERITONEAL DIALYSIS PATIENTS: OBJECTIVE AND SUBJECTIVE ASSESSMENT

Els Holvoet, Isabel Van Dorpe, Clement Dequidt, Nathalie Polfliet, Wim Van Biesen, Sunny Eloit

Nephrology, Ghent University Hospital, Belgium

#### Objective

Peritoneal dialysis (PD) patients experience a high burden of fatigue and insomnia, directly affecting their quality of life (QoL). Fatigue is prioritised as outcome by patients in the Standardised Outcomes in Nephrology Group (SONG). Objective assessment of sleep is however cumbersome.

We investigated whether subjective scoring of sleep by validated surveys is correlated with objective measures.

#### Methods

Actual sleep time, sleep efficiency and fragmentation index (measure for sleep quality) were measured as objective parameters in 8 patients on PD (2 female, age  $65.1 \pm 19.2$ ) using a Motionwatch for three consecutive nights. Subjective sleep was assessed using Insomnia Severity Index (ISI), Pittsburgh Sleep Quality Index (PSQI), and PROMIS-29 questionnaires subscales sleep disturbance and fatigue.

#### Results

Actual sleep time was  $6:40 \pm 0:49$ , sleep efficiency  $79 \pm 13\%$  and fragmentation index  $48.2 \pm 23.2$ , indicating that objective sleep quality was medium to bad. This was incompletely captured by subjective measures: ISI  $7.5 \pm 4.7$  (range 0-28) (i.e. no clinically significant insomnia) and PSQI  $7.4 \pm 3.9$  (range 0-27). The PROMIS-29 domains of sleep disturbance and fatigue ( $49 \pm 8$  and  $50 \pm 10$ , respectively) did not deviate from a general reference population. ISI and PROMIS sleep disturbance did not correlate with any of the objective sleep parameters, while PSQI correlated with actual sleep (Pearson  $R=-0.783$ ). Importantly, PROMIS fatigue correlated with fragmentation index ( $R=-0.738$ ). PSQI did not correlate with any of the other subjective scores, whereas PROMIS sleep disturbance correlated with ISI and PROMIS fatigue.

#### Conclusion

PD patients experience objective medium to bad sleep quality, which is poorly reflected in existing subjective measures. Fatigue as assessed by PROMIS correlated with objective sleep fragmentation. Diagnosing insomnia based on self-report questionnaires is probably insufficient to diagnose sleep disturbance. The PROMIS domain fatigue can be used as an indicator to identify patients for further objective sleep analysis.

P-145 [Moderated Poster Session 4](#)

## DEVELOPMENT AND USAGE OF A FREE MOBILE MEDICAL APP FOR TELEMONITORING OF PD PATIENTS

[Francesco Iannuzzella](#), Mariarosa Govi, Elena Borghi, Alfredo Stefani, Mattia Corradini, Mariacristina Gregorini

Ircs Arcispedale S. Maria Nuova, Italy

**Objectives**

Using only free open-access resources, we developed an intuitive medical App for accurate telemonitoring of peritoneal dialysis (PD) patients. The App allows patients to record all the information needed for their visits: ultrafiltration, weight, blood pressure and the presence or absence of symptoms. This information is then automatically transmitted to the PD clinic.

**Methods**

We screened all patients who attended our PD clinic between January 2015 and May 2016. From a total of 73 PD patients, 13 (8 M/5 F) patients, aged between 24 and 74 years (median 51 years) formed the final study cohort. This remote monitoring group answered daily symptom question and took daily weight, ultrafiltration, and blood pressure readings for a mean follow-up of 94+/- 13 days. The self-administered KDQOL-SF Instrument was used to assess quality of life. Continuous variables were reported as mean +/- SD, categorical data as frequencies per 100 patient-days or percentages. Student's t-test was used for normal distribution variables and Wilcoxon test for not normally distributed variables.

**Results**

Enrolled patients were significantly younger than other screened patients and showed a better socioeconomic status and a higher degree of instruction. Seven of 13 patients used a mobile phone, whereas the remainder used both mobile phones and other devices. Missing readings throughout the study showed a frequency of 0.6 per 100 patient-days. On a total of 851 recordings, data were reported erroneously in 2.3% of cases. There was no significant difference in QoL, but significant changes were reported for the items of emotional well-being and patient satisfaction

**Conclusions**

A mobile App can be a useful telemonitoring system for a group of PD patients with an impressive compliance and an acceptable percentage of errors in data collection.

## P-146

## PERITONEAL DIALYSIS AS A TREATMENT FOR DIURETIC RESISTANT, REFRACTORY HEART FAILURE IN PATIENTS WITH CHRONIC KIDNEY DISEASE: A SINGLE CENTRE EXPERIENCE

[Amar Monaf Mahdi](#), Madhavan Menon, Helen Capper, Duwarakan Satchithananda, Simon Davies

Renal and Cardiology Departments at University Hospital of North Midlands, United Kingdom

**Objective**

To assess the role and feasibility of peritoneal dialysis (PD) on clinical outcomes in patients with diuretic resistant refractory heart failure (HF) and Chronic Kidney Disease (CKD).

**Methods**

Retrospective data and case-note review of 20 patients with HF and CKD started on PD for fluid management. Setting: UK PD unit with an established assisted APD programme. The period of the study was between November 2010 and January 2017. Patients with eGFR <15ml/min were only included if believed to have decline in eGFR as a result of decompensating heart failure (cardio-renal syndrome).

**Results**

Mean age was 72±9 years, 18 (90%) aged 65 year or older, 85% male. Mean eGFR at PD initiation was 23.9±12.47 and 6 (30%) patients had eGFR of ≤15 ml/min at start of treatment. The aetiology of heart failure was ischaemic in 17 patients (85%). All patients had NYHA class III or IV, and diuretic resistance. Recent estimated ejection fraction (EF) before starting PD was available in 15 patients (EF 10%-60%), 46.6%: EF<35%, 33.3%: EF 35-45% and 20%: EF >45%. All PD catheters were inserted using Seldinger technique and had a patency rate of 95%. The median duration of PD was 9.35 months (IQR 3.41-16.08). During the study period 14 patients (70%) died, 30% (6 patients) died within the first year, and overall the median survival was 14.8 months (IQR 4.81-24.89). Among those who has lasted on PD for at least 12 months the mean number of hospital visits (days per year) for HF or PD related issues in the year before starting PD (52.43±27.8) was significantly higher than the year after starting PD (6.86±5.87) (p=0.007). The median eGFR has shown a rise by 0.5 ml/min/month over the first 3 months and a decline by 0.83 ml/min/month at 6 months.

**Conclusion**

Peritoneal dialysis could serve as a feasible therapeutic intervention to reduce hospital admissions in fluid management in heart failure patients where symptom control with conventional medical treatment becomes a challenge.

P-147

## HEPATITIS B VIRUS AND PERITONEAL DIALYSIS. PRIOR IMMUNIZATION AND VACCINE RESPONSE?

Diana Manzano Sánchez<sup>1</sup>, Adoración Martínez Losa<sup>2</sup>, Manuel Lanuza Luengo<sup>2</sup>, Victor Martínez Jiménez<sup>2</sup>, Andrés Alonso García<sup>2</sup>, M<sup>a</sup> Teresa Carbajo Mateo<sup>2</sup>, Luisa Jimeno García<sup>2</sup><sup>1</sup>Hospital General Universitario Santa Lucía, Spain, <sup>2</sup>Hospital Clínico Universitario Virgen de la Arrixaca, Spain

## Introduction

Hepatitis B virus (HBV) infection remains a concern in dialysis populations, and seroconversion induced by HBV vaccination is significantly lower (40-70%) than in the general population (97%). To improve seroconversion it is recommended that patients with chronic renal failure be vaccinated at predialysis stage.

## Objective

- Know the number of patients vaccinated before the onset of peritoneal dialysis (PD).
- Analyze the response to vaccination in patients en PD.

## Methods

Incidence and prevalence of PD patients in our unit who were screened for HBV markers and HBV vaccination. It was advised to vaccinate patients who had not been vaccinated and who had no antibodies to the hepatitis B surface antigen (anti-HBs). The response to immunization was measured in the first and third month thereafter. The subjects were divided into groups according to the level of anti-HBs: non-responders (<10 IU/L), weak responders (10-100 IU/L), and good responders (>100 IU/L).

## Results

Of 88 patients (demographic, clinical and laboratory characteristics are shown in Table 1)

- 1 (1.13%) patient: VBH +
- 2 (2.27%) immune due to natural infection
- 23 (26.13%) vaccinated predialysis
- 62 (70.45%) had anti-HBs <10.16 do not accept vaccination and other 16 patients did not complete the vaccination program.

Therefore, 30 patients (13 women and 20 men, mean age 49±12 years) were included in the final analysis. A response (anti-HBs ≥10 iu/l) was observed in 29 (96,7%). 7 patients (23.3%) responded weakly and 22 patients (73,3%) responded well, without finding statistically significant differences between the two.

## Conclusion

- Despite recommendations from clinical guidelines on the desirability of administering HBV vaccine in the predialysis period, 70% of the patients had not been vaccinated
- An overall response rate of 96.7% was found, comparable to the rates reported in the literature in the general population and higher than in patients with peritoneal dialysis.

P-148

## TWELVE YEARS OF PERITONEAL DIALYSIS: IS IT POSSIBLE?

Mondher Qunissi, Tasnim Mesbahi, Taieb Ben Abdallah

Department of Nephrology, Charles Nicolle Hospital, Tunisia

Peritoneal dialysis is an increasingly used therapy. Its longevity depends on the adherence of the patient, the loss of residual renal function, alteration of the peritoneal membrane, infectious complications and dysfunctions of the catheter.

The aim of this study is to specify the epidemiological and clinical characteristics of patients treated by peritoneal dialysis for a long period of time.

A period of peritoneal dialysis greater than 10 years is rare and has been reported by some teams. We report our experience with 5 patients treated with PD for at least 10 years.

## P-149

## PERITONEAL DIALYSIS IN ELDERLY

Mondher Ounissi, Fatma Ajlani, Tasnim Mesbahi, Taieb Ben Abdallah

Department of Nephrology, Charles Nicolle Hospital, Tunisia

## Objectives

The number of elderly patients starting peritoneal dialysis (PD) is increasing. Older age is frequently associated to contraindications of this technique of dialysis. The aim of this work is to study the epidemiologic, clinical characteristics of patients used PD, outcomes and patients and technique survivals and finally deducing prognostic parameters.

## Methods

We retrospectively analyzed 37 patients older than 65 years who started PD between January 1983 and December 2015.

## Results

The mean age at dialysis initiation was  $70.73 \pm 0.81$  years, 24 men and 13 women. The majority was educated (67.56%). Diabetes and cardiovascular diseases were the principal cause of the end stage renal disease (ERSD). The PD was used as the first renal replacement therapy in 70.27 % of patients. Twenty seven were treated by automated PD (APD) and 10 by continuous ambulatory peritoneal dialysis (CAPD). Twenty eight patients have bone complications primarily secondary hyperparathyroidism and adynamic osteopathy. Cardiovascular complications are the most frequent (27.07%). The peritonitis rate was 1 case/17.78 patient-month. It was 1/12.68 in CAPD and 1/27.19 in APD. Staphylococcus was the most incriminated bacterium. Twenty patients died (54.05%) primarily because cardiovascular diseases. Seven returned to hemodialysis (18.91%).

The 1, 3, and 5 years technique survival were respectively 100, 63.5 and 63.5 % meanwhile the 1, 3 and 5 years patient survival were 86.4, 57.5 and 27.5%.

Patient survival was significantly correlated with type of PD and modality of catheter placement ( $p < 0.001$ ). Technique survival was significantly correlated with type of PD also ( $p < 0.001$ ).

## Conclusions

PD is a suitable method for old patients with ESRD whom needs familiar and psychological support .

## P-150

## WHEN PERITONEAL DIALYSIS IS NO LONGER EFFECTIVE

Tasnim Mesbahi, Mondher Ounissi, Taieb Ben Abdallah

Department of Nephrology, Charles Nicolle Hospital, Tunisia

## Objectives

Peritoneal dialysis (PD) and hemodialysis are two methods of treatment of end-stage renal disease (ESRD).

The number of patients using PD remains very low. Approximately 10% of these patients are transferred to hemodialysis after failure of the technique especially during the first two years.

The aim of our study is to specify the causes of transfer to hemodialysis as well as the prognostic parameters.

## Methods

A retrospective study was conducted including patients treated by PD transferred to hemodialysis during the period between 1983 and 2015.

## Results

There were 244 patients: 120 women and 124 men. The median age was 35 years (2-82). Diabetic nephropathy is the first cause of ESRD (21.31%), vascular (20.9%), interstitial (16%), glomerular (19.64%). Automated peritoneal dialysis (APD) was chosen by 117 patients and Continuous ambulatory peritoneal dialysis (CAPD) by 125. The majority of patients was autonomous.

The mean survival of the technique was 31 months (1-126). The main cause of PD failure was peritonitis: 25.41% of cases. The peritonitis rate was 1 case/17 month patient. It was 1/23 in DPA and 1/13 in CAPD. The mean time to onset of peritonitis was 12.9 months in CAPD and 22.57 in APD. The loss of ultrafiltration is the cause of 22.13% of failure cases. Catheter dysfunction was noted in 19.20% of cases. Twenty-three patients had psychological problems refusing the technique. Three patients had malnutrition which aggravated the protein loss.

## Conclusions

The PD offers several advantages in terms of quality of life and socio-economic cost for patients with ESRD, but it is also an iatrogenic procedure with several complications, which explains the frequent transfer to hemodialysis.

P-151

**THREE CASES OF TUNNEL INFECTION CAUSED BY MYCOBACTERIUM SPECIES ON PD PATIENTS**

Misako Yuasa, Eri Ataka, Katsuro Imamura, Motoyasu Kurahashi, Fumiko Kuwahara, Saeko Miura, Kazuki Koga, Kenji Harada, Hidetoshi Kanai

Kokura Memorial Hospital, Japan

**Object**

According to ISPD guideline, exit site infection and tunnel infection are mainly caused by Staphylococcus and Pseudomonas. When antibiotics don't work, Mycobacterium should be considered. In Asia proportion of Mycobacterium on PD patients is higher than other areas. In our country Mycobacterium infection is rare but the reports are progressively increasing.

**Method**

We investigated three cases of Mycobacterium in our hospital.

**Result**

One case is 60 years old, female, three year of PD vintage. Cultivation of exit site revealed Mycobacterium for which antibiotics didn't work. Even after SPD (Subcutaneous Pathway Diversion) was performed, infection continued. Finally catheter removal was needed. Two case is 61 years old, male, one year of PD vintage. Levofloxacin (LVFX) resistant staphylococcus aureus was positive at exit site. Although antibiotic has changed from LVFX to vancomycin, infection was persisted. Eventually SPD and catheter removal are needed. Mycobacterium abscessus was detected with culture of the catheter.

Last case is 54 years old, female, at half year of PD vintage. Refractory exit site infection was continued. Mycobacterium was detected with cultivation of exit site revealed, administered with LVFX and clarithromycin. Exit site infection was gradually progressive to tunnel infection, accordingly SPD was required.

**Discussion**

Infection with Mycobacterium is generally refractory and resistant to conservative therapy. In these three cases of tunnel infection are needed SPD. Mycobacterium exist in kitchen and bathroom where water is circulated. It turned out that all patients have used well water with exit site care. We should take care of not only general findings but living circumstances.

P-152 Moderated Poster Session 4

## PRESCRIBING PERITONEAL DIALYSIS WITH DAYS OFF

Arunraj Navaratnarajah, Michelle Clemenger, Jacqueline McGrory, Nora Hisole, Titus Chelapurath, Edwina Brown

Imperial College NHS Healthcare Trust, United Kingdom

**Objectives**

The use of peritoneal dialysis (PD) as a home therapy is limited by a significant technique failure requiring patients to transfer to haemodialysis. Burnout from the burden of doing the dialysis procedure every day and loss of ultrafiltration (UF) are 2 important causes of technique failure. We have therefore developed a policy of tailoring the number of days/week that patients perform PD dependent on residual renal function (RRF) and dialysis clearance, and of introducing the use of a second icodextrin exchange with loss of UF with time on PD. The aim of this study is to determine the safety of this approach on dialysis adequacy and UF

**Methods**

This single-centre cohort study analysed retrospectively 95 patients who were on the PD programme on 31st December 2016. Dialysis adequacy is measured regularly (3-6 monthly) using PD Adequest. Patient demographic and clinical data were collected from medical records. Data on dialysis prescription and adequacy were collected for each patient from the time they had started PD.

**Results**

55% patients were male, with mean age 59.6 +- 1.8 years (range 18-88), and mean weight 74.9 +- 1.6 (range 41-117.6) kg. As shown in the table, only 55% patients started on PD 7 days/week and this dropped to 33% at 3 months following the first clearance test. Over 90% patients achieved creatinine clearance (CrCl) >50L/week/1.73m<sup>2</sup> at all time periods.

Table: Proportion of PD programme (expressed as %) by no. of days / per week of prescribed PD

	Dialysis vintage (months)				
	0	3	12	24	36
Patients (n)	95	85	52	31	18
5 days PD	6%	15%	8%	10%	17%
6 days PD	39%	52%	44%	26%	28%
7 days PD	55%	33%	48%	65%	56%
CrCl>50L/week/1.73m <sup>2</sup>		96%	92%	97%	94%
Fluid removal ≥750mL/24H		92%	90%	90%	83%

51 (54%) patients had one daily icodextrin exchange, and 9 (9%) patients had two daily icodextrin exchanges. In the latter group, mean CrCl was 81.24(±7.36)L/week and mean UF was 2113 (±314.5)mL/24h

**Conclusions**

Our local practice favours a personalised approach to dialysis prescription, involving careful monitoring of residual renal function (RRF), ultrafiltration and dialysis adequacy. We have demonstrated that patients can meet the adequacy targets set by the Renal Association even when having 1-2 days off dialysis. This time off helps patients maintain lifestyle, work and travel, thereby promoting quality of life. We now plan to extend this study to determine the technique survival rate for our PD patient population and compare this to published studies.

P-153

## OPTIMIZING NURSING RESOURCE AND TIME EFFICIENCY WITH REMOTE MONITORING IN AUTOMATED PERITONEAL DIALYSIS PATIENTS

Georgina Pharro, Sarah Lewis

Southend University Hospital, United Kingdom

### Objectives

Sharesource is a Remote Patient Management (RPM) tool allowing two way communications with peritoneal dialysis (PD) patients dialysing at home. This RPM platform allows daily visibility of patient therapy data, plus the ability to change patient prescriptions remotely.

Prior to Southend Hospital's implementation of Sharesource, therapy data was accessed via memory cards and/or patient record books at patient clinic appointments. Prescription changes required patients to come in to hospital, nurse travel to patient home, or instructions via phone.

In between appointments, reliance on patients to voice concerns to prompt action resulting in potentially sub-optimal dialysis and associated complications before nurses were made aware. PD numbers stagnate due to lack of nursing capacity, or require additional nursing resource to support PD growth.

To implement a proactive model of patient care with RPM for all PD patients at Southend Hospital and review impact on nursing resource activities and time allocation.

### Methods

Sharesource was implemented for all PD patients over 6 weeks in September/October-2015. PD nurses reviewed patient therapy data through Sharesource during 1-2 periods of each day. Each period of examination was < 10 minutes. Treatment changes (remote or home visit) were conducted accordingly. Twelve months of data between 01-Jan-16 and 31-Dec-16 including the number of home visits, the number of remote programme treatment changes, and the total PD patient number was audited.

### Result

PD patient numbers increased from 21 to 32 (52.3% increase). Number of home visits decreased from 24 in Mar-2016 (24 PD patients) to 10 in Dec-16 (32 PD patients). Two hundred and eighteen remote programme treatment changes were made over the 12 month period.

### Conclusions

Implementation of Sharesource RPM has enabled remote programme changes to supplement targeted home visits for patients most in need. Over the 12 month period, PD numbers increased with no additional nurse resource.

## P-154 Moderated Poster Session 5

### OPTIMIZATION OF PROGRAM OF PERITONEAL DIALYSIS IN OUR HOSPITAL

Dejan Pilcevic, Djoko Maksic, Brankica Terzic, Svetlana Antic, Violeta Rabrenovic, Mirjana Mijuskovic, Marijana Petrovic, Ljiljana Ignjatovic

Military Medical Academy, Clinic of Nephrology, Serbia

### Objectives

To promote and improve of PD program in our hospital. Approximately 10% of the total world population requiring dialysis are on PD modality and it is similar percentage in Serbia, also. However, in our hospital, more than 30% these patients are on PD. Our goal was not only to increasing number of patients on PD, moreover we wanted to improve quality of patient's selection (and prevent discreditation of this method), despite all limitation circumstances, including distrust of patients and nephrologists, also, in this method.

### Methods

First of all, we have improved training of young doctors and nurses. Second, fundamental criteria for patient selection is absence of medical contraindications, and then a choice by the patient. In purpose of this, we have formed pre-dialysis infirmary where we started with selection and education of patients with unbiased presentation of advantages (including engagement of compliant PD patients) but complications of both dialysis modalities, also, encouraging them to perform PD as first option with all benefits which same provides as home dialysis method. Possibility of APD is next, very important factor in recruitment these patients especially in population of elderly patients whose needs assisted PD. Also, very important fact is that we provide 24-hour-a-day patient support from experienced PD staff and in the case of the discontinuation of PD, we provide transfer in our HD centre. Finally, all patients without contraindications for kidney transplantation are regularly tested on PRA and renewed medical testing for this procedure.

### Results

Majority of these patients wanted to make a choice and more than 60% chosen PD as first modality treatment

### Conclusions

It is important early referral of patient with CRF to a renal center where they will undergo an unbiased education program and individualized approach with maximally limitation of all nonmedical factors as important negative determinants for selection of PD.

P-155

### OSCILLATIONS OF NUTRITIONAL STATUS IN DALMATIAN PERITONEAL DIALYSIS PATIENTS –A PILOT STUDY

Josipa Radic<sup>1</sup>, Tanja Ilic Begovic<sup>2</sup>, Leida Tandara<sup>3</sup>, Dragan Ljusic<sup>1</sup>

<sup>1</sup>Department of Nephrology and Dialysis, University Hospital Split, Croatia, <sup>2</sup>Department of Intensive Care, University Hospital Split, Croatia, <sup>3</sup>Department of Medical Laboratory, University Hospital Split, Croatia

#### Objectives

Malnutrition is associated with an increased risk of death in peritoneal dialysis (PD) patients. Considering the importance of malnutrition in this population of patients the aim of this pilot study was to define the possible oscillations of nutritional status in stabile PD patients living in Dalmatia, South Croatia.

#### Methods

To assess nutritional status in 15 PD patients (on PD > 6 months) serum albumin, prealbumin, urea, creatinine, cholesterol, Malnutrition Inflammation Score (MIS), bioelectrical impedance analysis (BIA) and anthropometric parameters (mid arm circumference, waist circumference, hip circumference and body mass index (BMI)) were used. All parameters were measured at the beginning of the study, after three and after six months.

#### Results

Significant differences in serum albumin ( $p < 0.001$ ), prealbumin ( $p = 0.006$ ), urea ( $p=0.027$ ), MIS ( $p=0.002$ ), lean tissue mass ( $p < 0.001$ ), lean tissue index ( $p < 0.001$ ), fat tissue mass ( $p < 0.001$ ), fat tissue index ( $p < 0.001$ ) and adipose tissue mass ( $p < 0.001$ ) were found during six months. But significant differences in BMI and other anthropometric parameters were not found over six months. PD patients presented significant serum albumin and prealbumin loss, fat mass gain and lean tissue mass loss without significant change in BMI and other anthropometric parameters.

#### Conclusion

Results suggesting that nutritional parameters and body composition factors might significantly oscillate over time in PD patients. Also, our results suggest that BMI and other anthropometric parameters cannot be used as reflection of nutritional status in PD patients. Other parameters of nutritional status (biochemical, clinical and BIA) should be used in clinical practice in order to assess nutritional status and detect changes in nutritional status in PD patients over time.

### P-156 Moderated Poster Session 1

### BENEFIT OF PERITONEAL DIALYSIS (PD) IN THE INFLAMMATORY STATE OF REFRACTORY CHRONIC HEARTH FAILURE (rCHF)

Inés Rama, Maria Quero, Nuria Lloberas, Pere Fontova, Carlota González, Nuria Montero, Miguel Hueso, Josep Maria Cruzado

Hospital Bellvitge, L'hospitalet, Spain

Treatment of rCHF with DP has a beneficial effect further than that obtained by ultrafiltration per se, with an improvement in inflammatory parameters probably in relation to a neurohormonal adaptation. In the field of inflammation, dendritic cells (DC) are antigen-presenting cells, essential for the initiation and maintenance of innate and acquired responses, and thus key in the study of situations involving inflammation and neurohormonal stress.

The aim of this study is to delve into the pathophysiology of the benefit of PD treatment of rCHF by studying inflammation.

#### Methods

Our patients with rCHF were prospectively included in PD program for pathophysiological analysis. Immuno-inflammatory study was assessed at baseline, 4 months and annual, in relation to:

- Innate immunity study: Activation or reduction of DC maturation as well as study of the release of cytokines involved in TH1 / TH2 / TH17 response and functional analysis of lymphocytic proliferation after MLR by CFSE.
- Evaluation of the benefit of improved congestion: bioimpedance and analysis of alterations in pre and post-treatment intra-abdominal pressure.

#### Results

Reduction of hospitalisation (6 to 0). Improved FEVI(30 to 40%) and PAP (50 to 40mmHg) as well as improvement 2 degrees of Functional Class (NYHA). Optimization of the congestion state by bioimpedance and intra-abdominal pressure. Reduction of DC maturation from 15% pre-treatment to 3% post-treatment and reduction of CD40 expression (MFI) of DC of 1,668.5 to 666.6, reduction of CD14low CD16 + monocytes from 25% to 11%, with no changes in CD14 monocytes ++ CD16 +.

These preliminary results could provide a basis for new studies to emerge, in more controlled environments, which evaluate the efficacy and safety of this technique in this particular scenario

P-157

## EFFICACY AND SAFETY OF A NEW PHOSPHATE BINDER SUCROFERRIC OXYHYDROXIDE (VELPHORO) IN PERITONEAL DIALYSIS PATIENTS WITH SECONDARY

Immacolata Maresca, Gennaro Argentino, Silvia Migliaccio, Andrea Memoli, Domenico Russo

University Federico II, Italy

### Objective

We aimed to investigate the efficacy and safety of sucroferric oxyhydroxide (velphoro) in peritoneal dialysis patients (PD-patients) with hyper-phosphataemia already under treatment with phosphate binders.

### Methods

The inclusion criteria were: 1) PD-patients on stable maintenance dialysis for at least one year, 2) hyperphosphatemia (> 5.0 mg/dl) despite treatment with full dose of other phosphate binders, 3) no change in PD procedure, 4) no change in dose of any vitamin D receptor activator or calcimimetic, during the observation period.

Exclusion criteria were: patients with haemochromatosis, or any other iron accumulation disorder, serum ferritin >1000 pmol/L, transferrin saturation (TSAT) >50%, severe gastrointestinal disorders, history of a severe digestive tract disease.

No wash-out from previous phosphate binding therapy was performed. Velporo was administered at initial dose of 500 mg (1 tablet); the dose was implemented progressively up to 3 tablets/day within 10 days. Velporo dose was adjusted according to phosphorus levels (< 5.0 mg/dl). Patients were followed-up for a 6-month period.

Routine chemistry, serum levels of calcium, phosphorus and PTH, and iron status was assessed before and 1,3,6 months after velporo administration. Side effects were recorded.

### Results

From a cohort of 58 patients, 19 met (47 female; 53 male) inclusion criteria. Mean age was 50±14 years. Blood levels of markers of mineral metabolism are in table. No changes were observed in iron status and Hb levels. Five patients discontinued therapy because of gastrointestinal disorders.

	Baseline Calcium	Calcium 1 Month	Calcium 3 Month	Calcium 6 Month
MEAN Std	8,440	8,850	8,855	8,817
Deviation	,6155	,6681	,5821	,3762

•= p<0.01 Vs baseline

	Baseline Phosphorus	Phosphorus 1 Month	Phosphorus 3 Month	Phosphorus 6 Month
MEAN Std	5,416	4,608 •	4,650 •	4,283 •
Deviation	,9782	,9030	1,4884	1,3320

	Baseline PTH	PTH 1 Month	PTH 3 Month	PTH 6 Month
MEAN Std	459,67	258,36	316,91	343,18
Deviation	458,098	154,275	152,027	240,810

### Conclusions

Velporo was effective in reducing blood levels of Phosphorus and PTH. Gastrointestinal disorders were the most frequent site effects.

P-158

## AN INTERESTING CASE OF “SUCCESSFUL MARRIAGE” BETWEEN CINACALCET AND PHOSPHATE BINDER SUCROFERRIC OXYHYDROXIDE (VELPHORO) IN PERITONEAL DIALYSIS PATIENT WITH SEVERE SECONDARY HYPERPARATHYROIDISM

Gennaro Argentino, Immacolata Maresca, Silvia Migliaccio, Andrea Memoli, Domenico Russo

University Federico II, Italy

### Objectives

This is the case of peritoneal dialysis patient with extensive bone lesions due to severe secondary hyperparathyroidism (SHPTH) that resulted cured by administration of cinacalcet and sucroferric oxyhydroxide (VELPHORO).

### Methods

Female patient (40-year-old) on peritoneal dialysis (7 years) presented severe SHPTH despite she was prescribed phosphate binders, cinacalcet, calcitriol. For years levels of serum PTH (> 1000 pg/ml), phosphorus (> 6.5 mg/dl) remained high despite efficient peritoneal dialysis; phosphate binders (lanthanum, sevelamer) were never taken as prescribed because of either side effects or pill burden. This was also the case of Cinacalcet (30 to 60 mg/day) therapy. The ups and downs were responsible of poor control of markers of mineral metabolism mainly PTH and serum phosphorus; calcitriol caused hypercalcemia and hyperphosphatemia and it was not sufficient to reduce PTH. Nonetheless the patient remained asymptomatic for many years. On January 2016, she started complaining bone pain; skeleton plain x-ray evidenced the presence of small bone tibial lesion; further diagnostic tests (TC scan, MRI) highlighted multiple osteolytic lesions resembling brown tumors. Therapy with phosphate binder velporo was initiated (1500 mg/day; total of 3 tablets) and cinacalcet restarted (30 mg/day). Velporo therapy was able to normalize serum phosphorus levels in few weeks with concomitant small reduction of PTH levels; velporo was tapered to 500 mg/day and cinacalcet was increased to 60 mg/day. This allowed to achieve a slow but well evident decline of PTH levels. Hypercalcemia was no more evident. Bone pain was tolerable. The patient stopped taking velporo and reduced cinacalcet to 30 mg/day; phosphorus and PTH increased with recurrence of bone pain.

### Results

3 months after the restart of velporo and cinacalcet therapy at prescribed doses, normalization of serum PTH, phosphorus, alkaline phosphatase, calcium levels was observed; TC scan and RMI showed resolution of bone lesions of all sites and melioration of tibial lesion

### Conclusion

The case herein reported shows that compliance to therapy plays a crucial role in the treatment of SHPTH. Among several factors influencing compliance to therapy of patients on dialysis, pill burden as phosphate binders is the most important one; phosphate binder therapy accounts for 49% of total pill burden. The new phosphate binder, Velporo, shows good phosphate binding capacity with few tablets. In the present case report, velporo improved compliance and allowed good control of hyperphosphatemia; the increased dose of cinacalcet normalized markers of mineral metabolism and thereafter bone lesions avoiding parathyroidectomy.

## P-159 Moderated Poster Session 4

### DIFFERENCES IN PERITONEAL DIALYSIS SURVIVAL USING COMPETING RISKS MODELS WITH INTERACTIONS - EXAMPLE FROM 23 YEARS' STUDY

Filipa Alves, Rui Silva, Rute Aguiar, David Fiel, Joana Santos, Rita Vicente, Manuel Amoedo, Carlos Pires

Nephrology Department, Hospital Espírito Santo, Portugal

#### Objectives

Patients on peritoneal dialysis (PD) could experience different outcomes: death, transfer to haemodialysis and transplantation. The most used Kaplan-Maier method for survival analysis considers one event only, so it has been suggested modelling competing risks instead. Additionally, multivariate analysis should take into account interaction between covariates to correctly explain model predictions. This worked aimed to study the outcomes in patients undergoing PD in one single centre from Portugal.

#### Methods

Retrospective study, including all 215 adult incident PD patients from 1993 to 2015, with mean of follow-up  $36 \pm 25$  months. Kaplan-Maier estimates were compared with those obtained by competing risks methods. Multivariate survival analysis with Cox Proportional Hazards Models and Competing Risks Regression Models was performed to determine factors with impact in death. Statistical analysis performed with Rproject, considering a significance level of 5%.

#### Results

The three and five-year probabilities of event estimated by Kaplan-Maier and competing risks were respectively for death 17% vs 21% and 25% vs 37%; transfer to haemodialysis 21% vs 27% and 34% vs 51%; transplantation 15% vs 20% and 19% vs 29%.

Competing risks shown that peritonitis in the first semester (HR 4.82, [95% CI 1.98 – 11.70]), female gender (2.07, [1.12 – 3.82]), PD starting before year 2005 (1.82, [1.02 – 3.38]) and age interacting with diabetes were independent predictors of death, whereas Cox Models fails to demonstrate significance for gender and date of PD starting. The interaction means that increment of age only increases risk on non-diabetics (3.03 per decade, [2,15 – 4,28]) and that the impact of diabetes decreases with age.

#### Conclusions

Probably Kaplan-Maier overestimates the occurrence of outcomes in PD where competing events occur. Furthermore, models considering interactions could be more accurate explaining complex outcomes. In our study, early occurrence of peritonitis, gender, date of PD starting, age and diabetes were independents predictors for death.

## P-160 Moderated Poster Session 4

### TECHNIQUE FAILURE, TRANSPLANTATION AND DEATH AFTER STARTING PERITONEAL DIALYSIS – NATIONAL AND CENTRE SPECIFIC ANALYSES FROM THE UK RENAL REGISTRY

Matthew Tabinor<sup>1,2</sup>, Anna Casula<sup>4</sup>, Martin Wilkie<sup>3</sup>, Simon Davies<sup>1,2</sup>, Fergus Caskey<sup>4</sup>, Mark Lambie<sup>1,2</sup>

<sup>1</sup>University Hospitals of North Midlands NHS Trust, United Kingdom, <sup>2</sup>The Institute for Science and Technology in Medicine (ISTM; Keele University), United Kingdom, <sup>3</sup>Sheffield Teaching Hospitals, United Kingdom, <sup>4</sup>The UK Renal Registry (Southmead Hospital), United Kingdom

#### Objectives

The role of technique failure (TF) as a determinant of peritoneal dialysis (PD) prevalence in the UK is yet to be determined. We sought to describe the variation in both the national and centre specific incidence of PDTF across the UK.

#### Methods

Clinical and demographic data was extracted from all 71 UK adult renal centres through the UK Renal Registry. PDTF was defined as swapping to haemodialysis (HD) for greater than 30 days. Cumulative incidence function (CIF) plots for either TF, transplantation or death treated the other two variables as competing risks. Analyses were conducted using SAS and Microsoft Excel (2011).

#### Results

Between 2007-2014, 9337 renal replacement therapy (RRT) patients successfully started PD as their first modality for a minimum of 90 days. At the end of follow up 16.1% remained on PD, 27.0% were transplanted, 16.3% had died, 38.5% were on HD and 2.1% had been lost to follow up / recovered / stopped RRT. Median survival on PD was 1.6yrs (IQR 0.9-2.7yrs). Over 5yrs cumulative incidence (CI) plots demonstrated that Wales had slightly higher transplantation and death rates and a slightly lower PDTF rate when compared with other UK nations. The UK 1-yr CIF for PDTF was 0.14 (95%CI 0.13-0.15). The centre-specific 1-yr CIFs for PDTF ranged between 0.06-0.31. The centre-specific 1-yr CIF for PDTF lower confidence intervals in 6 centres and upper confidence intervals in 5 centres did not intersect the value for the UK 1-yr CIF for PDTF, suggesting considerable heterogeneity between some centres. Inter-centre variability in PDTF was not explained by variation in the centre specific 1-yr CIF for transplantation or mortality on PD.

#### Conclusions

Significant variation exists in the 1-yr CIF for PDTF across UK centres. Further work is needed to identify potential predictors for PDTF so preventative strategies can be implemented.

## P-161 Moderated Poster Session 2

### INEQUALITY OF ACCESS TO HOME THERAPIES IN THE UK FOR ETHNIC MINORITIES AND AREAS WITH HIGH LEVELS OF SOCIAL DEPRIVATION: RESULTS FROM THE UK RENAL REGISTRY

Matthew Tabinor<sup>1,2</sup>, Anna Casula<sup>4</sup>, Martin Wilkie<sup>3</sup>, Simon Davies<sup>1,2</sup>, Fergus Caskey<sup>4</sup>, Mark Lambie<sup>1,2</sup>

<sup>1</sup>University Hospitals of North Midlands NHS Trust, United Kingdom, <sup>2</sup>The Institute for Science and Technology in Medicine (ISTM; Keele University), United Kingdom, <sup>3</sup>Sheffield Teaching Hospitals, United Kingdom, <sup>4</sup>The UK Renal Registry (Southmead Hospital), United Kingdom

#### Objectives

Recent US data demonstrates lower usage of home therapies (HT) amongst ethnic minorities. We hypothesised that ethnic minorities and more socially deprived populations in the UK might have inequitable access to home dialysis.

#### Methods

Routine clinical and demographic data was extracted from all 71 UK adult renal units in the UK Renal Registry. Patients were allocated to centre according to geographic location (by postcode). Deprivation was assessed with the Index of Multiple Deprivation divided by quintiles. Analyses were conducted using SAS and Microsoft Excel.

#### Results

As of the 31st December 2014, 17.4% of the prevalent dialysis population were using HT; 4.2% on home haemodialysis (HHD) and 13.1% on peritoneal dialysis (PD). Ethnic minorities constitute 27% of the UK in-centre HD population but only 21% of the PD and 12% of the HHD population. Graphical display suggested the difference in HT usage by ethnicity varied between centres with comparable proportions of ethnic minority populations. The least deprived quintile had higher usage of home therapies (In-centre HD 79.2%, PD 15.5%, HHD 5.4%) compared to the lowest quintile (In-centre HD 86.2%, PD 10.3% HHD 3.5%). The same pattern was found in the white only population. It is not due to differential rates of technique failure or transplantation as it is apparent in an incident cohort (modality at 90 days in 2013-14 cohort: least deprived quintile In-centre HD 63.6%, PD 22.1%, Transplant 14.2%, most deprived quintile In-centre HD 76.2%, PD 16.7%, Transplant 7.1%). The pattern was consistent in incident patients excluding late referrals and in a cohort from 2007-08. There was a 'dose-response' for HT use by deprivation quintile in all analyses.

#### Conclusions

As well as having less access to transplantation, ethnic minorities and patients from more socially deprived areas have less access to HT. Policies to address this inequity should be developed.

P-162 Moderated Poster Session 4

## DIFFERENCES IN QUALITY OF LIFE AND PREVALENCE OF DEPRESSION BETWEEN HEMODIALYSIS AND PERITONEAL DIALYSIS PATIENTS AMONG ARAB PATIENTS IN ISRAEL

Maha Zaher<sup>1</sup>, Kamal Hassan<sup>2</sup>, Zaher Armaly<sup>1</sup>

<sup>1</sup>EMMS-Nazareth Hospital, Israel, <sup>2</sup>Western Galilee Hospital- Nahariya, Israel

#### Background

A high prevalence of depression is observed among patients with ESRD. Several studies have reported a higher incidence of depression in HD patients as compared with PD subjects. However, these studies were conducted in certain ethnical groups of patients and could not automatically be extrapolated to all ethnicities.

#### Aims

1-To examine whether PD or HD yields any differences in terms of quality of life and prevalence of depression among Arab dialysis patients; and 2- To explore how physiological, psychological and social factors influence depression and quality of life in these patients.

#### Methods

The study included 61 HD patients and 19 PD patients. All Arabs from the Lower and Western Galilee region, patients of the Dialysis Institute at the English Hospital of Nazareth and Nahariya Hospital Dialysis Institute.

The subjects have completed two questionnaires:

1. Beck Depression Inventory (BDI) for measuring the severity of depression
2. Kidney Disease Quality of Life Short Form (KDQOL-SF, Version 1.3.)

#### Results

The sense of well-being was low in both subgroups. The prevalence of depression was higher in HD group, where the female gender composes the majority of the depressed patients. Social support was found to be higher among HD patients, although it was high in both groups. A health status, which interferes in occupational functioning, was found to be lower in HD patients. More severe pain in PD patient group was found. Sexual function was found to be high in the PD patient group. Likewise, nutrition was better in the PD group. Moreover, capacity to work for payment was found to be higher in PD patients.

#### Conclusions

The prevalence of depression is higher among HD patients, where the majority of patients suffering of depression are females. Moreover, significant differences in quality of life in favor of the PD group were documented.

P-163

## BENEFICIAL EFFECTS OF SILYMARIN AGAINST HEPATOTOXICITY AND NEPHROTOXICITY IN RATS EXPOSED TO PERITONEAL DIALYSIS SOLUTION

Emna Annabia<sup>2</sup>, Yosra Guedri<sup>1</sup>, Emna Ismail<sup>1</sup>, Awatef Azzabi<sup>1</sup>, Wissal Sahtout<sup>1</sup>, Sinda Mrabet<sup>1</sup>, Hassen Bacha<sup>2</sup>, Salwa Abid Essafi<sup>2</sup>, Dorsaf Zellama<sup>1</sup>, Abdellatif Achour<sup>1</sup>

<sup>1</sup>Chu Sahloul, Tunisia, <sup>2</sup>Laboratory of Research on Biologically Compatible Compounds, Tunisia

### Introduction

Peritoneal dialysis (PD) is used as an alternative to haemodialysis for patients with severe chronic kidney disease. Chronic exposure to peritoneal dialysis solution (PDS) affects the peritoneum but also the liver and the kidney. Silymarin (SLY), a natural flavonoid, has been reported to have antioxidant, anti-inflammatory and anti-apoptotic effects. This study was carried out to determine whether SLY exerts a protective effect against PDS induced hepatotoxicity and nephrotoxicity.

### Methods

Rats were divided into 4 groups: Group 1 (Saline solution, i.p, daily injection), Group 2 (Silymarin, 200 mg/kg, orally), Group 3 (10 ml PDS 3,86% dextrose, ip daily injection), Group 4 (Silymarin (200 mg/kg, orally) +PDS (10 ml, ip, daily injection) for 30 days.

Rats were sacrificed, blood samples were collected and the serum was separated for the biochemical analyses.

### Discussion

The group 3 of rats showed significant increase of Aspartate aminotransferase (AST), Alanine aminotransferase (AST), Gamma glutamyltransferase (GGT), Bilirubine T, Bilirubine C, Creatinine, Urea and Uric acid levels compared to the control group (1).

Moreover, we demonstrated that PDS induced oxidative stress in both kidney and liver as monitored by measuring the increase of malondialdehyde (MDA) level, the protein carbonyl generation, the catalase and the superoxide dismutase activity. However, co-treatment of PDS with silymarin significantly reduced PDS induced alterations in all tested oxidative stress markers and biochemical serum markers.

### Conclusion

SLY treatment leads to a reduction on PDS induced hepatic and renal damage in rats. Our data support a new preventive role of SLY against PDS toxicity and since it is safe and acceptable for human consumption, the optimum dosage of this compound would be useful

## P-164 Moderated Poster Session 4

### WEIGHTED- CATHETER TECHNIQUE FOR PERITONEAL DIALYSIS

Stephen Stonelake, Jyoti Baharani, Mark Thomas, Roger Adkins, Lee Hollingsworth, Teun Wilmink

Heart of England NHS Trust, United Kingdom

### Objectives

To review experience using the self-locating weighted catheter and to compare failure rates, complications and catheter survival to other PD catheters used in our institution.

### Methods

The insertion, start, end and removal dates were recorded for 262 all-type catheter insertions (January 2011 to October 2016). Primary and secondary failure rates were recorded including the reason for failure. Primary and secondary failure were defined as failure to ever establish in or outflow or failure subsequent to a period of successful PD respectively. Patients were censored from analysis if peritoneal dialysis ended due to death, transfer of care, transfer to haemodialysis, transplantation or if the patient recovered renal function.

### Results

There were 44, 75 and 143 weighted surgical, non-weighted surgical and percutaneous catheters inserted respectively. Primary failure rates were 4/44 (9%), 20/75 (27%) and 26/143 (18%) in weighted surgical, non-weighted surgical and percutaneous catheters respectively. There were reduced primary failure rates seen in the weighted (9%) versus surgically inserted non-weighted group (27%) ( $P = 0.04$ ) and versus percutaneously inserted non-weighted group (18%) ( $P=0.15$ ). There was no difference between all surgically versus percutaneously inserted catheters in primary failure rates (20% versus 18%) and catheter survival ( $P=0.17$ ). Secondary failure rates were 6/40 (15%) and 51/171 (30%) in the weighted and non-weighted catheters respectively ( $P = 0.06$ ). The most common reason for catheter failure amongst all catheters that failed (107) was related to flow or drainage (59%) followed by peritonitis (26%). Kaplan-Meier curves revealed overall increased catheter-survival in the weighted catheter group ( $P=0.02$ ).

### Conclusion

The weighted catheter, in our experience, has increased survival rates and low primary failure rate compared with non-weighted surgical and percutaneously inserted catheters. This is despite its use in a cohort of patients who are at higher risk of PD catheter failure.

P-165

## THE USE OF ICODEXTRIN IN CROATIAN COHORT OF PERITONEAL DIALYSIS PATIENT POPULATION – A CROSS-SECTIONAL PILOT STUDY

Bozidar Vujjic<sup>1</sup>, Nikolina Basic-Jukic<sup>2</sup>, Dragan Klaric<sup>3</sup>, Josipa Radic<sup>4</sup>, Zeljka Grdan<sup>5</sup>, Goran Radulovic<sup>6</sup>, Klara Juric<sup>7</sup>, Karmela Altabas<sup>8</sup>, Marko Jakic<sup>9</sup>, Valentina Coric-Martinovic<sup>10</sup>, Ivana Kovacevic-Vojtusek<sup>2</sup>, Marijana Gulin<sup>11</sup>, Nikola Jankovic<sup>12</sup>, Dragan Ljitic<sup>4</sup>, Sanjin Racki<sup>1</sup>

<sup>1</sup>Clinical Hospital Centre Rijeka, Croatia, <sup>2</sup>Clinical Hospital Centre Zagreb, Croatia, <sup>3</sup>General Hospital Zadar, Croatia, <sup>4</sup>Clinical Hospital Centre Split, Croatia, <sup>5</sup>General Hospital Varazdin, Croatia, <sup>6</sup>Clinical Hospital "Merkur", Croatia, <sup>7</sup>Clinical Hospital "Dubrava", Croatia, <sup>8</sup>Clinical Hospital Centre "Sestre Milosrdnice", Croatia, <sup>9</sup>Clinical Hospital Centre Osijek, Croatia, <sup>10</sup>General Hospital Vinkovci, Croatia, <sup>11</sup>General Hospital Sibenik, Croatia, <sup>12</sup>Clinical Hospital "Sveti Duh", Croatia

### Introduction

Icodextrin is a high molecular weight glucose polymer developed specifically for use as an alternative osmotic agent to glucose during the long-dwell exchange in peritoneal dialysis (PD) patients. In the present cross-sectional pilot study we investigated association of icodextrin with clinical, laboratory and nutritional parameters in the cohort of PD population in Croatia.

### Methods

PD prescription and ultrafiltration, clinical and laboratory patient's data from 13 Croatian dialysis centres were collected during 2014. Residual diuresis was estimated using volume of daily urine. Transport characteristics were determined by the standard PET test.

### Results

In total, 190 PD patients older than 18 years (man/woman 112/78, mean age  $57.35 \pm 14.41$  years, mean PD duration  $24.96 \pm 24.43$  months) were included in investigation, and icodextrin was used by 101 patients. The causes of ESRD were chronic glomerulonephritis in 55, hypertensive nephrosclerosis, in 46, diabetes in 44 and polycystic kidney disease in 17, and unknown in 28 patients. Transport characteristics were as follows: high 26, high average 55, low average 63, low 19, while transport characteristics were missing for 27 patients. Icodextrin was used for all high transporters, but it was also prescribed in 24 patients with low average transport characteristics, 41 out of 55 high averages, and in 10 patients with unknown transport characteristics. The icodextrin use positively correlated with number of peritonitis episodes and antihypertensive drugs, weekly dose of ESA, transport type, nutritional support, creatinine, calcium, phosphorus, erythrocytes and platelets, while residual diuresis, serum haemoglobin and albumin exhibited negative correlation.

### Conclusion

In the cohort of Croatian PD population, icodextrin was predominantly used for patients with ultrafiltration problem. Due to overhydration, patients on icodextrin use a greater number of antihypertensive drugs. The patients who use icodextrin have lower serum hemoglobin levels requiring significantly higher weekly dose of EPO. Further prospective study is in progress.

## P-166 Moderated Poster Session 3

### BICARBONATE BUFFERED PD FLUID LOWERS ENDOTHELIAL CELL ANGIOGENIC CAPACITY

Maria Bartosova<sup>1</sup>, Gwendolyn Eich<sup>1</sup>, Christian Tischer<sup>2</sup>, Tanja T Wlodkowski<sup>1</sup>, Betti Schaefer<sup>1</sup>, Sebastian Pichl<sup>1</sup>, Nicole Alt<sup>1</sup>, Thilo Hackert<sup>1</sup>, Claus P Schmitt<sup>1</sup>

<sup>1</sup>University Hospital Heidelberg, Germany, <sup>2</sup>The European Molecular Biology Laboratory, Germany

Peritoneal dialysis (PD) fluids induce excessive peritoneal angiogenesis resulting in progressive ultrafiltration decline. A recent trial suggested better preservation of peritoneal ultrafiltration with bicarbonate versus lactate buffered, pH neutral, low glucose degradation products (GDP) fluid; molecular mechanisms are unknown.

The angiogenic cytokine profile of primary human umbilical endothelial (HUVEC) and peritoneal mesothelial cell (HPMC) and tube formation capacity were assessed following incubation with bicarbonate (BPDF) and lactate buffered, pH neutral, low GDP (LPDF) and acidic, lactate buffered, high GDP fluid (CPDF). Ex vivo validation was performed in peritoneal samples of age matched, peritonitis free children on PD with BPDF and LPDF, respectively.

In HUVEC Angpt-1 mRNA and protein abundance increased twofold upon incubation with BPDF, but decreased by 70 and 80% with LPDF and CPDF compared to medium control; Angpt-2 remained unchanged. Angpt-1/Angpt-2 protein ratio was 15 and 3-fold increased with BPDF compared to LPDF and medium, and unchanged with CPDF. VEGF-A, MMP-1, HO-1 AQP-1, FGF-2, and HIF-1a levels were similar with BPDF and LPDF. No buffer dependent differences in angiogenic cytokine profile were observed in HPMC. Time-lapse microscopy of live cell tube formation with automated network analysis demonstrated less angiogenesis of HUVEC incubated with BPDF compared to LPDF and CPDF. Tie-2 translocates to the cell membrane in BPDF incubated HUVEC. In peritoneal biopsies from children treated with BPDF relative Angpt-1 abundance was higher, and vessels larger than in LPDF treated children, vessel density tended to be lower (n=8/group).

Bicarbonate buffered pH neutral, low GDP PD fluid stimulates synthesis of Angpt-1, a cytokine favoring vessel maturation, and inhibits vessel formation capacity in vitro. These findings provide molecular evidence for the superior preservation of ultrafiltration capacity with bicarbonate versus lactate buffered, low GDP fluid in the clinical trial.

P-167

### INTERVENTIONAL RADIOLOGY FLUOROSCOPIC GUIDANCE AS AN ALTERNATIVE TO SURGERY FOR PERITONEAL DIALYSIS CATHETER PLACEMENT

[Praful Ghyar](#), Sean Leavey, Catherine Brown, Elizabeth Abernethy, Frank Kelly, Ian Kelly, Mary O'Grady

University Hospital Waterford, Ireland

#### Objectives

The objective of this study was to evaluate the waiting time for PD catheter placement via IR compared to surgical placement in patients waiting for peritoneal dialysis as a modality for RRT in University Hospital Waterford (UHW).

#### Methods

Patients attending the Low Clearance Clinic in University Hospital Waterford (UHW) referred for PD between November 2014 and February 2017 were identified using the emed and NIMIS databases. The time between referral for PD catheter placement by IR or surgery and actual placement were analysed.

#### Results

A total of 20 patients underwent PD catheter placement or were referred for it. Of these nine were referred for surgical placement and 11 for fluoroscopic guidance in IR. According to our analysis, six of the nine patients referred for surgical placement had their PD catheter in place by February 2017. Of these four were placed as an emergency procedure and two as routine. Three candidates were still awaiting catheter placement. The average waiting time was 68.66 days (minimum of two days, maximum of 192 days). Similar analysis of the patients referred to IR for PD catheter placement showed that all 11 patients had successfully undergone the procedure. The average waiting time was 23.5 days (minimum of one day, maximum of 64 days).

#### Conclusions

The waiting time for Peritoneal Dialysis (PD) catheter for candidates who elected for placement under IR as the form of Renal Replacement Therapy (RRT) was approximately 50% less than for those who underwent surgical placement.

P-168

### DEVELOPMENT OF A NOVEL PERITONEAL DIALYSIS SOLUTION BASED ON A FLAVONE GLYCOSIDES MIXTURE AS OSMOTIC AGENT

[Guadalupe González<sup>1</sup>](#), Rafael Selgas<sup>3</sup>, Manuel López-Cabrera<sup>1</sup>, Abelardo Aguilar<sup>2</sup>

<sup>1</sup>Centro de Biología Molecular Severo Ochoa (CSIC-UAM), Spain, <sup>2</sup>Instituto de Investigación del Hospital Universitario la Princesa, Spain, <sup>3</sup>Instituto de investigación del Hospital Universitario La Paz, Spain

#### Objectives

To develop a new peritoneal dialysis fluid (PDF) free of glucose and based on a flavone glycosides mixture (FGM) as osmotic agent. FGM is a compound of natural origin with a molecular weight about 1KD, the theoretical ideal weight for a PD solution.

To analyse in vitro and in vivo the benefits of this compound compared to glucose, as glucose has local and systemic adverse effects.

#### Methods

To investigate the PD biocompatibility, human peritoneal mesothelial cells (MCs) were cultured in the presence of glucose based PDF (GBPDF) or FGM and TGF- $\beta$  to induce mesothelial to mesenchymal transition (MMT) during 6, 24, 48 and 72 h.

Mice submitted to a surgery for the insertion of an intraperitoneal catheter were treated for 4 weeks with FGM or a PDF with glucose. After the sacrifice, the ultrafiltration capacity of the peritoneum was analysed, and peritoneal tissues were collected to determine thickness, MMT and angiogenesis.

#### Results

In vitro, FGM did not induce MMT, VEGF secretion or extracellular matrix components production when compared with GBPDF. In vivo, FGM preserved the MCs monolayer, induced less peritoneal membrane (PM) thickening and MMT. Using artificial membranes we demonstrated that this solution has a maintained and prolonged osmotic capacity similar to icodextrin.

#### Conclusions

PD solution based in FGM showed better biocompatibility than GBPDF in vivo and in vitro. FGM did not induce PM thickening, MMT, angiogenesis or membrane failure, maintaining osmotic capacity more than glucose.

P-169 Moderated Poster Session 5ANALYSIS OF CYTOPROTECTION OF MESOTHELIAL CELLS BY GSK3 $\beta$ -INHIBITION IN PERITONEAL DIALYSIS FLUIDS

Rebecca Herzog<sup>1,2,3</sup>, Katarzyna Bialas<sup>2,3</sup>, Anja Wagner<sup>2</sup>, Markus Unterwurzacher<sup>2</sup>, Guadalupe González-Mateo<sup>4</sup>, Manuel Lopez-Cabrera<sup>4</sup>, Christoph Aufricht<sup>1</sup>, Klaus Kratochwill<sup>1,2</sup>

<sup>1</sup>Department of Pediatrics and Adolescent Medicine, Medical University of Vienna, Austria, <sup>2</sup>Christian Doppler Laboratory of Molecular Stress Research in Peritoneal Dialysis, Medical University of Vienna, Austria, <sup>3</sup>Zytoprotec, Vienna, Austria, <sup>4</sup>Centro de Biología Molecular Severo Ochoa, Universidad Autónoma de Madrid, Spain

The PDF-mediated cellular injury of mesothelial cells was described to be associated with inadequate cellular stress responses as a result of activation of glycogen synthase kinase-3 $\beta$  (GSK-3 $\beta$ ). Adequate cellular stress responses could be restored by lithium, a well described GSK-3 $\beta$ inhibitor, which could therefore be a promising group of molecules used as cytoprotective additives to PDF. The aim was to analyse the cytoprotective potential of lithium chloride (LiCl) on the gene and protein expression level with a multi-omics approach and in-vivo in a chronic mouse model.

Human primary mesothelial cells (HPMC) were exposed to icodextrin-based PDF (with/without LiCl). Cell survival was analysed by LDH-release. Isolated RNA was subjected to gene expression microarray analysis and significantly altered biological processes were identified. Changes in the proteome were analysed with a 2D gel based approach. In an in-vivo model mice were treated 4 weeks with PDF +/-5mM LiCl. The parietal peritoneum was analysed for thickening and effluent cells were characterized following a 30min dwell.

Cell injury triggered by PDF was associated with significantly differential expression of 601 genes compared to control. Pathway analysis shows a significant overrepresentation of 6 biological pathways (PDGF-signalling, oxidative stress response, CCKR-signalling, VEGF-signalling, GNRHR pathway, angiogenesis). PDF with LiCl caused significantly lower cell injury and significantly altered the expression of 1003 genes, of which 62 showed an abolishment of the PDF-effects with LiCl. These genes are regarded as markers of LiCl-mediated cytoprotection. In-vivo LiCl addition lead to a decrease of PDF-induced thickening of the peritoneal membrane and increased Treg/IL-17 ratio of the effluent cells.

The observed cytoprotective potential of LiCl addition, combined with the modulation of relevant mechanisms of the cellular stress response, fibrosis and inflammation suggests positive effects of this pharmacological intervention. The underlying molecular mechanisms of the improved outcome will be further analysed in ongoing studies.

## P-170

## THE NEW ERA OF BIOCOMPATIBLE AND LOW-GLUCOSE-BASED PERITONEAL DIALYSIS SOLUTIONS: IS THE PREVALENCE OF METABOLIC SYNDROME IN PERITONEAL DIALYSIS CHANGING?

Joana Silva Costa<sup>1</sup>, Helena Sá<sup>1</sup>, Andreia Borges<sup>1</sup>, Catarina Romãozinho<sup>1</sup>, Fernando Macário<sup>2</sup>, Rui Alves<sup>1</sup>

<sup>1</sup>Coimbra Hospital and University Center, Portugal, <sup>2</sup>Diaverum -Unidade de Aveiro, Portugal

## Introduction

Peritoneal dialysis (PD) has been associated with higher risk of Metabolic Syndrome (MS) than hemodialysis (HD) as high concentration of glucose in the dialysate may cause obesity, dyslipidemia and hyperinsulinemia, which were reduced with the use of biocompatible and low-glucose-based PD solutions in the last few years.

## Objectives

Compare the prevalence of MS in PD patients under biocompatible and low-glucose-based PD solutions and in HD patients.

## Methods

In a retrospective study, we evaluated the diagnosis of MS in PD patients under low-glucose-based PD solutions and in HD patients, with modified National Cholesterol Education Program (NCEP) criteria. Patients in dialysis for <3 months, with < 18 years, acute infection or history of neoplasm or chronic liver disease, were excluded. Statistical analyses were conducted using R Statistical Software version 3.2.5.

## Results

A total of 100 patients (42 patients in PD, 58 patients in HD) were included. Significant differences were found in age and in time of dialysis, not in gender or Charlson Index. MS was diagnosed in 60 patients, 24 in PD and 36 in HD (p=0.772, adjusted OR 0.93 [0.24-3.29]). No significant differences were found in Body Mass Index (BMI), diabetes mellitus, HDL, triglycerides or systolic blood pressure between PD and HD groups. PD patients presented lower albumin (3.5 $\pm$ 0.6 g/dl in PD vs 4.0 $\pm$ 0.3 g/dl in HD, p<0.001) and higher LDL (122.7 $\pm$ 40.6 mg/dl in PD vs 94.6 $\pm$ 30.2 mg/dl in HD, p<0.001), although less patients were medicated with statins. HD patients presented higher PTH (641.3 $\pm$ 585.1 pg/ml in HD vs 479.6 $\pm$ 420.7 pg/ml in PD, p=0.130), in spite of more patients medicated with vitamin D analogs and calcium mimetics, and higher PCR (1.6 $\pm$ 1.9 mg/dl in HD vs 1.1 $\pm$  1.4 mg/dl in PD, p=0.199).

## Conclusions

In this study, we haven't found significant difference in MS between PD under low-glucose-based PD solutions and HD patients.

## P-171

## INCIDENCE AND RISK FACTORS OF PERITONITIS IN PERITONEAL DIALYSIS PATIENTS: A SINGLE UNIT STUDY

Lilia Ben Lasfar, Yosra Guedri, Dorsaf Zellama, Wissal Sahtout, Awatef Azzabi, Sanda Mrabet, Salma Toumi, Manel Chouchène, Ferdaous Sabri, Abdellatif Achour

Chu Sahloul, Tunisia

## Objectives

Peritonitis is a common infectious complication in PD. The aim of this study was to evaluate peritonitis rate, and risk factors of peritonitis in a large group of patients in our center.

## Methods

The study was conducted in the Nephrology Department at Sahloul University Hospital in Tunisia. It was retrospective and included 185 patients who initiated PD between January 2006 and June 2016. Peritonitis incidence was calculated and risk factors were evaluated.

## Results

Totally, 186 episodes of peritonitis occurred in 69 patients over the ten years period. The average time before occurrence of the first episode of peritonitis was 14±16 month. The total rate of peritonitis, in the first year was one episode per patient every 32,4 months (n=54). The mean rate of peritonitis was one episode per patient every 26,7 month. Ninety one patients didn't present any peritonitis (49,7 %). All other patients have presented one or more episode of peritonitis (max = 9). Peritonitis incidence was higher in male patients (p= 0,004), diabetic patients (p=0,00), patients who had lower albuminemia at the beginning of dialysis (p= 0,23). No association was noted between the older age and peritonitis.

Our results were similar to literature concerning association between the male sex, hypoalbuminemia and peritonitis, but we are in discordance regarding the age. These discordances are related probably to the size of the population and the fact that the studies were interested only in continuous ambulatory peritoneal dialysis.

## Conclusion

Our data indicate that peritonitis occurred more often in a specific population (male, diabetic, malnourished), hence the necessity and the need of future studies to reduce this complication taking more precautions and anticipations with this predisposed population.

## P-172

## PERITONEAL DIALYSIS PERITONITIS IN MALTA – TRENDS OVER FOUR YEARS

Angela Borg Cauchi<sup>1,2</sup>, James Gauci<sup>1</sup>, Maria Angela Grima<sup>1</sup>, James Farrugia<sup>1</sup>, Michael A Borg<sup>1,2</sup>

<sup>1</sup>Mater Dei Hospital, Malta, <sup>2</sup>University of Malta, Malta

## Objectives

Peritoneal dialysis (PD) infections still lead to morbidity and mortality. This was a prospective study analysing the trends of PD peritonitis.

## Methods

All patients undergoing PD in Malta during 2013 till 2016 were analysed. ISPD Guidelines were used to define peritonitis. Infection rates were standardised as episodes/patient/year at risk. Microbiological data was analysed.

## Results

The prevalent number of patients undergoing PD during 2013 till 2016 was 91, 80, 126 and 117 respectively. There was male predominance at 63.5 % (61-67). Median ages were 64.8, 60.4, 66 and 66 years (18-89 years) respectively. Incidence of diabetes mellitus was 45.3% (41.8-50), cardiovascular disease 34.2%, hypertension 79.3%. PD peritonitis rates were 0.57, 0.54, 0.43 and 0.39 episodes/patient for 2013, 2014, 2015 and 2016 respectively. There was a marked predominance of Gram-positive organisms, at 0.40, 0.26, 0.23 and 0.26 episodes/patient respectively, predominantly Staphylococcal. The coagulase-negative Staphylococcus (CNS) peritonitis rate decreased from 0.26 to 0.11 episodes/patient in 2016. Methicillin Resistant Staphylococcus aureus (MRSA) peritonitis rates decreased from 0.01 episodes/patient in 2013 to nil in 2016. The other salient G-positive organism was Streptococcus. Amongst the G-negative flora, Escherichia coli and Pseudomonas were equally predominant during 2013, at 0.02 episodes/patient. In 2016, Enterobacter and Klebsiella were predominant at 0.01 episodes/year, with no Pseudomonas peritonitis. Fungal peritonitis rates were 0.01, 0.02, 0.02, nil episodes/year respectively.

## Conclusions

There was a high prevalence of diabetes mellitus in the PD population, consistent with that in the local population. There was marked improvement in PD peritonitis rates over the last four years. Rates for CNS peritonitis have improved, with no episodes of either MRSA, Pseudomonas or fungal peritonitis during 2016. Results of this study were possible due to an active inter-disciplinary approach between the Nephrology and Infection Control Departments.

P-173

## 2007-2017 PERITONITIS: AN UPDATE

Antonio Carlini, Ilaria Lucarotti, Roberta Lucarini, Elisa Colombini, Laura Bozzoli, Valentina Marchetti<sup>1</sup>, dr Riccardo Giusti

Dept.of Nephrology, S. Luca Hospital, Lucca-Italy

## Objectives

We monitored the incidence, epidemiology and outcome of peritonitis in our renal unit from 2007 to 2016, because it remains the main clinical complication and cause of drop-out in peritoneal dialysis (PD), otherwise the improvement in connectology and retraining patients. .

## Methods

All the patients affected by peritonitis were switched in CAPD (4-5 exchanges /day) and treated according to empiric antibiotic therapy (cefotaxime 500mg/bag IP plus tobramycin 0.6 mg/kg IP once a day) to change owing to the peritoneal liquid culture and specific antibiogram.

## Results

From 2007 to 2016 239 patients were treated with PD ( 149M and 90 F), aged between 16-87 years; 176 patients on APD and 63 patients on CAPD and 43 peritonitis, 15 on CAPD (34.8%) and 28 on APD (63.2%) occurred. The epidemiology showed: 48.8% Gram positive peritonitis, 30.2% Gram negative peritonitis, 9.3% culture negative peritonitis, 4.6% polymicrobial bacteria peritonitis, 4.6% fungal peritonitis and 2.3% mycobacterium peritonitis. In APD Gram positive peritonitis was 46.2% and in CAPD 53.3% The epidemiology was similar between CAPD and APD with high prevalence of Gram positive germs and the significant rate of peritonitis between CAPD and APD is related to higher number of patients on APD. The overall outcome was: 74.6% recovery from peritonitis, 13.9% catheter removal and switch in hemodialysis, 9.34% death. Our data demonstrated that:

- peritonitis incidence is different between CAPD and APD
- the Gram positive bacteria are the main etiologic cause of peritonitis
- a low rate of culture negative peritonitis (< 10%)
- an good incidence of recovery
- low –average rate of mortality and drop-out in PD patients.

## Conclusions

The Gram positive bacteria and the “touch contamination” are the main cause of acute peritonitis in our PD patients and it is necessary to perform an adequate training program with periodic retraining of all patients on PD to decrease their incidence

P-174

## SIMULTANEOUS CATHETER REMOVAL AND REPLACEMENT FOR INFECTIOUS COMPLICATIONS – SHOULD WE BE MORE LIBERAL? – EXPERIENCE OF A CENTRE

Rute Carmo, Ana Nunes, [Ana Oliveira](#), Ana Beco<sup>1</sup>, João Frazão, Manuel Pestana

Nephrology Department, Centro Hospitalar São João, Portugal

## Background

Infections related to peritoneal dialysis (PD) are frequent and decrease technical survival. In these cases, ISPD recommend to wait 2 weeks for reinsertion of a new catheter. However previous reports showed that simultaneous catheter removal and replacement (SRR) may be a safe alternative. We aimed to describe our experience in SRR.

## Methods

Retrospective observational study including consecutive patients followed-up in our program submitted to SRR between 2011 and 2016.

## Results

Twenty-eight procedures were performed in 21 patients (1,3 episodes/patient): 11 were male (52,3%), with a mean age of 43,7±10,5 years, 3 (14,2%) were diabetic. Prevalence of continuous ambulatory and automated PD was similar (n= 14; 50%).

Persistent exit site and tunnel infection was present in 16 cases (57,1%), being *Staphylococcus aureus* the most common agent (25%). In 12 cases (42,9%) recurrent peritonitis was the reason for SRR, most commonly due to *Staphylococcus epidermidis* (n= 4; 30,8%). All cases had 2 consecutive peritoneal leukocyte count inferior to 100/uL at the time of SRR.

The SRR was performed under antibiotic coverage, which was maintained for a mean of 15,2±7,5 days after surgery.

Sixteen cases needed temporary haemodialysis and resumed PD after a mean of 9,8 days.

One case (3,5%) had a recurrent peritonitis due to *Klebsiella pneumoniae*. Five patients (17,8%) had mechanical complications, and 3 needed a new SRR. The new catheter mean survival was 21,8±14,2 months and the mean technique survival after SRR was 24,8±13,1 months. At the end of follow-up, 13 (61,9%) patients dropped out: 5 (38,5%) due to an infection, 4 (30,7%) had a kidney transplant, 2 (15,4%) had low efficacy and 2 (15,4%) for option.

## Conclusions

Simultaneous catheter removal and replacement was a safe option in our patients, with a lower rate of complications, and allowed a fast resume of PD, avoiding immediate technic dropout.

## P-175

## RHIZOBIUM RADIOBACTER E BACILLUS LICHENIFORMIS: OPPORTUNISTIC PERITONITIS

Rute Carmo, [Ana Oliveira](#), Ana Nunes, Ana Beco, João Frazão, Manuel Pestana

Centro Hospitalar São João, Portugal

## Background

Rhizobium radiobacter is a gram negative phytopatogenic bacillus and Bacillus licheniformis is a gram positive bacillus present also in soil and birds. These agents cause opportunistic infections in immunocompromised hosts, although peritonitis is very rare.

## Case report

The study was conducted in the Nephrology Department at Sahloul University Hospital in Tunisia. It was retrospective and included 185 patients who initiated PD between January 2006 and June 2016. Peritonitis incidence was calculated and risk factors were evaluated.

## Results

We describe the case of a 44-years-old male, farmer, with chronic kidney disease of uncertain aetiology, on continuous ambulatory peritoneal dialysis (CAPD) since 2011. In January 2016, he received a kidney transplant from a donor after cardiac death, with primary failure due to venous thrombosis. He resumed CAPD with low volumes a few days later.

In March 2016, he developed nausea, abdominal pain and cloudy effluent. Lab work revealed elevated protein C reactive (68 mg/L), without leucocytosis. Peritoneal fluid presented 153 leukocytes/uL. After cultures were obtained, he started vancomycin and ceftazidime as protocol in our unit. At day 14 of treatment, Rhizobium radiobacter was identified (antibiotic sensitivity test wasn't performed). We decided to suspend vancomycin and maintain ceftazidime during 21 days with good clinical and analytical response. Four days after he had recurrence of the symptoms and peritoneal effluent cytology compatible with peritonitis. He was started on vancomycin, ceftazidime and oral ciprofloxacin. Cultures identified Bacillus licheniformis any agent and patient was submitted to catheter removal and new catheter was inserted 3 weeks later. After 35 days CAPD was resumed, without further complications.

## Conclusion

Previous immunosuppression and regular contact with soil and birds, such as chickens, were assumed as predisposed risk factors, alongside with chronic kidney disease, for the opportunistic infections identified. Proper antibiotic sensitivity test, not available in our centre, could be useful in the preservation of the catheter.

## P-176

## STAPHYLOCOCCAL PERITONITIS IN CHRONIC PERITONEAL DIALYSIS PATIENTS: SEVEN-YEAR REVIEW

Tiago Carvalho, Ana Rita Martins, Patrícia Branco, Sara Lobo, Elisabete Costa, [Maria Augusta Gaspar](#)

Hospital de Santa Cruz, Portugal

## Introduction

The most common agent in peritoneal dialysis-related peritonitis is Staphylococcus spp. The optimal treatment strategy of staphylococcal peritonitis (SP) remains controversial.

## Material and Methods

We reviewed all consecutive cases of SP in a chronic peritoneal dialysis (CPD) unit from 2010 to 2016. During this period, there were 300 episodes of peritonitis, of which 109 (36.3%) were SP, affecting 59 patients, aged 52±15 years. Our unit empirical antibiotic protocol was intraperitoneal cefazolin and ceftazidime.

## Results

Among SP affected patients, 30 had one episode, 17 had two episodes and 12 had three or more. There were 63 cases (57.8%) of coagulase-negative SP, 42 (38.5%) of methicillin-sensitive Staphylococcus and 4 (3.7%) of methicillin-resistant Staphylococcus. 72 (66.1%) SP episodes occurred in males and 29 (26.6%) in diabetic patients. Mean time until first SP episode was 24±23 months. Exit-site infection occurred in 25 (22.9%) episodes, with 64% caused by the peritonitis agent. In 28 (25.7%) episodes hospitalization was required, 71 (65.1%) were initially treated with intraperitoneal cefazolin and ceftazidime and 47 required antibiotic adjustment after microbiological susceptibility was known. Vancomycin was used in 42 of these cases. The treatment duration was 14 days in 48 episodes and 21 days in 61 episodes; overall response rate was 75.2%. There were 23 (21.1%) relapse episodes and 8 (7.3%) repeat episodes, with a response rate of 58.3%. Overall, 27 (24.8%) patients were submitted to catheter substitution/removal, of which 14 corresponded to relapse or repeat episodes. 19 episodes (17.4%) needed haemodialysis. There were 4 dropouts (3.7%).

## Conclusions

SP remains a common complication of CPD. Due to the high proportion of cefazolin-resistant staphylococcal strains, vancomycin usage in the empirical antibiotic protocol may be warranted. Relapse and repeat episodes have a lower treatment response rate, requiring more frequent catheter substitution/removal, though technique dropout due to SP was low.

P-177

### THE IMPACT OF EARLY INFECTION-RELATED HOSPITALIZATION ON CLINICAL OUTCOMES IN INCIDENT PERITONEAL DIALYSIS PATIENTS

Sang Su Choi, Yaeni Kim, Hye Eun Yoon, Seok Joon Shin, and Yong Kyun Kim

Department of Internal Medicine, College of Medicine, The Catholic University of Korea, South Korea

#### Background

Infection is a common cause of hospitalization in patients undergoing peritoneal dialysis (PD). However, there are few data about the association between early infection-related hospitalization and clinical outcomes in PD patients. In this study, we investigated the influence of early infection-related hospitalization on clinical outcomes in incident peritoneal dialysis patients.

#### Methods

A total of 583 incident PD patients were included from the Clinical Research Center registry for End Stage Renal Disease, a prospective observational cohort study in Korea. Early infection-related hospitalization was defined as all of infection-related hospitalization within 1 year after the time of initiation of PD. Primary outcome is all-cause mortality following infection-related hospitalization within 1 year at the time of initiation of PD. Secondary outcome is technical failure following infection-related hospitalization within 1 year at the time of initiation of PD.

#### Results

Seventy-six patients were admitted due to infection within 1 year at the time of initiation of PD. The median follow-up period was 29 months. In the multivariate Cox regression analyses showed that early infection-related hospitalization was independently significant risk factor for all-cause mortality (HR 2.38, 95% CI, 1.03-5.52, P = 0.043) and technical failure (HR 3.23, 95% CI, 1.89-5.51, P<0.001).

#### Conclusions

Our data showed that early infection-related hospitalization after initiation of PD was associated with significantly higher risk of all-cause mortality and technical failure in PD patient.

P-178

### DEVELOPMENT, VALIDATION AND CE CERTIFICATION OF A LOW-COST IMMUNODIAGNOSTIC TEST FOR MICROBIAL INFECTION IN SPENT DIALYSIS FLUID FOR EASY USE BY PD PATIENTS DURING ROUTINE EFFLUENT DISPOSAL

Barbara Fallowfield, Gita Parekh

Mologic, United Kingdom

#### Objectives

To develop a simple diagnostic test working on spent dialysis fluid, reliably indicating the presence of microbial infection in the peritoneal cavity, before diagnosis can be achieved by symptoms and signs (e.g. "cloudy bag")

To build the diagnostic test into a compact, disposable device which interfaces easily and cleanly with the fluid disposal bag, allowing confident, frequent and unobtrusive use as part of the effluent disposal process.

To use technology and manufacturing processes which allow high volume production and affordable costs, enabling widespread adoption and favourable health economics.

#### Methods

Laboratory assays for biomarkers of host innate immune response were developed and validated for use in spent dialysis fluid. 121 samples were tested - 66 infected and 55 non-infected. Two biomarkers were selected and assays for these were transformed into duplex lateral flow format.

A novel thermoplastic housing was designed, allowing the test device to be connected to the outlet pipe of an effluent bag, enabling a fluid sample to enter the device, automatically initiating the test. Subsequent testing of dialysis fluids with the final product confirmed clinical utility of the duplex lateral flow device.

#### Results

Acute peritonitis diagnosis was based on the presence of abdominal pain and cloudy peritoneal effluent with >100 white blood cells/mm<sup>3</sup>. MMP 8 and IL-6 were found to reliably identify the presence of infection with a sensitivity of 98% and specificity of 95%. The usability, acceptability and clinical performance of the final test version were all found to be satisfactory, allowing the product to receive CE mark certification as an IVD for self-use.

#### Conclusions

The objectives have been achieved and embodied in a novel diagnostic which fits unobtrusively into the daily routine of PD patients to provide a reliable, unambiguous diagnosis of peritoneal infection.

P-179

**BREVUNDIMONAS DIMINUTA PERITONITIS IN PERITONEAL DIALYSIS PATIENTS: A CASE REPORT**

Laura Florea, Cristina Popa, Raluca Dumea, Adrian Covic

UMF "Gr T Popa" IASI, Parhon Hospital, Romania

**Objectives**

Peritonitis is a frequent complication of peritoneal dialysis (PD) leading to technique failure and mortality. The majority of cases involves bacterial pathogens. We report an episode of peritonitis caused by an uncommon Gram-negative organism, *Brevundimonas diminuta*.

**Methods**

Case report.

**Results**

A 61-year-old man patient, known with chronic renal failure due to chronic glomerulonephritis and ethylic cirrhosis, treated with continuous ambulatory peritoneal dialysis for 224 months, with 6 previous peritonitis episodes, developed cloudy PD effluent and mild abdominal pain. He was admitted with peritonitis without exit site infection. He had elevated leukocyte 12800/mm<sup>3</sup> and CRP level 86 mg/l. Laboratory examination of the effluent showed 1200 white blood cells, with 80% segmental neutrophils. Bacterial cultures were positive with *Brevundimonas diminuta*. He was treated with gentamicin and ceftazidime that were administered intraperitoneally during peritoneal dialysis. He refused the peritoneal catheter removal and the transfer to hemodialysis. The patient has a slow but favorable evolution, not only surviving, but also maintaining PD catheter.

**Conclusion**

*Brevundimonas diminuta* is non lactose fermenting environmental Gram negative bacilli. He has been described as opportunistic pathogen in immunocompromised hosts. *Brevundimonas diminuta* associated with PD has rarely been identified. Only one case was reported. The factor that predisposes patients to this infection remains unknown. In our case the peritoneal catheter was the potential portal of entry.

P-180

**BEDROOM DIALYSIS EXCHANGE IS THE RISK FACTOR FOR PERITONITIS IN CAPD PATIENTS BESIDE DURATION OF CAPD**

Silvija Vladislavic, Ivo Jelacic, Dijana Boric-Skaro, Rozarija Skaricic, Dragan Ljutic

Department of Nephrology and Dialysis, University Hospital Center Split, Croatia

**Objectives**

To investigate the connection between peritonitis rate and sociodemographic factors of patients treated with continuous ambulatory PD (CAPD).

**Methods**

Sixty-seven patients (34 females, 33 males) aged 50,3±15,5 years, treated with CAPD for 30,2±28,66 years were investigated. They completed the questionnaire about sociodemographic factors.

**Results**

Peritonitis rate was 0.41 episodes per patient year. Statistical analysis showed no correlation of the peritonitis occurrence with the sex (p=0,222), age (p=0,243), working place (p=0,512), marital status (p=0,257), place of residence (p=0,42), number of inmates (p=0,576), pets (p=0,424), monthly income (p=0,111), depending on whether the exchange was done alone or with assistance of the other person (p=0,431).

Higher peritonitis occurrence was associated with duration of CAPD ( $\chi^2 = 22,92$ ; p<0.001), and the room where dialysis exchange was performed (higher incidence in the bedroom) ( $\chi^2 = 8.51$ , p=0.037) (Table 1).

**Conclusions**

This study demonstrated that, beside duration, the place in which peritoneal exchange was performed is associated with peritonitis occurrence – the higher incidence in the bedroom.

Table 1. Relationship between peritonitis and the room where the CAPD was performed

	The room where the CAPD was performed:				Total
	Separate	Bedroom	Dining Room	Living Room	
Did you have peritonitis					
Yes	8	29	0	1	38
No	11	13	2	3	29
	19	42	2	4	67

P-181

### PERITONEAL CATHETER LOCK-SOLUTION WITH TAUROLIDINE IN RELAPSING PERITONITIS CAUSED BY STAPHYLOCOCCUS EPIDERMIDIS

Nuria Areste Fosalba, Kamila Klimek, Antonia Concepción Gomez Castilla, Alejandro Fortes Sayago, Mercedes Salgueira Lazo

Virgen Macarena University Hospital, Spain

#### Objectives

Relapsing peritonitis is frequently associated with peritoneal catheter chronic infection and may lead to catheter removal. Catheter lock-solution with taurolidine could be a preventive measure of relapsing peritonitis due to its antimicrobial and anticoagulant properties, avoiding the formation of biofilm.

#### Methods

Two cases of relapsing peritonitis treated with taurolidine peritoneal catheter lock-solution are presented. Peritonitis were caused by Staphylococcus epidermidis in both cases, and were intermittently treated with intraperitoneal vancomycin, with serum vancomycin level control. Good initial clinical response was observed and negative cultures were obtained, albeit relapsing peritonitis were registered up to three more times in both patients.

Taurolidine catheter lock-solution was subsequently applied according to protocol: twelve hours long taurolidine catheter lock-solution administration once per day during one week, following a weekly administration during the next four weeks. Neither side effects nor complications were reported. Follow-up period was twelve months.

#### Results

Upon completion of the protocol, no new episodes of peritonitis were registered in any of the patients.

#### Conclusions

Catheter lock-solution with taurolidine was effective and safe in our series. Catheter removal and temporary haemodialysis were avoided. This technique cannot be considered as the gold standard treatment modality due to the lack of studies with enough sample size. Randomized controlled trials are needed. However, it should be considered as a useful treatment option.

### P-182 Moderated Poster Session 4

### PD TRAINING PRACTICES IN RELATION TO INFECTIOUS COMPLICATIONS –RESULTS FROM THE MULTICENTRE ANALYSIS

Monika Lichodziejewska-Niemierko<sup>1</sup>, Michał Chmielewski<sup>1</sup>, Ewa Wojtaszek<sup>1</sup>, PJoanna Matuszkiewicz-Rowińska<sup>1</sup>, Ewa Suchowierska<sup>1</sup>, Beata Naumnik<sup>1</sup>, Edyta Golembiewska<sup>1</sup>, Magdalena Grajewska<sup>1</sup>, Dr Beata Sulikowska<sup>1</sup>, Stanisław Niemczyk<sup>2</sup>, Piotr Jagodziński<sup>1</sup>, Magdalena Mosakowska<sup>2</sup>, Renata Kłak<sup>1</sup>, Bernadeta Marcykiewicz<sup>3</sup>, Krzysztof Kalita<sup>3</sup>, Krzysztof Cieszyński<sup>3</sup>, Robert Krawczyk<sup>3</sup>, Mirosław Adamski<sup>3</sup>

<sup>1</sup>Department of Nephrology, Medical University, Poland, <sup>2</sup>Department of Nephrology Military Institute of Medicine, Poland, <sup>3</sup>Fresenius Nephrocare Dialysis Centre, Poland

#### Objectives

Dialysis-related infections remain major complications of peritoneal dialysis. With ISPD recommendations in place, there seem to be a variability of practice patterns as assessed by PDOPPS. The aim of the study was to analyse training practices in relation to infections in PD units in Poland.

#### Methods

11 units took part in the study led by PD Working Group of the Polish Society of Nephrology. They provided retrospective data on PD-related infections and unit practices over a 2-year period.

#### Results

There were 559 patients on PD during 2014-15 (283 women, 276 men), aged 43-69; 57 on average, 35% were diabetic, 33% suffered from heart failure, 62% were on CAPD, 67% on biocompatible solutions, 22% used icodextrin, 11% were assisted PD patients.

All patients were trained on hospital basis, majority by the same nurse, time of initial training varied from 5 to 14 days and reeducation was taking place every 6 months. All units used a structured training programme and finished education with the test; majority was training a family member as well.

A dressing was changed every 2 days and none of the centers applied antibiotic topically on exit site. Staph. aureus carrier status was not checked routinely by half of the centers but if positive, it was treated with mupirocin with a standard procedure. Empiric treatment of peritonitis consisted of cephalosporins of 1st and 3rd generation in majority of centers.

The peritonitis rate was 1 episode per 45 and exit-site infection 1 per 147 patient-months. All units audited frequency and microbiology of infectious complications once a year.

#### Conclusions

The rate of infections related to PD appears to be low in large Polish PD units and this may be connected with appropriate and meticulous training and retraining practice pattern.

P-183 Moderated Poster Session 4

## PERITONITIS PREVENTION STUDY (PEPS) - A RANDOMIZED, CONTROLLED TRIAL

Susanne Ljungman<sup>1</sup>, Joergen Jensen<sup>2</sup>, Dag Poulsen<sup>3</sup>, Aivars Petersons<sup>4</sup>, Mai Rosenberg<sup>5</sup>, Heikki Saha<sup>6</sup>, Dirk Struijk<sup>7</sup>, Martin Wilkie<sup>8</sup>, Olof Heimbürger<sup>9</sup>, Bernd Stegmayr<sup>10</sup>, Thomas Elung Jensen<sup>11</sup>, Ann-Cathrine Johansson<sup>12</sup>, Margareta Rydström<sup>13</sup>, Helga Gudmundsdottir<sup>14</sup>, Max Petzold<sup>15</sup>

<sup>1</sup>Sahlgrenska University Hospital, Sweden, <sup>2</sup>Odense University Hospital, Denmark, <sup>3</sup>Innlandet Hospital, Norway, <sup>4</sup>Pauls Stradins Clinical University Hospital, Latvia, <sup>5</sup>University of Tartu, Estonia, <sup>6</sup>Tampere University Hospital, Finland, <sup>7</sup>Medisch Centrum, University of Amsterdam, The Netherlands, <sup>8</sup>Sheffield Kidney Institute, United Kingdom, <sup>9</sup>Karolinska University Hospital, Sweden, <sup>10</sup>University Hospital of Northern Sweden, Sweden, <sup>11</sup>Rigshospitalet University Hospital, Denmark, <sup>12</sup>Skåne University Hospital, Sweden, <sup>13</sup>Skaraborg Hospital, Sweden, <sup>14</sup>Oslo University Hospital, Norway, <sup>15</sup>Center of Applied Biostatistics, University of Gothenburg, Sweden

**Objectives**

Peritonitis is a serious potential complication in patients treated with peritoneal dialysis (PD). Breaks in the PD exchange protocol are a risk factor for peritonitis. The aim of this study was to evaluate if a new model of follow-up with systematic testing and retraining of PD patients could reduce the incidence of peritonitis, technique-failure rate, and hospitalization due to peritonitis. Risk factors for peritonitis were also be studied.

**Methods**

New PD patients able to perform PD without assistance were recruited in Scandinavia, Latvia, Estonia, the Netherlands, and the United Kingdom. Time of study: January 2010 - Dec 31, 2015. Patient participation time: up to 3 years. 669 patients were randomized either to an intervention group (INT; n=338) or standard care. The INT patients underwent regular testing of their PD knowledge with focus on infection prophylaxis. Hand disinfection technique was tested using fluorescent alcohol and a UV lamp. If the goals of the tests were not reached, retraining was given. Patients in the control group (CTR; n=331) were treated according to the routines of the clinic.

**Results**

Peritonitis incidence rate was 0.31 and 0.34 episodes/patient year in the INT and the CTR (p=0.242). The risk of developing a peritonitis episode was 10% lower in the INT than in the CTR (adjusted hazard ratio=0.90; p=0.320). The rate of transfer to haemodialysis/patient year was 0.216 in the CTR and 0.175 the INT (p=0.095). The proportion of patients who were admitted to hospital for peritonitis at least once was 41% in the CRT and 32% in the INT (p=0.016).

**Conclusion**

PD patients using the new follow-up model tended to have lower rates of peritonitis and PD technique failure, although not significantly lower, and were less likely to be hospitalized for peritonitis than patients treated according to the routines of the clinics.

## P-184

## A SINGLE – CENTER EXPERIENCE WITH PERITONEAL DIALYSIS – ASSOCIATED PERITONITIS: TEN YEARS DATA

Zdenka Majster, Aleksandar Jankovic, Bojan Stopic, Tatjana Damjanovic, Milos Mitrovic, Nada Dimkovic

Clinical Department for Renal Diseases, Zvezdara University Medical Center, Serbia

**Objectives**

To evaluate peritonitis incidence, risk factors and outcomes in patients on peritoneal dialysis (PD)..

**Methods**

We studied 211 patients (119 males and 92 females, median age 60.3± 12.2 years) who started PD between January 2006 and December 2015. Almost all patients were on continuous ambulatory PD, except 5 on automated PD. 82 (38.9%) had diabetes mellitus. 42 (19.9%) received PD as second choice. 76 (36.0%) were treated with assisted PD. Median time on PD was 29.2 months (3 - 120 months). Multiple regression analysis was used to study the impact of age, gender, hemodialysis (HD) as former modality, diabetic status, PD dialysis system and assisted PD on peritonitis prediction.

**Results**

There were 196 episodes of peritonitis during 6158 patient-months, with the rate of 1 episode every 31.4 months. The total number of patients who developed peritonitis was 109 (51.7%). 4 episodes of peritonitis were related to tunnel infection. Single Gram-positive germs were isolated in 54.1% episodes of peritonitis, Enterobacteriaceae in 23.5%, Candida in 4.6%, culture-negative were 10.2% episodes and 7.6% were polymicrobial. There were 5 cases of vancomycin-resistant enterococcal peritonitis. The primary cure was 89.3%. Catheter replacement was performed in 4 episodes. 12 (5.7%) patients required permanent transfer to HD. Peritonitis was the cause of death in 9 (4.3%) patients. Multivariate analysis showed that former HD was associated with higher peritonitis rates independently of other factors (OR 2.360, 95% CI 1.114-4.997, p=0.025).

**Conclusion**

In our program peritonitis rate and primary cure met the ISPD standards. Transfer from HD was significantly associated with a higher risk for peritonitis.

P-185

### THE INCIDENCE OF INFECTIONS AND SHORT-TERM OUTCOMES IN PERITONEAL DIALYSIS PATIENTS UNDERGOING ABO-INCOMPATIBLE KIDNEY TRANSPLANTATION

Skalioti Chrysanthi<sup>1</sup>, Christina Melexopoulou<sup>1</sup>, Smaragdi Marinaki<sup>1</sup>, Ioanna Tsoumpou<sup>1</sup>, Chrysanthi Skalioti<sup>1</sup>, Giorgos Spanos<sup>1</sup>, George Zavos<sup>2</sup>, John Boletis<sup>1</sup>

<sup>1</sup>Nephrology Department and Renal Transplantation Unit, National and Kapodistrian University of Athens Medical School, General Hospital of Athens «Laiko», Greece, <sup>2</sup>Renal Transplantation Unit, General Hospital of Athens «Laiko», Greece, <sup>3</sup>National and Kapodistrian University of Athens, General Hospital of Athens Laiko, Greece

#### Objectives

The use of intensified desensitization protocols in ABO-incompatible kidney transplantation (ABOi KTx) seems to increase postoperative infection rates. The purpose of this study was to audit infectious complications and outcomes in ABOi KTx in peritoneal dialysis (PD) patients and compare them with haemodialysis (HD) patients.

#### Methods

From June 2005 to June 2016 we performed 40 ABOi KTx. Our desensitization protocol included the use of rituximab 30 days pre-KTx, immunoadsorptions, intravenous immunoglobulin and double oral immunosuppression administered 15 days pre-KTx. We compared the incidence of bacterial and viral infections, surgical complications (SCs), survival rates and rejection episodes between patients on PD and HD with a follow-up period of one year.

#### Results

The cohort included six (15%) PD patients, 32 (80%) HD patients and two preemptive. The mean age was 30 years [range16-52] in the PD group and 39 years [range21-60] in the HD group (p=ns). During desensitization period one episode of peritonitis in the PD group was observed, successfully treated which caused rescheduling the KTx. The incidence of post-KTx bacterial infections leading to hospitalization, viral infections (cytomegalovirus and polyoma virus) and SCs were similar between the two groups (p=ns). There was no significant difference in serum creatinine after one year, between two groups ( $1.73 \pm 0.5$  vs  $1.51 \pm 0.35$ mg/dl, p=ns) and patient and graft survival was 100%vs100% and 100%vs96.9% in the PD vs HD group, respectively (p=ns). Furthermore, the rate of biopsy-proven acute rejection was comparable. Two patients in the PD group and 3 in the HD group had acute cellular rejection, treated successfully. Only one HD patient developed acute antibody-mediated rejection and lost the graft immediately after KTx.

#### Conclusions

Peritoneal dialysis and haemodialysis patients undergoing ABO incompatible kidney transplantation have comparable infectious complications rate and short term outcomes.

P-186

### IDIOPATHIC EOSINOPHILIC PERITONITIS IN PERITONEAL DIALYSIS. A CASE REPORTED

Isabel Millan, Ana Esther Sirvent, María Angeles Herrero, Mercedes Calatayud, Ricardo Enríquez, Luis Jiménez

Section of Nephrology, Spain

#### Introduction

The development of cloudy peritoneal dialysis effluent (PDE) is of great concern to the patient undergoing therapy with peritoneal dialysis (PD). It usually occurs within the first 3 months after initiating dialysis, although it can be developed much later. We reported a case after 12 months.

#### Clinical case

A 65-year-old male patient with end-stage-renal disease secondary to diabetic nephropathy, with allergic history to penicillin. He was started on Automated PD for 12 months and presented asymptomatic, cloudy PDE with a white cell count of 800 cells/mm<sup>3</sup> (75% eosinophil). Intraperitoneal antibiotics (vancomycin, ampicillin and tobramycin) were initiated after to send cultures. The peripheral blood revealed eosinophilia (eosinophil 21.60%). He had slightly elevated C reactive protein (21.7 mg/l) without high white blood cell count. After seven days, cultures of PDE showed no growth of aerobic, anaerobic bacteria, fungus or parasites. Mycobacterial culture intraperitoneal was negative. No parasite or cyst was found on fecal examination. The chest X-ray and computed tomography scan also showed negative findings. Searches for serum tumor and immunological markers were negatives.

Given the fact that our patient continued with turbid PDE and inefficacy of change antibiotic therapy we diagnosed that the patient had idiopathic eosinophilic peritonitis (EP) and decided to start with oral prednisone (20mg/day) which was gradually tapered off and stopped over an 8 week. After 24 hours his PDE became clear with less of 100/mm<sup>3</sup> white cells. Four months later there is no recurrence of EP.

#### Conclusions

The diagnosis of idiopathic EP should be considered when repeated cultures are always negative and the turbidness of PDE persists in spite of an antibiotic therapy. As is reported, we treated with corticoids in a tapering form with excellent results without relapsed.

P-187 Moderated Poster Session 1

## BEYOND CALCIUM HOMEOSTASIS IN PD: CAN CINACALCET REDUCE PERITONITIS?

Ana Pimentel, Anabela Malho Guedes, Pedro Cavaleiro, Ceu Laranjo, Idalécio Bernardo, Pedro Neves

CHA, Portugal

## Introduction

Cinacalcet is an extracellular calcium sensing receptor (CaSR) agonist. The expression of CaSR has been observed throughout the entire gastrointestinal (GI) tract in diverse cells and it seems to have a regulatory role in the GI function. Previous studies in rats show that invasion of enterobacteria in small intestine damage was significantly prevented by pretreatment with cinacalcet, functionally associated with the down regulation of inducible nitric oxide synthase (iNOS) expression and neutrophil recruitment resulting from the suppression of bacterial invasion. In peritoneal dialysis (PD), the peritoneum is an effective vascular surface area but there is no known CaSR at the time.

The aim was to perceive if cinacalcet could have a protective role regarding peritonitis in PD patients.

## Methods

A retrospective open cohort of patients undergoing PD since 2008 was analyzed. Patients with primary catheter dysfunction were excluded. Demographic and clinical data was collected and peritonitis incidence rate calculated.

## Results

87 patients were analyzed, 27 of which had cinacalcet while on PD (24.4 months on average). Mean age was 59.9 years, 49 patients were male. Total follow-up was 2140 months (660 while on cinacalcet, 1480 without). 79 peritonitis were diagnosed, with an incidence rate of 0.29 episodes per person-year while on cinacalcet and 0.51 otherwise. Incidence rate ratio of 0.57; 95% CI [0.31 – 0.99].

## Conclusions

Extracellular CaSR functions as a key regulator of calcium homeostasis and has a known systemic anti-inflammatory role. In our cohort of patients undergoing PD, it seems that cinacalcet has a protective role in peritonitis incidence. The underlying mechanism is still not known and further studies are needed to confirm the result.

## P-188

## ANTIMICROBIAL SUSCEPTIBILITIES IN PERITONITIS IN PERITONEAL DIALYSIS: EXPERIENCE OVER ONE DECADE

Jose Antonio Quintanar Lartundo<sup>1</sup>, Noelia Vada Manzanal<sup>2</sup>, Rosa Palomar Fontanet<sup>2</sup>, Carlos Antonio Salas Venero<sup>2</sup>, Luis Martinez Martinez<sup>2</sup>, Manuel Arias Rodriguez<sup>2</sup>

<sup>1</sup>Cruces University Hospital, Spain, <sup>2</sup>Valdecilla University Hospital, Spain

## Introduction

Peritonitis carries a high morbi-mortality and can cause the technique failure. It is recommended to carry out periodic studies in each center to verify that there have been no changes in the resistances that may affect the protocols, which is the objective of our study.

## Methods

We carried out a microbiological study, between 2004 and 2013, considering both the etiology and antimicrobial susceptibilities of the identified organisms, using a quantitative antibiogram method.

## Results

Of the 376 episodes, 57.7% were due to grampositive(GP), 25.3% to gramnegative(GN), fungus 2.9%, 0.8% anaerobe, 3.7% multi-organism and 9.6% culture-negative.

In GP, there were no differences ( $p>0.05$ ) in the appearance of resistance, except for *Streptococcus* spp., with a decrease in resistance to penicillins (28.6% to 6.1%;  $p<0.05$ ). There are no changes to clindamycin, cefotaxime, quinolones or vancomycin. 100% of coagulase-negative *Staphylococcus* are sensitive to vancomycin and linezolid. Five cases of methicillin resistant *S. aureus* (20%) were isolated, without resistance to vancomycin. One case of *Enterococcus gallinarum* resistant to glycopeptides has appeared.

In GN; 1)The rate of enterobacteria resistant to third-generation cephalosporins is low (<20%). With the exception of *E. coli* (resistance to quinolones of 39%), the other enterobacteria were sensitive to the antibiotics tested. 2)The number of GN with extended spectrum beta-lactamase resistances has increased. One enterobacteria in the first period and 6 in the second. (5 *E. coli*, one *Enterobacter cloacae*). 3)There was no strain producing carbapenemases. 4)Among the non-fermenting GN, with the exception of one *Acinetobacter baumannii* and another *P. aeruginosa* multiresistant, the rest are sensitive to the antibiotics tested.

## Conclusion

No statistically significant differences were observed in the occurrence of antimicrobial resistance in the two time periods studied in any of the microorganisms detected, which leads us to reaffirm the suitability of maintaining the antibiotics used empirically as a protocol in our center.

P-189

## SHOULD WE HOSPITALIZE ANY EPISODE OF PERITONITIS? PREDICTORS OF HOSPITALIZATION IN PERITONEAL DIALYSIS PERITONITIS

Jose Antonio Quintanar Lartundo<sup>1</sup>, Noelia Vada Manzanal<sup>2</sup>, Rosa Palomar Fontanet<sup>2</sup>, Manuel Arias Rodriguez<sup>2</sup>

<sup>1</sup>Cruces University Hospital, Spain, <sup>2</sup>Marques de Valdecilla University Hospital, Spain

### Introduction

There are many guidelines that indicate how to manage the infection, but do not provide information on the criteria for hospitalization. The aim of our study were to compare the outcome between ambulatory and hospital management and to recognize the main predictors of admission in PD related peritonitis.

### Methods

We included all the patients on PD with an episode of peritonitis(2004-2013). We evaluated the ability to perform adequate treatment on an outpatient basis and recorded peritonitis and demographic data.

### Results

Of the 367 episodes, 315(85.8%) were treated in on outpatient basis without admission.

A total of 61 episodes(16.2%) were hospitalized, 40(10.6%) from the beginning and 21(5.6%) after treatment at home. Outcomes: complete cure, 49(80.3%) episodes; catheter removal, 24(39.3%); 12(19.7%) died. The mean hospital stay was 13.9±7.1 days.

Causes of admission after outpatient treatment: no cure in 13(61.9%) episodes, fever/poor outcome at 48 hours in 7(33.3%) and 1(4.8%) due to fungal infection. Causes of initial hospitalization: 25(62.5%) for poor outcome, 4(10%) due to inability to correctly PD and 11(27.5%) for fungus.

When comparing the outcome according to the time of hospitalization, there were no significant differences( $p>0.05$ ) between cure rates(52.4% after home vs 35% from baseline), catheter withdrawal(33.3% vs. 42,5%) or peritonitis-related mortality(14.3% vs 22.5%).

There was a significant difference in the organisms that required admission( $p<0.001$ ); fungus(81.8%); anaerobe(33.3%); gramnegative(22.1%); polymicrobial(21.4%); negative-culture(19.4%); grampositive(9.2%).

When comparing the episodes that required or not hospital admission, there were no differences( $p=0.482$ ) among the different age groups (<50, 50-64.9, 65-79.9 and >80years), renal disease( $p=0.885$ ), presence of cardiovascular( $p=0.87$ ), cerebrovascular( $p=0.99$ ) or peripheral vascular disease( $p=0.375$ ), DM( $p=0.12$ ) or PD modality( $p = 0.973$ ).

### Conclusions

1)The main risk factors for hospitalization are fungal infection, poor outcome after 72 hours and inability to correct treatment. 2)There are no differences in the outcome of hospitalized patients. 3)The main causative organisms are fungus, anaerobes and gramnegatives.

P-190

## CHANGE IN MICROBIOLOGIC PROFILE IN PERITONEAL DIALYSIS PERITONITIS OVER A DECADE

Jose Antonio Quintanar Lartundo<sup>1</sup>, Noelia Vada Manzanal<sup>2</sup>, Rosa Palomar Fontanet<sup>2</sup>, Carlos Antonio Salas Venero<sup>2</sup>, Luis Martinez Martinez<sup>2</sup>, Manuel Arias Rodriguez<sup>2</sup>

<sup>1</sup>Cruces University Hospital, Spain, <sup>2</sup>Marques de Valdecilla University Hospital, Spain

## Introduction

Peritonitis remains the most important complication of peritoneal dialysis (PD), associating high morbi-mortality, transfer to hemodialysis and hospitalization. Some studies have described changes in the epidemiology of infectious agents over time. The aim of our study was to examine the microbiological profile over time in our Unit to determine the best therapeutic approach.

## Materials and Methods

We studied all the peritonitis episodes in a ten-year period (01/01/2004-12/31/2013). In order to compare the evolution, the study time was divided into two periods; 2004-2008 and 2009-2013.

## Results

A total of 376 episodes were recorded in 149 patients (men;67.8%), with a mean age 62.6±14.5 years. 87.2% of them were in CAPD. The peritonitis incidence was 0.69p/p/y.

Comparing the main grampositive (coagulase negative staphylococcus[CNS], *S.aureus* and other), there was a slight decrease ( $p>0.05$ ) in the number(132-85) and proportion(61.1%-53.1%) of them, in probable relation to the decrease of the CNS(52.3%-37.6%). An increase in *Streptococcus* spp., mainly in the *mitis* group(9.1%-18.8%) was observed, remaining the rest stable. However, statistical differences were not observed ( $p=0.138$ ). The percentage of methicillin-resistant *S.aureus*(2.3%-2.4%) had no changes.

Within gramnegatives, although the number is similar(51-44), there has been an increase ( $p>0.05$ ) in their percentage(23.6%-27.5%), due to an increase of *E. coli*(37.3%-50%), *Acinetobacter baumannii*(3.9%-13.6%) and *Roseomonas* sp.(1.9%-9.1%). No statistical differences were found ( $p=0.376$ ) in gramnegatives.

There was a slight decline ( $p>0.05$ ) in the number(24-12) and percentage(11.1%-7.5%) of negative culture and an increase in polymicrobial peritonitis(0%-8.8%; $p>0.05$ ). The number and percentage of fungi and anaerobes has not changed.

## Conclusion

In this period of time there has been a decrease in the incidence of grampositive and peritonitis with negative-culture, with an increase of gramnegatives and polymicrobial peritonitis. There have been no variations in fungi and anaerobes. These changes have not resulted in loss of sensitivity of antibiotics initially used empirically as a protocol in our center to most common organisms.

3 Evolution of microorganisms by period of time			
Positive Culture	Microorganisms	2004-2008	2009-2013
		Grampositive	132 (61/1)
	<i>S. aureus</i> MS / SAMR	12 (9.1) / 3 (2.3)	8 (9.4) / 2 (2.4)
	<i>Strept. viridans</i>	9 (6.8)	7 (8.2)
	<i>Strpt. mitis</i>	12 (9.1)	16 (18.8)
	Other <i>Streptococcus</i>	7 (5.3)	10 (11.8)
	<i>Enterococcus</i> spp.	3 (2.3)	3 (3.5)
	<i>Corynebacterium</i>	10 (7.6)	3 (3.5)
	Other grampositives	7 (5.3)	4 (4.7)
	Gramnegative	51 (23,6)	44 (27,5)
	<i>E. coli</i>	19 (37,3)	22 (50)
	<i>Enterobacter cloacae</i> complex	7 (13,7)	5 (11,4)
	<i>Klebsiella</i>	7 (13,7)	2 (4,5)
	<i>K. pneumoniae</i> / <i>K. oxtoca</i>	2 (3,9) / 5 (9,8)	0 (0) / 2 (4,5)
	<i>Acinetobacter</i> spp	3 (5,9)	6 (13,6) / 0 (0)
	<i>A. baumannii</i> / <i>A. iwoffii</i>	2 (3,9) / 1 (1,9)	6 (13,6) / 0 (0)
	<i>Roseomonas</i> sp.	1 ( 1,9)	4 (9,1)
	<i>P. aeruginosa</i>	3 (5,9)	1 (2,3)
	Other gramnegatives	11 (21.6)	4 (9,1)
	Fungus	7 (3,2)	4 (2,5)
	<i>Candida parapsilosis</i>	4 (57,1)	2 (5,0)
	<i>Candida albicans</i>	2 (28,6)	2 (50)
	<i>Candida tropicalis</i>	1 (14,3)	0 (0)
	Anaerobes ( <i>B. Fragilis</i> )	2 (0,9)	1 (0,6)
	Polymicrobial	0(0)	14 (8,8)
	Total	192 (88,9)	148 (92,5)

P-191

## PERITONITIS IN PERITONEAL DIALYSIS. WHEN OUTCOME IS NOT AS EXPECTED

Jose Antonio Quintanar Lartundo<sup>1</sup>, Noelia Vada Manzanal<sup>2</sup>, Rosa Palomar Fontanet<sup>2</sup>, Manuel Arias Rodriguez<sup>2</sup><sup>1</sup>Cruces University Hospital, Spain, <sup>2</sup>Valdecilla University Hospital, Spain**Introduction**

The peritonitis cure rate in Peritoneal Dialysis(PD) is high, however, 10-20% of the cases may present a complicated outcome, such as membrane damage requiring catheter removal and transfer to hemodialysis, multiple repeated episodes or death. The aim of our study was to evaluate the causes that led to the unfavorable outcome, as well as the causative organisms, of the peritonitis that occurred in our Unit.

**Methods**

We performed a study of all peritonitis in our Unit between January 2004 and December 2013.

**Results**

376 episodes appeared in 149 patients(32.2% women), with a mean age of 62.6±14.5 years, incidence of 0.6 peritonitis/patient/year and a median peritonitis-free survival(time to first episode) of 190 days.

316(84%) of the episodes presented a complete cure. The rest, 60 cases(16%), had an unfavorable outcome.

In 10.6% the PD catheter was removed. The mean time to withdrawal was 8.5±5.3 days. Causes: lack of cure(37.5%), fungus(30%), recurrence(20%), patient's request(7.5%), membrane failure(2.5%) and incapacity for PD(2.5%). Causative organisms: fungi(100%), anaerobe(33.3%), polymicrobial etiology(14.3%), gramnegative(13.7%), grampositive(5.5%) and negative culture(5.3%).

There were 18(4.8%) relapses(50% by grampositive) and 16(4.3%) recurrences (43.8% by gramnegative). The catheter was removed in 7 cases and 1 died.

Within 30 days after an episode of peritonitis, 28 cases(7.4%). The mean time to death was 15.6±9.2 days.

Peritonitis was responsible in 12 cases(42.9%), 3 of them due to fungal peritonitis, 3 were gramnegative, 2 were grampositive, 1 were anaerobe, and in 3 cases no organisms were isolated. The most frequent causes of mortality are cardiac(21.5%), other type of infection(10.7%), abdominal(3.6%), cerebrovascular(7.1%), peripheral vascular disease(7.1%) and neoplasia(7.1%).

**Conclusion**

1)The unfavorable outcome rate(16%) is similar to previous studies. 2)The need for catheter removal is low(10.6%), being the responsible organisms fungi (withdrawal by protocol), anaerobes and polymicrobial etiology. 3)The cure rate of relapses/recurrences is 70.6%. 4) Peritonitis-related mortality was low(3.2%).

P-192

## PERITONITIS IN PERITONEAL DIALYSIS. WHAT TO CHOOSE; OUTPATIENT OR HOSPITAL TREATMENT

Jose Antonio Quintanar Lartundo<sup>1</sup>, Noelia Vada Manzanal<sup>2</sup>, Rosa Palomar Fontanet<sup>2</sup>, Manuel Arias Rodriguez<sup>2</sup><sup>1</sup>Cruces University Hospital, Spain, <sup>2</sup>Valdecilla University Hospital, Spain

## Introduction

Most peritonitis, despite continuing to be one of the main complications of peritoneal dialysis(PD), leading to high morbi-mortality, which are the main cause of transfer to hemodialysis and one of the fundamental causes of admission, with correct early management, evolve towards healing. The objective of our study was to evaluate the clinical outcome of peritonitis in our Unit.

## Methods

We performed a study of all peritonitis that occurred in Cantabria over a period of ten years (2004-2013).

## Results

A total of 376 episodes of peritonitis were studied in 149 patients(32.2% women), with a mean age of 62.6±14.5 years(range of 19 to 85 years) and a stay in PD of 190 days until the first episode.

After the initial empiric antibiotic treatment presented a favorable outcome, with a complete cure, 316 cases(84%). Of the 316 episodes, 291 received treatment at home and the other 25 at hospital. Grampositive organisms presented completely cure in 90.3% of cases(196 episodes of 217, with no significant differences among them), gramnegative in 76.8%(73 of 95 cases, no differences), polymicrobial peritonitis in 92.9%(13 of 14 episodes), negative culture in 86.1% (31 of 36 cases) and anaerobic in 66.7%(2 of 3 episodes). Fungal peritonitis is excluded because, by protocol, the PD catheter is withdrawn. There were no statistically significant differences(p=0.653) when comparing grampositive and gramnegative, nor between the different organisms(p>0.05). See table 1.

The remaining peritonitis, 60 cases(16%), had a complicated/unfavorable outcome; there were 18 relapses(4.8%), 16 recurrences(4.3%), the catheter had to be removed and transferred to hemodialysis in 17 episodes(4.5%) and 9 cases(2.4%) died.

## Conclusion

The cure rate(84%) is high, there being no significant differences between the different organisms. Based on the good outcome and few complications, we consider that outpatient treatment is a good option for these patients.

Organism	Total number	cure	%
Grampositive	217	196	90.3
S. epidermidis	68	63	92.6
S. coagulasa-c	33	29	87.9
S. aureus	25	22	88
Streptococcus grupo viridans	16	15	93.8
Streptococcus grupo mitis	28	26	92.9
Otros Streptococcus	17	15	88.2
Enterococcus	6	6	100
Corynebacterium	13	12	92.3
Otros grampositivos	11	8	72.7
Gramnegative	95	73	76.8
Escherichia coli	41	33	80.5
Enterobacter cloacae complex	12	8	66.7
Acinetobacter spp <sup>1</sup>	9	8	88.9
Klebsiella spp <sup>2</sup>	9	6	66.7
Roseomonas sp.	5	3	60
Pseudomonas aeruginosa	4	2	50
Otros grampositivos	15	13	86.7
Anaerobe	3	2	66.7
Negative culture	36	31	86.1
Polymicrobial peritonitis	14	13	92.9
Total	376	316	84

P-193

**PERITONEAL DIALYSIS-RELATED PERITONITIS CAUSED BY FUSARIUM SOLANI**Jennifer Sánchez, Olga González, Javier Arrieta

Hospital Universitario De Basurto, Spain

Peritoneal Dialysis (PD) is associated with high risk of infection of the peritoneum, subcutaneous tunnel and catheter exit site. Peritonitis is a common complication that is associated with significant morbidity death, hospitalization, and need change from PD to haemodialysis.

Clinical case: A 72 year-old white male with Chronic Kidney Disease G5 (Peritoneal Dialysis since 2012, nephroangiosclerosis), was seen in the emergency department because of fever, nausea and stomach ache. Previously, he had had two peritoneal dialysis-related peritonitis caused by *Enterobacter cloacae* and treated with Meropenem. He was admitted to the hospital in order to perform an examination, diagnostic tests (Rx- normal result-, analysis- considerably increased inflammation markers and cloudy peritoneal fluid) and receive treatment (Intraperitoneal vancomycin and oral levofloxacin oral). Despite antibacterial therapy (two doses), his condition worsened (hard stomach ache, hypotension, and fever). We didn't have the peritoneal fluid culture results; therefore, antifungal medication (fluconazole) and Sulfamethoxazole/trimethoprim were added. In spite of the broad-spectrum antibiotics, there was no improvement. Finally, Microbiology service reported the peritoneal fluid results to us: Peritonitis caused by *Fusarium solani* (sensitive to Voriconazole). Our procedure was base on removing the peritoneal dialysis catheter and starting treatment with Voriconazole. Quickly improvement was seen.

P-194

## GROUP B STREPTOCOCCUS (STREPTOCOCCUS AGALACTIAE) PERITONITIS DURING PERITONEAL DIALYSIS: MAY THE FORCE BE WITH YOU

Serge Treille, Ahmed Benahmed, Thanh Ho, Véronique Hubaux, Vinciane Névrumont, Benoît Guillaume

CHU Marie Curie, Belgium

### Background

Streptococcus Agalactiae induces severe infections during pregnancy or to newborn childs. Group B streptococcus bacteria are hopefully rare in PD patients but do represent a mostly fatal cause of peritonitis, To our best knowledge, this is the 8th case affected of CAPD-related peritonitis by this bacteria (1)

### Case Report

A 23 years-old young man was admitted to the hospital for abdominal pain and fever. Body temperature didn't exceed 37,9 °C but the abdominal pain was so demonstrative that the medical staff decided to keep him in the nephrology unit. He had started CAPD 18 months before after renal insufficiency because of membranous glomerulonephritis and nephrotic syndrome. He stayed on the kidney-transplantation waiting list since 15 months and had no major health-related problems but hypertension and hyperkalemia, His PD prescription included 4 exchanges of 2 litres of BicaVera® per day (3 times 1,5 % and 1 bag of 2,3 %). Microscopic analysis of the peritoneal fluid showed only 20 leucocytes per cubic millimetre. Vancomycin ( 2g IP) and amikacin ( 3mg/kg/day) were started on the very 1st day of admission. Abdominal pain showed no improvement after 24 hours but the patient felt comfortable 2 days after.

Culture became positive for Streptococcus Agalactiae 2 days after admission .Antibiogram data showed that the organism was multi-resistant (Resistance to erythromycin, clindamycin, levofloxacin and tetracyclins). The antibiotic treatment was switched to ceftazidim IP once a day in a 1,5 % bag for 6 hours but extended to 3 weeks because of the high prevalence of recurrence and death in the literature, All the other peritoneal fluid examinations were negative. Although data suggest PD catheter removal (2), this patient carried on with the same catheter without any recurrence of the sickness. We also suggest prophylactic treatment to his fiancée because of positivity of the genital flora. He completely recovered, is now doing well and has been transplanted

### Conclusions

Streptococcus Agalactiae-related peritonitis in CAPD patients have been rarely reported in the literature but the extreme severity of the sickness should be known by all praticians because of the high mortality rate and septic shock induced by these microorganisms (3). Treatment should be rapidly induced and extended to three weeks or more

Catheter removal and prophylactic antibiotic treatment (in women with positive genital flora) should also be considered

1, Liakopoulos V, Petinaki E, Bouchlariotou S, Group B Streptococcus peritonitis associated with continuous ambulatory peritoneal dialysis (CAPD). Clin Nephrol. 2004;62(5):391–396.

2, Pagniez D, Fruchart A, Dequiedt P. Group B Streptococcus treatment of CAPD peritonitis. Letter to the Editor. Nephron. 1995;71:480.

3, Dos Santos C et al Streptococcus agalactiae: A rare peritoneal infection in a continuous ambulatory peritoneal dialysis patien. tJ Renal Failure 2010, vol 32

P-195

## INCIDENCE OF HOSPITALIZED PERITONITIS IN THE UNITED STATES

Kristine Kubisiak<sup>1</sup>, Rajesh Thomas<sup>1</sup>, Allan Collins<sup>1,2</sup>, Eric Weinhandl<sup>1,2</sup>

<sup>1</sup>NxStage Medical, United States, <sup>2</sup>University of Minnesota, United States

### Objectives

Peritonitis increases risks of peritoneal dialysis (PD) technique failure and death. However, population-level data about the absolute magnitude of and trends in peritonitis incidence are lacking. We estimated incidence of hospitalized peritonitis in the United States (US) PD population.

### Methods

We analyzed United States Renal Data System records. From 2006 to 2013, we collected cohorts of Medicare (public insurance) beneficiaries on PD for treatment of end stage renal disease. We identified hospitalized cases of peritonitis from Medicare claims with ICD-9-CM diagnosis codes [a] 567.x (peritonitis), [b] 996.68 (infection due to PD catheter), and [c] 038.x (septicemia). We estimated hospitalized peritonitis incidence rates with definitions of diagnosis code [a], codes [a]-[b], and codes [a]-[c], and with only principal or with both principal and secondary codes.

### Results

In 2013, the hospitalized peritonitis incidence rate was 5.4 (cumulative change since 2006, 45%), 17.6 (30%), and 26.6 (13%) events per 100 patient-years with diagnosis code [a], codes [a]-[b], and codes [a]-[c], respectively, as a function of only principal diagnosis codes. In contrast, as a function of both principal and secondary diagnosis codes, corresponding rates were 25.7 (25%), 27.8 (27%), and 37.5 (18%) events per 100 patient-years. Most of the decrease in incidence occurred between 2009 and 2013.

### Conclusions

Between 2006 and 2013, the incidence of hospitalized peritonitis decreased among PD patients in the US; the bulk of the decline coincided with rapidly increasing utilization of PD, thus suggesting a volume effect on peritonitis risk. Nevertheless, incidence rates associated with more sensitive claims-based definitions indicated that peritonitis remains a common complication in 2013; for frame of reference, the incidence of all-setting peritonitis ranged from 35 to 40 events per 100 patient-years in Australia between 2012 and 2015. Further expansion of PD utilization in the US likely demands tools aimed at peritonitis risk reduction.

P-196

### MICROBIOLOGICAL ASPECTS AND OUTCOMES OF PERITONITIS IN PERITONEAL DIALYSIS PATIENTS: A 10-YEAR SINGLE CENTER EXPERIENCE.

Lilia Ben Lasfar, Yosra Guedri, Sanda Mrabet, Dorsaf Zellama, Wissal Sahtout, Awatef Azebi, Salma Toumi, Manel Chouchène, Samira Amor, Ferdaous Sabri, Abdellatif Achour

Chu Sahloul, Tunisia

#### Objectives

The first episode of peritonitis affects survival of the peritoneal membrane as a medium for dialysis as well as survival of patients. The aim of this study is to determine peritonitis rate, several causative organisms of peritonitis and different causes leading to peritonitis in Tunisian peritoneal dialysis (PD) patients.

#### Methods

It was a retrospective descriptive study that included 185 patients who initiated PD between January 2006 and June 2016 in the Nephrology Department at Sahloul University Hospital in Tunisia.

#### Results

Among 185 patients, The mean rate of peritonitis is one episode per patient every 26,7 month.

Culture remained negative in 73 cases (39.24% of cases). 29,56% of germs were cocci gram + (CG+) and 20,43 % were gram – (G-). Fungal peritonitis was caused by *C.Albicans* and *Aspergillus* in 3,68% of cases.

The CG+ were represented by *Staphylococcus Aureus* in 15% of cases, *staphylococcus Epidermidis* in 6,9%, *streptococcus* in 7,5%. The G- were mainly *Pseudomonas* in and *E.coli*.

The essential cause of peritonitis was the lack of asepsis in 78,2 % of cases.

Among 93 patients with at least one peritonitis, 37.6% were transferred to hemodialysis with a failure rate of DP equal to 30,27 %. Only one death was observed following fungal peritonitis.

According to literature, The proportion of G- organisms has increased from 9.8% to 17.3% in the last three years. And this seems to look like our results. Obviously, the infectious peritoneal flora will depend closely on the flora of the hospital environment.

#### Conclusions

Several pathogens can cause peritonitis. Our study demonstrate that the main cause of peritonitis was asepsis and that peritonitis can cause technique failure. So, therapeutic education of PD persons must be the principal prevention target.

P-197

### MYCOBACTERIUM ABSCESSUS PERITONITIS IN A PATIENT ON PERITONEAL DIALYSIS

Hugo Ferreira<sup>1</sup>, André Silva<sup>2</sup>, Ana Nunes<sup>1</sup>, Ana Oliveira<sup>1</sup>, Ana Beço<sup>1</sup>, João Frazão<sup>1,3,4</sup>, Manuel Pestana<sup>1,3,4</sup>

<sup>1</sup>Nephrology Department, Centro Hospitalar de São João, Portugal, <sup>2</sup>Infectious Diseases Department, Centro Hospitalar de São João, Portugal, <sup>3</sup>Nephrology and Infectious Diseases Research and Development Group, INEB-(I3S), Portugal, <sup>4</sup>Faculdade de Medicina da Universidade do Porto, Portugal

The authors report a case of a 54-year-old-female patient on peritoneal dialysis (PD) since 2013. She had had 3 previous peritonitis episodes and an ostium infection where cuff removal was performed. She was undergoing antibiotic broad spectrum antibiotics for ostium infection which was unresolving and catheter removal was planned. Four days before scheduled removal she developed catheter related peritonitis. She was admitted for intravenous antibiotic (vancomycin and imipenem) and urgent catheter removal. There was clinical improvement after removal, however, 6 days after, a result of the ostium exsudate (taken 5 weeks previously) came positive for *Mycobacterium abscessus* (MA). A MA related peritonitis was assumed and targeted empiric antibiotics were started (clarithromycin, levofloxacin, meropenem and amikacin) while sensibility tests were unknown. Eighteen days after effluent cultures were sent to laboratory MA was also identified. She continued large spectrum antibiotic treatment during 2 months then continued clarithromycin and amikacin (according to sensibilities).

Non-tuberculous mycobacteria (NTM) peritonitis are rare but the incidence appears to be raising. The most common NTM are those of rapid growing as *Mycobacterium fortuitum*, *chelonae* and *abscessus*. Rapid diagnosis is difficult by the non-specific symptoms in comparison with other peritonitis agents and despite being rapid growers they still have a more fastidious grow than usual agents. In our case, the grow was considerable slow (compared to slow-grow mycobacteria) besides the correct antibiotic treatment only lasted 6 days facilitated by a previous sent exsudate specimen. Association with sclerosing peritonitis has been described in these cases which did not occurred in our patient. The preconized treatment consists in multiple antibiotic association that normally includes macrolides, quinolones, aminoglycosides, carbapenems and/or tetracyclines, with a minimum 6-month duration. To our knowledge, there are only 11 cases described of PD-related peritonitis with this agent.

NTM can be agents causing PD-related peritonitis. MA is rarely described.

## P-198 MODERATED POSTER SESSION 4

## PERITONITIS IN PERITONEAL DIALYSIS - CHARACTERIZATION AND IMPACT: EXPERIENCE IN 24 YEARS

David Fiel, Filipa Alves, Joana Santos, Rita Vicente, Rute Aguiar, Beatriz Malvar, Rui Silva, Manuel Amoedo, Carlos Pires

Hospital Do Espírito Santo De Évora, Portugal

## Objectives

Peritonitis is a common complication in patients undergoing Peritoneal Dialysis (PD) and still a major cause for dropout. The authors analysed peritonitis outcomes dating back over 20 years in a PD Unit of a Central Hospital.

## Methods

Retrospective study from 1993 to 2016: assessment of demographic, clinical and microbiological profiles of patients with peritonitis. Univariate and multivariate analysis (Multiple Logistic Regression) were performed to predict peritonitis risk factors and survival analysis (Cox Proportional Hazards Model) was done to determine the impact on outcomes (mortality and technique survival) using Rprojectã, significance level of 5%.

## Results

229 patients were included, average age  $48 \pm 14$  years, CAPD 72% vs. 28% in APD, average time of follow-up  $34 \pm 26$  months. 199 episodes of peritonitis were registered (0,31 peritonitis/patient.year), 77% resulting in cure. Primary end-point was death or transfer to haemodialysis for which the median time was 45 months. The most frequent agents were Staphylococci: Coagulase-Negative Staphylococci in 23% and Staphylococcus aureus in 20% (of which 25% MRSA). Gram-negative bacterial infections led to the removal of the peritoneal catheter in 50% of cases (vs. 20% in Gram-positive). Only the modality of PD (OR: APD vs. CAPD 0,30 [0,16-0,57]) and the decade of incidence in PD (OR: 2011-2016 vs. 1993-2000 0,25 [0,10-0,59]) were predictors of peritonitis in multivariate analysis. The number of peritonitis correlated with outcomes (OR 1 vs 0: 2,8 [1,4-6,2]; 2 vs 0: 3,8 [1,7-9,0]) and the occurrence of peritonitis in the first year increased the end-point risk by 2,4x [1,5-3,7], log-rank  $p < 0,001$ .

## Conclusions

Rate of peritonitis was within recommended values. APD had a protector impact for peritonitis, possibly due to the less risk of contamination of fewer connections. Not only did the number of peritonitis but also peritonitis occurrence during the first treatment year worsened technique survival, emphasizing the importance of early peritonitis prevention.

## P-199

## EXIT SITE INFECTION AND NASAL CARRIAGE OF STAPHYLOCOCCUS AUREUS

Joana Gameiro, Iolanda Godinho, Noelia Lopez, Marta Pereira, Cristina Pinto Abreu, António Gomes da Costa

Division of Nephrology and Renal Transplantation, Centro Hospitalar Lisboa Norte, EPE, Portugal

In peritoneal dialysis (PD) *S. aureus* infections constitute a serious complication being the leading cause of exit site infection, often leading to catheter loss. Nasal carriage is linked with an increased risk of exit site infection and peritonitis. Elimination of carriage would probably reduce the infection rate. Guidelines recommend mupirocin for nasal decolonization in PD patients. Although highly effective in eliminating *S. aureus*, relapses are common within months and bacterial resistance to mupirocin is rising.

The purpose of this study was to determine whether there was an association between nasal carriage and *S. aureus* exit site infection. Nasal swabs were done in 65 PD patients of Centro Hospitalar Lisboa Norte during 2016. A retrospective analysis of exit site infections of these patients between 2013 and 2016 was performed.

There were 33 females (50.8%). Mean age was  $54.71 \pm 17.6$  years. The mean time in PD program was  $72.9 \pm 58.8$  months and there were no patients in PD for less than 6 months. Twenty three percent were *S. aureus* carriers ( $n=15$ ). We documented 25 exit site infections in this period, 56% associated with *S. aureus*.

Of these *S. aureus* exit site infections, only 35% were in nasal carriers (35% nasal carriers versus 64% non-carriers,  $p=0,205$ ). The majority of nasal carriers did not have *S. aureus* exit site infections (66.7%), however, they were on PD for less time ( $34.4 \pm 24$  versus  $80.1 \pm 62$  months,  $p=0.009$ ).

Considering that there was no correlation between exit site infection incidence and *S. aureus* nasal carriage, we decided that mupirocin treatment was an unnecessary exposure to antibiotic. We highlight the importance of other factors contributing to low rate of exit-site infections in *S. aureus* carriers, namely, appropriate hand hygiene. Nevertheless, because many patients have intermittent nasal carriage, single cultures may yield false negative results, hence the need to extend our study.

## P-200

## EFFICACY OF PROPHYLACTIC ANTIBIOTICS AT PERITONEAL CATHETER INSERTION ON EARLY PERITONITIS. DATA FROM THE CATHETER SECTION OF THE RDPLF

Antoine Lanot<sup>1,2</sup>, Thierry Lobbedez<sup>1,2</sup>, Clémence Béchade<sup>1</sup>, Christian Verger<sup>3</sup>, Emmanuel Fabre<sup>3</sup>, Max Dratwa<sup>4</sup>, Isabelle Vernier<sup>3,5</sup>

<sup>1</sup>Nephrology, CHU CAEN, France, <sup>2</sup>Normandy University, UNICAEN Medicine School, France, <sup>3</sup>RDPLF, France, <sup>4</sup>Nephrology, CHU Brugmann, Belgium, <sup>5</sup>Nephrology, Polyclinique du Languedoc, Narbonne, France

## Objectives

International guidelines recommend the use of a prophylactic antibiotic prior to peritoneal dialysis (PD) catheter insertion. The main objective of this study was to assess whether this practice is associated with a lower risk of early peritonitis and to estimate the magnitude of the centre effect.

## Methods

A retrospective, multicentric study was conducted, analysing data from the French Language Peritoneal Dialysis Registry (RDPLF). Patients were separated into two groups, according to whether or not prophylactic antibiotics were used prior to catheter placement.

## Results

Out of the 2014 patients who had a PD catheter placed between 1 February 2012 and 31 December 2014, 1105 were given a prophylactic antibiotic. In a classical logit model, the use of prophylactic antibiotics was protective against the risk of early peritonitis (OR=0.67, [95%CI: 0.49 - 0.92]). However, this association lost significance in a mixed logistic regression model with centre as a random effect: OR=0.73 (95%CI: 0.48 - 1.09). Covariates associated with the risk of developing early peritonitis were: age over 65: OR=0.73 (95%CI: 0.39 - 0.85), BMI over 35kg/m<sup>2</sup>: OR=1.99 (95%CI: 1.13 - 3.47), transfer to PD due to graft failure: OR=2.24 (CI95%: 1.22 - 4.11), assisted PD: OR=1.96 (95%CI: 1.31 - 2.93), and the use of the Moncrief technique: OR=3.07 (CI95%: 1.85 - 5.11).

## Conclusions

There is a beneficial effect of prophylactic antibiotic prior to peritoneal catheter insertion on peritonitis within the first 3 months of PD.

However the beneficial effect could be masked by a centre effect.

## P-201

## A 19-YEAR RETROSPECTIVE STUDY ON PD TREATMENT MODALITY AS A PREDICTOR FOR PERITONITIS

Archie Gonzales, Helen Gannon, Donna Johnson, Lorraine Gardiner, George Mellotte

Tallaght Hospital, Ireland

## Objectives

Incidence of peritoneal dialysis (PD)-related infections among PD patients has been in decline in recent years. However, peritonitis remains to be a leading complication of PD. Peritonitis is shown to result in infection-related mortality in PD and peritoneal membrane failure. Uncovering factors associated with PD peritonitis will help identify at-risk PD patients.

## Methods

A retrospective study with data taken from 1998-2016 from a PD unit in a Dublin Teaching Hospital. Demographic data, treatment modality, treatment days, peritonitis rate (episodes-per-year-at-risk), and peritonitis cases were included in the study.

## Results

453 cases of peritonitis were studied. Annual average of total days spent on PD was 182,723. Using Chi-squared test (Yates' continuity correction in R), female patients on continuous ambulatory PD (CAPD) were shown to be 1.6 times more prone to peritonitis than males, however, the association was not strongly significant ( $X^2 = 3.613$ ,  $p = 0.057$ ). There was a moderate association between the rate of peritonitis and the treatment modality (Multiple R = 0.50). Both CAPD and automated PD (APD) only accounted for 15% (adjusted R = 0.15) in the variation of peritonitis rate. Population regression for both coefficients were positive (APD: t-stat=1.6; p=1.13 / CAPD: t-stat=2.14; p=0.04). CAPD was a stronger predictor than APD, however, both were not significantly related to peritonitis ( $F=2.6$ ,  $df=2$ ,  $p=0.10$ ). The length of time on the treatment also did not contribute significantly in the occurrence of peritonitis (CAPD days: t-stat=1.650, p=0.1185 / APD days: t-stat=0.339, p=0.7393; F-statistic=1.383 on 2 and 16 DF, p-value=0.2793).

## Conclusions

The study showed that the treatment modality (APD/CAPD) including the length of time spent on either modality are not strong enough predictors for PD peritonitis. Female patients on CAPD have 1.6 times more chances of having peritonitis than male patients on CAPD, however, the overall association with peritonitis is not compelling.

## P-202 Moderated Poster Session 4

## HYPONATREMIA AS A MARKER OF POOR OUTCOME IN PERITONEAL DIALYSIS-RELATED PERITONITIS

Dejan Pilcevic, Djoko Maksic, Brankica Terzic, Svetlana Antic, Violeta Rabrenovic, Mirjana Mijuskovic, Marijana Petrovic

Military Medical Academy, Clinic of Nephrology, Serbia

## Objectives

Determine association between hyponatremia and clinical outcome in patients with peritoneal dialysis-related peritonitis (PDRP).

## Methods

We retrospectively evaluated the records of all patients with PDRP who were treated in our hospital in period 2015-2016. Depended of Na<sup>+</sup> level, we formed two groups of patients -with serum Na<sup>+</sup> <130 mEq/L (hyponatremic) and ≥ 130 mEq/L (normonatremic). Diagnosis of peritonitis was made based on standard criteria. The demographic and laboratory characteristics, pathogens of peritonitis, method failure and mortality rate were analyzed.

## Results

We analyzed 53 patients treated with standard-sodium (134 mmol/L of sodium) PD solutions. We identified total 26 episodes of peritonitis (3 episodes were culture negative). A single gram (+) organisms were founded in 65, 22 % and single gram (-) organism were founded in 34, 78 % of the positive culture cases. We verified complete resolution in all cases of Gram positive peritonitis and loss of catheter and transfer on HD in 2 cases of Gram negative peritonitis (25%). There were not cases of fungal or polymicrobial peritonitis or lethal outcomes. Hyponatremia occurred in 34, 62% (9/26) patients with PDRP. Gram-negative microorganisms were lead pathogens responsible for 55, 55% (5/9) PDRP in hyponatremic group, while gram-positive cocci were found in 78, 57% (11/14) PDRP in normonatremic groups. All patients in group with culture-negative peritonitis (3/3) were normonatremic. Hyponatremic group had significantly higher serum CRP ( $p < 0.01$ ), lower serum albumin ( $p < 0.05$ ) and PD catheter removal rate ( $p < 0.05$ ). There were no significant difference in age, gender, duration of dialysis and mortality between two groups

## Conclusions

Hyponatremia is a marker of poor outcome in peritoneal dialysis-related peritonitis, associated with a high frequency of gram negative causer's infection, malnutrition, inflammation and PD catheter removal rate.

## P-203

## NUTRITIONAL AND INFLAMMATION STATUS AS RISK FACTORS FOR PERITONITIS IN PATIENTS ON PERITONEAL DIALYSIS

Rita Valério Alves, Alice Lança, Hernâni Gonçalves, Francisco Ferrer, Ana Vila Lobos

Centro Hospitalar Médio Tejo, Portugal

## Objective

Assessment of nutritional and inflammation status in patients on Peritoneal Dialysis (PD) and the respective risk of peritonitis episodes.

## Methods

Retrospective study of patient data with one bioimpedance assessment and analytic evaluation in the same day, and at least one peritonitis within 6 months. Data collected: demographic information, nutritional status, inflammation status, comorbidities and PD modality. Data analyzed by Student's t-test, Mann-Whitney U test, Pearson and Spearman correlations using SPSS version 23.

## Results

35 patients: 37.1% (n=13) females, average age  $53.46 \pm 11.83$  years, 22.9% (n=8) diabetic, 85.7% (n=30) hypertensive and 68.6% (n=24) were on Automated PD (APD).

Within the time period 20% (n=7) had peritonitis episodes.

Initially, different subgroups were analyzed within the population and it was verified that patients under 60 years ( $r = -0.653$ ,  $p = 0.001$ ;  $r = -0.467$ ,  $p = 0.028$ ), and males ( $r = -0.592$ ,  $p = 0.003$ ;  $r = -0.445$ ,  $p = 0.038$ ) had negative correlations with serum albumin and with total Cholesterol. Non-diabetic patients ( $r = -0.502$ ,  $p = 0.008$ ) also had a negative correlation with serum albumin. Additionally, patients undergoing APD showed an association with serum albumin ( $t = 4.882$ ,  $p = 0.001$ ) and a positive correlation with the patient weight ( $r = 0.357$ ,  $p = 0.035$ ).

In our cohort, a positive correlation was found between C-reactive protein (CRP) and serum albumin lower than 3g/L ( $r = 0.535$ ,  $p = 0.001$ ).

As expected, there was a positive correlation between CRP levels and peritonitis ( $r = 0.455$ ,  $p = 0.006$ ), while a negative correlation exists between peritonitis and serum albumin ( $r = -0.556$ ,  $p = 0.001$ ), total Cholesterol ( $r = -0.408$ ,  $p = 0.016$ ) and High Density Lipoprotein (HDL) ( $r = -0.375$ ,  $p = 0.026$ ).

## Conclusion

Observations from reported literature were confirmed, and an association was established between higher CRP levels, lower serum albumin, lower total Cholesterol and lower HDL with the peritonitis risk. Further studies with larger samples are required to confirm these observations.

P-204

**OVERHYDRATION: A NEW RISK FACTOR FOR PERITONITIS IN PERITONEAL DIALYSIS?**

Rita Valério Alves, Alice Lança, Rachele Escoli, Hernâni Gonçalves, Francisco Ferrer, Ana Vila Lobos

Centro Hospitalar Médio Tejo, Portugal

**Background**

Overhydration (OH) remains a frequent problem in peritoneal dialysis (PD), with deleterious effect in outcomes. Recent evidence suggests a direct relation between OH and increased peritonitis risk. The mechanisms of this association are not well defined, but gut wall oedema and malnutrition are probably involved.

**Objectives**

Assessment of OH as a risk factor for peritonitis in patients on PD.

**Methods**

Retrospective study of patient data with one bioimpedance assessment within 6 months before peritonitis episode.

Data collected comprised demographic information, hydration status, comorbidities, PD modality, PD solutions, Charlson Comorbidity Index (CCI), serum albumin and peritonitis episodes.

The hydration status and other factors were compared between patients with and without peritonitis. Associations between peritonitis rate and the collected variables were assessed using Chi-square test and Pearson's correlation using SPSS version 23 for Mac OS X.

**Results**

From a pool of 35 patients, average age was 53.46/11.83 years, 62.9% were males, 22.9% had diabetes mellitus (DM), 85.7% hypertension and 20% were smokers. 68.6% were on Automated Peritoneal Dialysis (APD), 51.4% used bicarbonate-based PD solution and 31.4% icodextrin solution. Peritonitis was experienced by 20% (n=7).

DM (p=0.003), cigarette smoking (p=0.018), OH (p=0.006), Overhydration/Extracellular Water (OH/ECW) over 15% (p=0.018), PD solution (p=0.041), CCI (p=0.002) and serum albumin lower than 3g/L (p=0.006) were associated with the risk of peritonitis.

There were positive correlations between peritonitis and OH (r=0.610, p=0.001) and CCI (r=0.559, p=0.001), and there was a negative correlation between peritonitis and serum albumin (r=-0.462, p=0.005).

Increasing age, gender, hypertension and PD modality weren't associated with risk for peritonitis.

**Conclusion**

An association between OH, hypoalbuminemia, bicarbonate-based PD solution, DM, cigarette smoking and CCI and the rate of peritonitis was established. Further studies with larger samples are required to confirm these observations.

P-205

**PROTECTIVE EFFECT OF SYLIMARIN AND SULODEXIDE AGAINST OXIDATIVE STRESS INDUCED BY HYPERTONIC PERITONEAL DIALYSIS SOLUTION IN RATS**Ines Amara<sup>1</sup>, Yosra Guedri<sup>2</sup>, Emna Ismail<sup>2</sup>, Sinda Mrabet<sup>2</sup>, Wissal Sahtout<sup>2</sup>, Awatef Azzabi<sup>2</sup>, Salma Toumi<sup>2</sup>, Hassen Bacha<sup>1</sup>, Salwa Abid Essefi<sup>1</sup>, Dorsaf Zellama<sup>2</sup>, Abdellatif Achour<sup>2</sup><sup>1</sup>Laboratory of Research on Biologically Compatible Compounds, Tunisia, <sup>2</sup>Department of Nephrology, Dialysis and Transplant, Tunisia**Introduction**

Chronic peritoneal dialysis (PD) can result in several peritoneal alterations of varying degree, which lead to progressive reduction in dialytic efficacy. Although its pathogenesis has not been clarified yet, it has been proposed that high glucose induced oxidative stress generation within the peritoneal membrane leading to membrane alterations. The aim of this study was to investigate the probable protective effects of silymarin (SYL) and sulodexide (SDX) against peritoneal alterations induced by hypertonic PD solutions in rats.

**Methods**

Studies were performed on six groups of rats. 1- control group (isotonic saline solution intraperitoneally (i.p)), 2- hypertonic PD solution group (Dextrose 3.86%, i.p), 3- silymarin group (200 mg/kg, orally), 4- sulodexide group (15 mg/kg orally), 5- hypertonic PD solution + silymarin group and 6- hypertonic PD solution + sulodexide.

After 4 weeks, all rats were sacrificed and the serum was collected for analysis of glucose, urea and creatinin. Malondialdehyde (MDA), protein carbonyl (PC) levels, superoxide dismutase (SOD) and catalase (CAT) activity were determined in the peritoneal tissue lysates.

Compared to the control group, serum markers; glucose, urea and creatinin levels were dramatically altered in the hypertonic PD solution-treated rats. Likewise, higher levels of MDA, PC and decreased activity of SOD, CAT were determined in the hypertonic PD solution-treated rats.

**Discussion**

Silymarin and Sulodexide co-treatment with hypertonic PD solution reduced its peritoneum damage and oxidative stress. It can be concluded that, the protective effects of Silymarin and Sulodexide against hypertonic PD solution induced-peritoneum damage was associated with the attenuation of oxidative stress and the preservation of antioxidant enzymes.

**Conclusions**

It can be stated also that Silymarin is more effective in preventing the toxic effects of hypertonic PD solution.

P-206 Moderated Poster Session 1

## INDUCTION OF MESOTHELIAL TO MESENCHYMAL TRANSITION (MMT) UPON EXPOSURE OF PERITONEUM MESOTHELIAL CELLS TO LINEAR STRETCH: ROLE OF A CAVEOLIN-1-TGF-BETA1 INTERPLAY

Raffaele Strippoli<sup>1,2</sup>, Roberto Moreno<sup>2</sup>, Lucia Rossi<sup>1</sup>, Pilar Sandoval<sup>3</sup>, Cecilia Battistelli<sup>1</sup>, Marta Loureiro<sup>4</sup>, Francesca Matteini<sup>1</sup>, Enrique Calvo<sup>4</sup>, Jesus Vazquez<sup>4</sup>, Manuel Lopez-Cabrera<sup>3</sup>, Marco Tripodi<sup>1</sup>, Miguel Angel del Pozo<sup>2</sup>

<sup>1</sup>Department of Cellular Biotechnologies and Haematology, Sapienza University, Italy, <sup>2</sup>Mechanoadaptation and Caveolae Biology, Centro Nacional de Investigaciones Cardiovasculares, Spain, <sup>3</sup>Centro de Biología Molecular-Severo Ochoa (CBMSO), Departamento de Biología Celular e Inmunología, Spain, <sup>4</sup>Cardiovascular Proteomics laboratory, Centro Nacional de Investigaciones Cardiovasculares, Spain

**Objectives**

Accumulating evidence demonstrated that biomechanical signals orchestrate complex cellular functions. Here, we hypothesize that biomechanics may play a role in the induction of peritoneal membrane damage during PD. In this study, we analyzed whether cell stretch is sufficient to induce a mesenchymal phenotype in human peritoneal mesothelial cells (MCs), production of extracellular matrix (ECM) and molecular mechanisms involved. We analyzed the role of caveolin-1, a component of plasma membrane microdomains acting as a mechanotransducer.

**Methods**

Primary MC or MeT5A mesothelial cell line were plated on a flexible membrane using a Flexcell device and left untreated or subjected to a periodic linear stretch for up-two days. In some experiments, caveolin-1 expression was silenced by siRNA. TGF $\beta$ 1 activity was inhibited using SB431542, a TGFBR1 pharmacological inhibitor, or an inhibitory monoclonal antibody against TGF $\beta$ 1. RNA-seq, high-throughput quantitative proteomics experiments followed by RT-PCR, western blot and immunofluorescence were performed to analyze the expression of epithelial/mesenchymal markers, as well as cellular morphology.

**Results**

When reproducing mechanical stretch in vitro, we found that exposure to stretching condition per se is sufficient to induce a mesenchymal-like phenotype in MCs, characterized by loss of intercellular junctions, increase of Snail, PAI-1, CTGF and MMP2. We then analyzed whether these changes were due to increased expression or activation of TGF $\beta$ -1, a main EMT inducer. We found that autocrine TGF- $\beta$ 1 secretion plays a major role in MMT induction upon exposure to cyclic stretch. In caveolin1-silenced MCs, exposure to cyclic stretch led to increased induction the mesenchymal phenotype, which was limited by treatment with TGF- $\beta$  inhibitors.

**Conclusions**

Our results demonstrate that cyclic cell stretch per se is able to induce MMT in MCs promoting an invasive phenotype. Moreover, caveolin-1 is negatively implicated in MMT induction through a mechanism depending on a cell-autonomous TGF- $\beta$ 1 activation pathway.

P-207 Moderated Poster Session 3

## MMT REVERSAL IN MESOTHELIAL CELLS FROM FIBROTIC PERITONEUM BY INHIBITION OF CLASS I HDACS

Lucia Rossi<sup>1</sup>, Cecilia Battistelli<sup>2</sup>, Valeria De Turre<sup>2</sup>, Sergio Valente<sup>3</sup>, Valeria Noce<sup>1</sup>, Alessandro Domenici<sup>4</sup>, Andrea Manzione<sup>4</sup>, Alessandra Moioli<sup>4</sup>, Elisa Giammarioli<sup>4</sup>, Marco Palladino<sup>4</sup>, Antonello Mai<sup>3</sup>, Paolo Menè<sup>4</sup>, Marco Tripodi<sup>1</sup>, Raffaele Strippoli<sup>1</sup>

<sup>1</sup>Department of Cellular Biotechnologies and Haematology, Sapienza University, Rome, Italy, <sup>2</sup>Center for Life Nanoscience, Italian Institute of Technology (IIT), Italy, <sup>3</sup>Department of Chemistry and Technologies of Drugs, Sapienza University, Italy, <sup>4</sup>Nephrology and Dialysis Unit, Department of Clinical and Molecular Medicine, Sapienza University of Rome, Sant'Andrea Hospital, Italy

**Objectives**

To evaluate the effect of histone deacetylases (HDACs), key components of the epigenetic machinery regulating gene expression, in the re-acquisition of epithelial-like features by mesenchymal mesothelial cells (MCs) and molecular mechanisms involved.

**Methods**

MCs were isolated from effluent of PD patients. Alternatively, MeT5A mesothelial cell line was used. Cells were treated with three different selective HDAC pharmacological inhibitors: Trichostatin A (class I and II inhibitor), MS275 (class I inhibitor) and MC1568 (class II inhibitor). Moreover, HDAC1 was silenced with a specific siRNA. The expression of epithelial-mesenchymal cell markers was evaluated by qRT-PCR, western blot analysis on cell lysates. Cell morphology was analysed by confocal microscopy. Moreover, cells were subjected to scratch assay and 3-Dimensional invasion assays on Matrigel using Ibidi chambers. Immunoprecipitation (IP) experiments to analyse Snail/HDAC1 interactions were performed.

**Results**

Treatment with Trichostatin A and MC1568 rescued E-cadherin levels, but failed to induce a full down-regulation of mesenchymal markers and a clear reacquisition of epithelial features. On the other hand, MS275 promoted a reacquisition of the apical to basolateral polarity followed by downregulation of mesenchymal markers (MMP2, Col1A1 and TGF $\beta$ 1), increased expression of epithelial markers, and a marked reduction of cell invasiveness. Unexpectedly, the levels of Snail, the E-cadherin repressor, were increased upon treatment with MS275. Results were confirmed by HDAC1 genetic silencing. IP experiments revealed reduced HDAC1/Snail interactions in cells treated with MS275.

**Conclusion**

Overall, we found that while the effect of Trichostatin A and MC1568 were limited to a rescue of E-cadherin levels, treatment with MS275 promoted a bona fide reversal towards an epithelial-like phenotype. The increase of Snail levels in cells treated with MS275 in spite of rescued E-cadherin expression and conformational changes suggests a hampering of its functional role as transcriptional regulator.

P-208 Moderated Poster Session 5

## PARICALCITOL TREATMENT AMELIORATE PERITONEAL DAMAGE DURING DIALYSIS

Guadalupe González<sup>1</sup>, Pilar Sandoval<sup>1</sup>, Auxiliadora Bajo<sup>3</sup>, Rafael Selgas<sup>3</sup>, Manuel López-Cabrera<sup>1</sup>, Abelardo Aguilera<sup>2</sup>

<sup>1</sup>Centro de Biología Molecular Severo Ochoa (CSIC-UAM), Spain, <sup>2</sup>Instituto de Investigación del Hospital Universitario la Princesa, Spain, <sup>3</sup>Instituto de investigación del Hospital Universitario La Paz, Spain

**Objectives**

Because inflammation is a major causative factor for peritoneal damage during peritoneal dialysis treatments, immunomodulation is a possible therapeutic approach. The vitamin D receptor (VDR), that is present in all hematopoietic cells, is associated with immunomodulation, thereby could represent an interesting therapeutical target. We investigated whether paricalcitol, a specific activator of the VDR, modulates peritoneal dialysis (PD) fluid (PDF)-induced peritoneal damage.

**Methods**

Mesothelial cells from omentum were cultured in vitro alone or with TGF-beta to induce mesothelial to mesenchymal transition (MMT) in absence or presence of paricalcitol at 10-5M or 10-8M concentrations.

Female C57BL/6 mice were treated during 5 weeks trough an intraperitoneal catheter with PDF alone or PDF + paricalcitol. A non-treated group was analyzed as control. We examined the ensuing fibrosis and the mesothelial cells status at the parietal peritoneal membrane.

**Results**

We observed that in vitro, the phenotype of cells exposed to TGF-beta and treated with paricalcitol was preserved when comparing with cells only exposed to TGF-beta. In the presence of paricalcitol, E-cadherin expression is maintained, while fibronectin and alpha-sma expressions are reduced in comparison with TGF-beta treated cells. Paricalcitol was also able to reduce the induction of Snail.

In mice, paricalcitol treatment reduced peritoneal fibrosis, what correlates with a lower induction of MMT.

**Conclusions**

The activation of immunological regulatory mechanisms by VDR signaling may prevent or reduce peritoneal damage in terms of mesothelial preservation and protection against fibrosis.

## P-209

## PROTECTIVE EFFETS OF SULODEXIDE AGAINST OXYDATIVE DAMAGES AND BIOCHEMICAL TOXICITY INDUCED BY DEXTROSE IN MALE WISTAR RATS TISSUES

Rim Timoumi<sup>1</sup>, Emna Ismail<sup>2</sup>, Yosra Guedri<sup>2</sup>, Awatef Azzabi<sup>2</sup>, Wissal Sahtout<sup>2</sup>, Salma Toumi<sup>2</sup>, Sinda Mrabet<sup>2</sup>, Hassen Bacha<sup>1</sup>, Salwa Abid Essefi<sup>1</sup>, Dorsaf Zellama<sup>2</sup>, Abdallatif Achour<sup>2</sup>

<sup>1</sup>Faculty of Dentistry, Tunisia, <sup>2</sup>University Hospital of Sahloul, Tunisia

**Introduction**

Sulodexide (SUL) is a mixture of sulfated glycosaminoglycans. It is characterized by the low molecular weight heparin, the high oral bioavailability and its protective effects against some disease particularly, the antidiabetic, antithrombotic and anti-inflammatory properties. The aim of the current study was to investigate the protective effect of SUL against oxydative alterations induced by one of the dialysis solution, the Dextrose (DEX), in liver and kidney extracts of male Wistar rats.

**Methods**

For this, we moniterated our work with male Wistar rats which are divided into four groups of 6 animals each: control group, SUL alone (15mg/kg), DEX alone (3.86%) and both SUL-DEX. All molecules were administrated orally for 30 days.

Oxidative stress was monitored in the kidney and liver by measuring malondialdehyde level, protein carbonyl concentration, catalase and SOD activity and some liver and kidney markers.

**Discussion**

The treatment of animals with DEX alone increased the lipid peroxidation and the protein carbonyl levels in both liver and kidney. Catalase and SOD activity were found to be significantly decreased in this two organs. Regarding the biochemical toxicity, DEX caused an increase in he liver enzyme activities of aspartate transaminase (AST), alanine transaminase (ALT), alkaline phosphatase (ALP), g-Glutamyl transpeptidase GT (GTT), total Bilirubine (BILT) and conjugated bilirubine (BILTC). Moreover, renal markers such as urea and creatinine were increased in DEX treated rats. The co-administration of SUL with the DEX restored the oxidative and the biochemical damages caused by DEX.

**Conclusions**

It appears that SUL has capability to prevent the liver and the kidney damages against the toxic effect of DEX.

### P-210 Moderated Poster Session 3

#### PERITONEAL DIALYSIS FLUIDS BLOCK HEAT SHOCK FACTOR 1 - A NOVEL PATHOMECHANISM?

Rebecca Herzog<sup>1,2</sup>, Klaus Kratochwil<sup>1,2</sup>, Christoph Aufricht<sup>1</sup>

<sup>1</sup>Department of Pediatrics and Adolescent Medicine, Medical University of Vienna, Austria, <sup>2</sup>Christian Doppler Laboratory of Molecular Stress Research in Peritoneal Dialysis, Medical University of Vienna, Austria

Chronic exposure to peritoneal dialysis fluid (PDF) causes injury of mesothelial cells but also induces cytoprotective mechanisms. Recent studies, however, suggest that PDF blocks the heat shock response (HSR), one of the evolutionary most important stress responses. The resultant increased vulnerability of the mesothelial cells could lead to progressing fibrosis of the peritoneal membrane during PD.

The aim was to identify the molecular mechanisms leading to the PDF-induced inadequate stress response.

The induction of the HSR in human mesothelial cells was analyzed using combined in-vitro and in-vivo models of PDF exposure and heat stress as the gold standard. In addition single cytotoxic components of PDF, like glucose degradation products (GDP) as well as the impact of cytoprotective additives were investigated. The status of heat shock transcription factor 1 (HSF-1) activation, cellular Hsp72 expression, the stress-proteome and viability of the cells were analyzed.

Compared to heat, PDF exposure leads to increased lethality but decreased Hsp72 expression. A concurrent blockage of the nuclear shift, phosphorylation and DNA-binding of HSF-1 with reduced activity of the promotor was found. The inadequate HSF-1 activation could be unblocked by a neutral pH, filter-sterilized PDF (without GDPs) or addition of alanyl-glutamine. The HSF-1 blocking caused by acidosis was associated with activation of GSK-3 $\beta$ , while the GDPs directly interfered with HSF-1 promotor activity.

The PDF-mediated inadequate induction of the cellular HSR represents a new pathomechanism in PD. The results demonstrate that the cytotoxic factors such as acidosis and GDPs lead to a HSF-1 block via different molecular mechanisms resulting in a reduction of the HSR and increased vulnerability of cells exposed to PDF which could be restored by addition of alanyl-glutamine.

### P-211 Moderated Poster Session 3

#### HYPEROSMOLARITY DUE TO GLUCOSE, MANNITOL OR NA CL INFLUENCES THE PROLIFERATIVE AND MIGRATORY PROPERTIES OF MESOTHELIAL CELLS

Vassilios Liakopoulos<sup>2</sup>, Vassiliki Peppas<sup>1</sup>, Evgeniy Solenov<sup>3</sup>, Stefanos Roumeliotis<sup>2</sup>, Konstantinos Gourgoulianis<sup>1</sup>, Chrissi Hatzoglou<sup>1</sup>, Sotirios Zarogiannis<sup>1</sup>

<sup>1</sup>Department of Physiology, Faculty of Medicine University of Thessaly, Greece, <sup>2</sup>Peritoneal Dialysis Unit, 1st Department of Internal Medicine, School of Medicine, Aristotle University of Thessaloniki, Greece, <sup>3</sup>Institute of Cytology and Genetics of the Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russian Federation

##### Objectives

Peritoneal Dialysis (PD) is an effective and patient friendly renal replacement therapy. Major issues pertinent to the modality are the progressive deterioration of the peritoneal membrane mainly due to mesothelial exposure to high glucose and glucose degradation products as well as hyperosmolarity induced oxidative stress. These factors induce mesothelial injury and subsequent mesothelial-to-mesenchymal transition that mediates submesothelial thickening, fibrosis and neoangiogenesis leading to ultrafiltration failure. Due to the detachment of mesothelial cells from the peritoneal membrane a re-mesothelisation of the membrane is required. For this process, mesothelial cell phenotypes such as cell proliferation and 2-D cell migration are important. The aim of our study was to investigate these phenotypes under conditions of hyperosmotic stress induced by high glucose, mannitol and NaCl.

##### Methods

Mesothelial cells (MeT-5A) were exposed to high osmolarity (350 mOsm/kg) by high glucose (50 mM), high mannitol (50 mM) and NaCl (25 mM) concentrations. Control experiments were performed in 290 mOsm/kg. Cell proliferation (over 3 days) by the Crystal Violet assay and cell migration by wound scratch assay (at 8 hours) were performed.

##### Results

Cell proliferation of MeT-5A cells was significantly increased on Day 3 in all hyperosmotic conditions as compared to Controls ( $p < 0.001$  in all cases). Also glucose increased proliferation significantly more than mannitol ( $p < 0.01$ ). In cell migration experiments the hyperosmotic stress due to all osmotic agents led to significantly decreased Migration Index (M.I.) as compared to Controls (mannitol and NaCl  $p < 0.05$  and glucose  $p < 0.01$ ).

##### Conclusions

Our results indicate that exposure to hyperosmotic stress affects mesothelial cell proliferation and migration independent of the osmotic agent used. Only glucose induced higher proliferation than mannitol suggesting thus a possible glucose specific effect on top of the hyperosmolarity. Our results show that hyperosmolarity may adversely affect the re-mesothelisation procedure in patients with PD.

P-212

## DIALYSATE CANCER ANTIGEN 125 CONCENTRATION IN PERITONEAL DIALYSIS PATIENTS – LESS IS MORE?

Gordan Dorcic<sup>1</sup>, Bozidar Vujcic<sup>2</sup>, Sanjin Racki<sup>2</sup><sup>1</sup>Emergency Medicine Department of Istria, Croatia, <sup>2</sup>Department of Nephrology, Dialysis and Kidney Transplantation, Clinic of Internal Medicine, Clinical Hospital Centre Rijeka, Croatia

## Objectives

Long-term peritoneal dialysis (PD) induces changes in peritoneal membrane function. Adequate dialysis prescription can be determined by conducting peritoneal equilibration test (PET). Cancer antigen 125 (CA125) in peritoneal effluent is a marker of mesothelial cell mass and may reflect peritoneal fibrosis status. Our aim was to investigate correlation between alterations in PET transporter status and creatinine dialysate to plasma (D/P) ratio with dialysate CA125 concentration in two-year follow-up among PD patients

## Methods

We prospectively analysed incident PD patients between January 2013 and January 2016 in Clinical Hospital Centre Rijeka. Measurements were performed 1 month after beginning of PD and every 6 months afterwards. Patients with 4 measurements were included. On the day of measurement blood laboratory test were performed and medical records' data was collected. The peritoneal membrane characteristics were assessed by PET after 4h dwell with 2,27% glucose and CA125 was determined in the same effluent.

## Results

We analysed 39 PD patients, mean age 57±15 years (range 27-85 years), PD duration 11,35±11,81 months, 24(61%) men, 14(36%) with diabetes, 25(64%) on continuous ambulatory PD. CA125 levels had an increasing trend throughout investigation but without significant difference between baseline and follow-up (p=0,58). CA125 levels had significant positive correlation with creatinine D/P ratio (r=0,34, p<0,01). Alteration in CA125 value had significantly negative correlation with alteration in creatinine D/P ratio and PET transport status change (r=-0,19, p<0,05 and r=-0,17, p<0,05, respectively). CA125 had no correlation with ultrafiltration, daily glucose load, residual renal function and CRP values.

## Conclusions

The change of CA125 concentration in effluent is reversely proportional with change in creatinine D/P ratio and PET transport status. Mean CA125 value among patients tends to rise as well as overall creatinine D/P values during long-term PD. Further investigations on larger number of patients and longer periods of follow-up are needed.

## P-213 Moderated Poster Session 3

## EFFECTS OF ORAL PARICALCITOL AND CALCITRIOL TREATMENT ON PERITONEAL MEMBRANE CHARACTERISTICS OF PERITONEAL DIALYSIS PATIENTS

Karima Farhat<sup>1,2</sup>, Andrea Stavenuiter<sup>1</sup>, Marc Vervloet<sup>1</sup>, Piet ter Wee<sup>1</sup>, Robbert Beelen<sup>1</sup>, Frans van Ittersum<sup>1</sup><sup>1</sup>VU University Medical Center, Netherlands, <sup>2</sup>Spaarnegasthuis, Haarlem/Hoofddorp, Netherlands

## Objective

Long-term PD is frequently complicated by technique failure preceded by peritoneal remodeling. Vitamin D has potent immunomodulatory characteristics: anti-inflammatory, anti-angiogenic, anti-fibrotic properties and influences on the macrophage phenotype. Little is known about the relation between pleiotropic effects attributed to vitamin D3 and the peritoneal membrane and what is the most appropriate vitamin D sterol in prevention of peritoneal remodeling in PD-patients. Animal studies have suggested that paricalcitol has advantageous effects; decrease in plasma markers of inflammation, less peritoneal fibrosis, less pronounced PD-induced omental angiogenesis, prevention of loss of ultrafiltration. We investigated whether paricalcitol is advantageous over calcitriol in PD patients.

## Methods

A multicenter open-label 1:1 randomized non-blinded clinical pilot study enrolled prevalent (C)APD-patients during 6 months comparing paricalcitol with calcitriol. All patients were treated with biocompatible PD-fluids. Primary endpoint: peritoneal transport parameters, exploratory endpoints: biomarkers of peritoneal damage and cell analysis (including M1/ M2 macrophages), safety endpoints: metabolic parameters.

## Results

27 patients were included. 14 were randomized to treatment with paricalcitol. There was no difference in peritoneal transport parameters between the groups. We found similar Kt/V, D/P creatinine, D/D0 glucose, ultrafiltration, residual renal function and 24h urine volume during the study. There was no difference in biomarkers concentrations in peritoneal effluents, and no difference in leucocytes differentiation or mesothelial cells between the groups at any time point. PTH-levels decreased after administration of calcitriol after 12 and 24 weeks compared to baseline (p=0.001; p=0.025). PTH-levels in the paricalcitol group did not change significantly.

## Conclusions

We did not find any specific benefit for one type of active vitamin D3 over the other in vitamin D3 sufficient patients. Additional studies during a longer period are required to test beneficial effects of active vitamin D3 over no treatment and to investigate whether in 25(OH)D3 deficient PD-patients the type of active vitamin D3 does matter.

P-214 Moderated Poster Session 3

## TWEAK IN PERITONEAL DIALYSIS: COULD THIS BE A NEW DROPOUT PREDICTOR FOR PERITONEAL DIALYSIS?

Ana Rita Martins<sup>1</sup>, Patrícia Branco<sup>1</sup>, Tiago Carvalho<sup>1</sup>, Augusta Gaspar<sup>1</sup>, Domingos Machado<sup>1</sup>, Jesus Egido<sup>2</sup>, Sebastian Más<sup>2</sup>

<sup>1</sup>Hospital Santa Cruz - Chlo, Portugal, <sup>2</sup>Fundation Jimenez Diás, Spain

**Objectives**

Patients with end-stage renal disease (ESRD) on peritoneal dialysis (PD) or on hemodialysis (HD) go through an increase of oxidative stress and inflammation. Long-term PD causes morphological and functional changes in the peritoneal membrane via two processes: the fibrotic process itself and the inflammatory response. A better understanding of molecular contributors for the peritoneal injury could improve the peritoneum preservation. Our aim was to investigate the role of new inflammatory regulators (TWEAK; TNF-alpha; high-sensitivity C-reactive protein (hsPCR)) in PD.

**Methods**

Plasma concentrations were quantified on patient sera via ELISA assay method and correlated with comorbidities and nutritional status. Kolmogorov-Smirnov test displayed a non-normal distribution, thus were subjected to a logarithmic conversion before data analysis.

**Results**

Observational prospective study involving 58 PD patients, of which 40 (69%) were male. The mean age was 55.7 years, 17 (29.3%) had diabetes mellitus (DM) and 8 (13.8%) had ischemic heart disease. At the beginning of the technique, 11 patients (19%) had obesity (body index mass (BIM)> 30 kg / m<sup>2</sup>). TNF-alpha; TWEAK, hs-CRP were significantly higher in patients with PD failure. In a multivariate analysis (logistic binary regression), there was a significant correlation between PD failure and serum albumin levels (B= 0,18; CI= 95%; 0,034-0,925; p= 0,04), BIM (B=1,21; CI (95%) 1,01-1,44; p= 0,36) and logTWEAK (B= 5,41; CI (95%); 1,13 – 25,85; p= 0,034), in a model adjusted for DM. On a Cox regression, PD failure was associated with logTWEAK (B=3,41; CI (95 %) 1,43-8,16; p= 0,006) and with loghs-CRP (B = 0,28; CI (95 %) 0,086-0,94; p= 0,039).

**Conclusions**

In our cohort, TWEAK and hsCRP serum levels were correlated with PD failure. Inflammation could be partly responsible for the depurative efficiency loss and the dropout to HD. Our preliminary results should be confirmed through additional studies involving peritoneal tissue histomorphometric assessment

## P-215

## LONGITUDINAL FOLLOW-UP OF FREE WATER TRANSPORT, D/P CR AND EFFLUENT CA125 IN PATIENTS ON PERITONEAL DIALYSIS

Miguel Oliveira<sup>1</sup>, Laetícia Teixeira<sup>2</sup>, José Carlos Oliveira<sup>4</sup>, Maria João Carvalho<sup>2</sup>, Olívia Santos<sup>2</sup>, António Cabrita<sup>2</sup>, Anabela Rodrigues<sup>2,3</sup>

<sup>1</sup>Nephrology Department, Tondela-Viseu Hospital Center, Portugal, <sup>2</sup>Nephrology Department, St. António Hospital - Oporto Hospital Center, Portugal, <sup>3</sup>Instituto de Ciências Biomédicas de Abel Salazar - University of Oporto, Portugal, <sup>4</sup>Clinical Pathology Department, St. António Hospital - Oporto Hospital Center, Portugal

**Objectives**

Peritoneal dialysis (PD) is associated with chronic changes in peritoneal membrane, compromising the removal of water and solutes. The objective of this study was to evaluate the variation of free water transport (FWT), D/P Creatinine (D/P Cr), and Effluent Carcinogen antigen 125 (EfCa125) in patients on PD, and assessing the impact of potential factors (age; gender; diabetes; PD vintage; first renal replacement therapy).

**Methods**

The patients performed Two-in-one Peritoneal Equilibration Test (PET) (3,86% glucose modified PET). EfCa125 concentration at 240 minutes, FWT and D/P Cr were quantified. Linear mixed models were performed to assess the impact of potential factors.

**Results**

A sample of 130 patients was considered (61 females and 69 males; mean age of 48,17 years; median follow-up of 39,0 months). 17,7% of patients had diabetes; 73,3% of patients were DP first, 15,4 % were treated with haemodialysis (HD) previously to DP and 12,3% received a renal transplant before. Standard prescription included biocompatible solutions without hypertonic 3.86% /4,25% glucose use.

Within the median follow-up no changes in D/P Cr was found but the contribution of incident patients allows to document a decrease of D/P Cr with an increase of FWT in short-term time PD. A significant decrease of EfCa125 and FWT was put on evidence only after adjusting for vintage, meaning that previous longer PD treatment from prevalent patients is associated with decreasing FWT and EfCa125; besides, previous HD treatment was also associated with similar trend.

D/P Cr profile according to age, and FWT according to sex, diabetes and previous HD exposition call for investigation of possible determinants of interstitium/vascular characteristics apart from PD exposition.

**Conclusions**

Up-dated PD prescription allows small solute transport preservation. However FWT and EfCa125 decrease with longer PD time exposition. Functional and structural determinants of water transport apart from PD exposition deserve clarification.

P-216 Moderated Poster Session 3

## ALTERATIONS IN TISSUE AND BLOOD CAPILLARY WALL IN RELATION TO CHANGES IN PERITONEAL TRANSPORT CHARACTERISTICS IN CAPD PATIENTS WITH ULTRAFILTRATION FAILURE

Joanna Stachowska-Pietka<sup>1</sup>, Jan Poleszczuk<sup>1</sup>, Bengt Lindholm<sup>2</sup>, Jacek Waniewski<sup>1</sup><sup>1</sup>Nalecz Insitute of Biocybernetics and Biomedical Engineering, Poland, <sup>2</sup>Divisions of Baxter Novum and Renal Medicine, Karolinska Institutet, Sweden**Objectives**

In peritoneal dialysis, ultrafiltration failure (UFF) is caused by local alterations of two major transport barriers, sub-peritoneal tissue and capillary wall, resulting in altered transport properties with reduced capacity to remove excess water. Here we investigated changes in overall transport characteristics and corresponding alterations of both transport barriers in UFF patients.

**Methods**

Intraperitoneal volume and solute concentrations were analysed in 31 CAPD patients, 20 with normal UF (NUF) and 11 with UFF, undergoing six-hour dwell using 3.86% glucose solutions and labelled serum albumin (RISA) added to dialysate as volume marker. For each patient, individual physiologically based parameters were evaluated for both transport barriers using spatially distributed approach based on the individual measurements of the intraperitoneal fluid during the dwell time. The obtained parameters were further applied to calculate individual peritoneal transport parameters such as, among others, diffusive mass transport (KBD), hydraulic conductance, and osmotic conductance for glucose (OsmCon).

**Results**

Increased solute diffusivity and decreased hydraulic conductivity was observed in both barriers in UFF as compared to NUF patients, together with increased local lymphatic absorption and functional decrease in the fraction of ultrasmall pores. This was linked to alteration of the distribution of fluid and solutes within the sub-peritoneal tissue. Decreased peritoneal hydraulic conductance (by 69%) and increased KBD (by 50-100%) were found in UFF vs. NUF patients. Moreover, lower values of the peritoneal reflection coefficient for glucose (by 58%) and peritoneal OsmCon (by 44%) were observed suggesting lower effectiveness of the osmotic force in UFF vs. NUF patients.

**Conclusions**

Alterations of individual peritoneal transport properties in patients with UFF are caused by changes occurring, typically simultaneously, both within the capillary wall and the tissue barrier, and these changes are influencing both solute and fluid transport within the tissue.

P-217 Moderated Poster Session 5

## EVALUATION OF CLINICAL RELEVANCE OF TRANSMEMBRANE ELEKTROKINETIC FLUX IN PERITONEAL MEMBRANE

Anneleen Pletinck, Sunny Eloot, Griet Glorieux, Wim Van Biesen

Ghent University Hospital, Belgium

**Objectives**

It is debated whether in PD, transport can be governed by the electrokinetic model, in which streaming potentials are generated across a fenestrated capillary by forced filtration of an ionic solution. As transcapillary flux across the membrane differs during the dwell or with different osmolarity, the streaming potential over the membrane would change if the electrokinetic model applies. Accordingly, transport of solutes with the same molecular weight but different charge would differ during the dwell or when using hypertonic glucose. We investigated presence of streaming potentials in transperitoneal transport in PD by measuring ratios of dialysate concentrations of IgG2 (neutral) and IgG4 (negative), both 150 kD, under different conditions of transcapillary ultrafiltration.

**Methods**

PD patients got two consecutive dwells of 120min, with randomly either 2L Physioneal 1.36% or 3.86% as first dwell. D/P was taken at 5, 15, 30, 60 and 120min. After 120min, dialysate was drained and volume checked. IgG2 and IgG4 concentrations were estimated with ELISA.

**Results**

In ten patients, 65±17 years, RRF 9.7±5.6mL/min/1.73m<sup>2</sup>, drained volume after 120 minutes [Median/Q1/Q3] was different between the 1.36% and the 3.86% glucose dwells [1947/1913/2022mL vs 2541/2380/2794mL resp, P=0.007]. At none of the time points, a difference was found between the 1.36% and the 3.86% ratios

Time (min)	Physioneal 1.36%	Physioneal 3.86%	P-value
5	2.39 [1.54; 10.6]	3.21 [1.34; 10.6]	1.00
15	2.30 [1.30; 9.08]	2.51 [1.23; 8.86]	1.00
30	2.34 [1.35; 9.19]	2.22 [1.29; 8.19]	0.13
60	2.06 [1.23; 7.91]	2.27 [1.28; 8.65]	1.00
120	1.92 [1.09; 8.49]	2.11 [1.08; 8.81]	0.73

**Discussion**

We failed to demonstrate a difference in the transport ratios of two macromolecules with the same molecular weight but a different charge, and this despite sufficient differences in transcapillary ultrafiltration.

**Conclusions**

Our data failed to provide support for the electrokinetic hypothesis governing transport across the peritoneal membrane.

## P-218

## ULTRAFILTRATION FAILURE WITH ICODEXTRIN. CASE REPORT AND LITERATURE REVISION.

Chiara Manenti<sup>2</sup>, Elisa Delbarba<sup>2</sup>, Valerio Vizzardi<sup>1</sup>, Massimo Sandrini<sup>1</sup>, Giovanni Cancarini<sup>1,2</sup>

<sup>1</sup>ASST-Spedali Civili-OU of Nephrology, Italy, <sup>2</sup>University of Brescia, Italy

## Objectives

Icodextrin is a mixture of glucose polymers with a high molecular weight used to obtain a sustained peritoneal ultrafiltration. ERBP Guidelines suggest to use icodextrin in fast transporter patients. Current literature has no evidence of ultrafiltration failure (UFF) induced by icodextrin, but three cases in one report published in 1999.

## Methods

A 52 years old man started PD in 2013. At the end of 2016 a shift from NTPD to CCPD with a long daily icodextrin dwell was planned because of low dialysis adequacy. Before this prescription was applied, he suffered from bacterial peritonitis. After this episode a long dwell with icodextrin was introduced. Surprisingly, the patient experienced a complete loss of UF, with no apparent explanation. For this reason we re-establish NTPD and obtained a rapid recovery of UF. Was the loss of UF due to peritonitis-related inflammation trigger or to the use of icodextrin?

## Results

Two months after peritonitis and two weeks after icodextrin withdrawal, 3.86%-PET results confirmed the patient was an average transporter (D/Pcreat: 0.72) with  $\Delta$ Na and UF capacity normal and similar to his previous tests. An attempt to reintroduce icodextrin was done. Again, complete UFF occurred with weight gain despite urine output was preserved. A second 3.86%-PET showed the patient had become fast transporter (D/Pcreat: 0.87) with UFF (UF: 350 ml). No rash or any allergic manifestations occurred. Icodextrin was interrupted. Ten days later a third 3.86%-PET was performed showing peritoneal permeability recovery (D/Pcreat: 0.71; UF: 750 ml).

## Conclusions

The PET test during the use of icodextrin, showed rapid increase in solute transport, rapid dissipation of the osmotic gradient and UFF. Other causes of UFF were excluded (catheter dysfunction, leakage and significant residual peritoneal volume). We hypothesize a direct role of icodextrin, due to possible pro-inflammatory properties in predisposed patients, that has to be confirmed by further studies.

## P-219

## CHANGES IN DIALYSIS PRESCRIPTION AFFECT THE TIME COURSE OF SOLUTE TRANSPORT IN PERITONEAL DIALYSIS

Irene Brenna<sup>1</sup>, Emma Elphick<sup>2</sup>, Maurizio Gallieni<sup>3</sup>, Simon Davies<sup>2</sup>, Mark Lambie<sup>1</sup>

<sup>1</sup>Royal Stoke University Hospital, United Kingdom, <sup>2</sup>Keele University, United Kingdom, <sup>3</sup>Università degli Studi, Italy

## Objectives

Long term peritoneal dialysis (PD) is associated with increased peritoneal solute transport rate (PSTR), which correlates with hard outcomes. Whether different clinical approaches affect PSTR rate of increase is unclear.

## Methods

This is a single centre retrospective longitudinal analysis, collecting data from 01/01/1990 to 31/12/2016 from PETs routinely performed twice a year in all PD patients at the Royal Stoke University Hospital. Using a linear mixed model approach, 3889 PETs from 865 patients were analysed, follow-up being up to 12.7 years, median 1.6. A random intercept/slope model was fit to assess whether the exposure to different clinical practice patterns (PD type, average glucose exposure, long dwell strategy) had an effect on the PSTR rate of increase, adjusting for patients' demographics, comorbidities, residual renal function (RRF) and peritonitis episodes.

## Results

Mean predicted PSTR at PD start was 0.723, average increase 0.012 per year. Average glucose exposure affected PSTR absolute value, but not its rate of increase. The use of icodextrin was associated with higher PSTR at PD start (+ 0.055, 95%CI 0.040/0.070) and slower increase over time (0.005 per year, p=0.002). A dry long dwell resulted in lower PSTR at PD start (- 0.090, 95%CI -0.114/-0.067), but faster increase (0.029 per year, p<0.0001). The pattern of PSTR changed with starting-period too (p<0.001), the starting PSTR being lower in 1990-95 (0.723) and rising until 2005-2010 (0.824), and lower starting values were associated with greater increases over time. The change with starting-period was only partially explained by changes in practice pattern.

## Conclusions

Both the initial PSTR and the subsequent change over time are associated with different PD prescription strategies.

P-220

## PREDICTORS OF OVERHYDRATION IN PERITONEAL DIALYSIS

Rachele Escoli<sup>1</sup>, Alice Lança<sup>1</sup>, Rita Alves<sup>1</sup>, Hernâni Gonçalves<sup>1</sup>, Paulo Santos<sup>1</sup>, Francisco Ferrer<sup>1</sup>, Ana Vila Lobos<sup>1</sup><sup>1</sup>Centro Hospitalar do Médio Tejo, Portugal

## Objectives

Overhydration (OH) remains a relevant problem in peritoneal dialysis (PD). The aim of the study was to identify the main predictors of overhydration in a cohort of PD patients.

## Methods

The study enrolled 45 prevalent PD patients, divided into two groups according to hydration status by the last evaluation of bioimpedance analysis (BIA): Group A OH/ECW 15% (n=19) and Group B OH/ECW &lt;15% (n=26). For each group we collected demographic data, comorbidities, Charlson Score Index (CSI), diuresis volume, adequacy parameters (weekly kt/V urea and creatinine clearance), daily ultrafiltration (UF), PD modality, PD solutions and creatinine dialysate/plasma (D/P) at a 4-hour 3.86% peritoneal equilibration test.

## Results

A statistically significant difference between the groups (A vs. B) was found in: diabetes prevalence (52.6% vs. 19.2%; p=0.021), peripheral arterial disease (31.6% vs. 7.7%, p=0.047) and average CSI (6.11±3.28 vs. 3.38±1.53, p&lt;0.001). There was no statistically significant difference in gender, although there was a higher percentage of male in overhydrated group. Differences in residual diuresis (0.70±0.50 L vs. 1.53±0.97 L, p=0.001), daily UF (1.61±0.61 L vs. 2.3±0.7, p=0.001) and D/P of creatinine at 240 minutes (0.73±0.11 vs. 0.65±0.07, p=0.006) were also statistically significant. PD vintage, PD modality, PD solutions and in parameters assessing PD adequacy were similar among groups. Using multiple variable logistic regression diabetes (OR 1.88, CI 1.56-1.96, p=0.04), higher creatinine D/P (OR 2.12, CI 1.81-2.56, p=0.01) and residual diuresis (0.89, CI 0.86-0.99, p=0.008) were predictors of overhydration.

## Conclusions

Diabetes and a fast transport status are potential predisposing factors of OH, but probably the most important protective factor in PD patients is residual diuresis. These results are in accordance to the literature, despite the small number of patients of the study.

P-222

## EARLY SUSPICION OF PERITONITIS RAISED BY SUDDEN ULTRAFILTRATION LOSS IN APD PATIENT UNDERGOING REMOTE CONTINUOUS MONITORING

Rafael Gomez<sup>1</sup>, Cristian Petro<sup>1</sup>, Maria Dazzarola<sup>1</sup>, Angela Rivera<sup>2</sup><sup>1</sup>RTS Colombia, Colombia, <sup>2</sup>Baxter Export Corporation, United States

## Introduction

Remote Continuous Monitoring (RCM) of patients on Automated Peritoneal Dialysis (APD) provides new opportunities for evaluation of prescription adherence and early detection of ultrafiltration failure, permitting prompt actions, decreasing non-scheduled appointments and preventing hospitalizations. Another potential benefit is early identification of changes in ultrafiltration (UF) profiles linked to changes in vascular permeability due to imminent peritonitis. While UF patterns are variable, it is known that peritonitis associates with fall in UF. Thus sudden appearance of low UF for wet day and low night UF may be due to acute inflammatory process linked to peritonitis. Here we report findings in one patient in whom a peritonitis's episode was preceded by dramatic fall in UF one day before clinical recognition.

## Methods

69 year-old ESRD patient was prescribed 10 hours, 4 cycles, dwell volume: 2.1 liters, wet day: 1.1 liters with APD-RCM. Patient's treatment was monitored every day.

## Results

UF profiles showed on average initial UF: 0.2 liters (wet day UF), UF night cycles: 1.3 liters. But, on February 15, wet day UF fell to -0.7 liters, UF of night cycle fell to 0.271 liters. Thus wet day UF as well as night UF fell dramatically from historic values without evident cause. The following day he sought consultation, complaining of abdominal pain and cloudy peritoneal fluid. A diagnosis of peritonitis was made.

## Discussion

We failed to demonstrate a difference in the transport ratios of two macromolecules with the same molecular weight but a different charge, and this despite sufficient differences in transcapillary ultrafiltration.

## Conclusion

Sudden UF loss recorded by APD-CRM preceded clinical signs of peritonitis suggesting that ambulatory monitoring of UF allowing identification of unexpected drop in UF may represent an indirect marker of imminent peritonitis thus informing caregivers about need for appropriate actions. While this is the first case in our experience and more episodes are warranted to validate these observations, we suggest that APD-CRM may be a novel tool for early identification of sudden UF loss linked to imminent peritonitis.

P-223

## ULTRAFILTRATION PATTERNS BY CYCLE IN APD PATIENTS WITH REMOTE CONTINUOUS MONITORING

Rafael Gomez<sup>1</sup>, Jacek Waniewski<sup>2</sup>, Malgorzata Debowska<sup>2</sup>, Joanna Stachowska-Pietka<sup>2</sup>, Mauro Pietribiasi<sup>2</sup>, Angela Rivera<sup>3</sup>, Beng Lindholm<sup>4</sup><sup>1</sup>Rts Colombia, Colombia, <sup>2</sup>Nalecz Institute of Biocybernetics and Biomedical Engineering, Polish Academy of Sciences, Poland, <sup>3</sup>Baxter Export Corporation, USA, <sup>4</sup>Baxter Novum and Renal Medicine, Karolinska Institutet, Sweden

## Objectives

Peritoneal ultrafiltration is influenced by numerous factors and is not easy to predict. Until now, descriptions of the behavior of ultrafiltration by cycle in APD and its clinical correlates are lacking. Remote Continuous Monitoring (RCM) of patients on Automated Peritoneal Dialysis (APD) provides an opportunity to review patterns of ultrafiltration by APD cycle and analyze factors influencing it. Here we describe ultrafiltration results for eight patients undergoing APD with RCM.

## Methods

Eight APD patients, mean age 65.6 (range 21-85) years, 50% diabetics, 50% males, mean D/P creatinine at 4 hours of PET 0.55 (0.37-0.71) monitored by RCM were using on average (range): 4 (3-5) exchanges, dwell time 104 (77-128) minutes, dwell volume 1850 ml (1500-2100) for 9 (6-10) hours. Three patients had wet day. We measured individual patient ultrafiltration, cycle by cycle, every day for one month.

## Results

Total net ultrafiltration for all cycles was higher in wet day patients than in dry day patients (1167±260 vs 591±278 ml). Interestingly, during first night cycle, using the same volumes and dwell times, all dry day patients (n=5; -116±82ml) consistently had negative ultrafiltration while it was positive in wet day patients (n=3; 252±107 ml). The last cycle yielded always positive ultrafiltration (442±199 in wet and 385±130 ml in dry day patients, respectively), while other cycles showed great variability.

## Conclusions

Using the APD-CRM system, which opens new opportunities to study ultrafiltration patterns in the ambulatory setting, this exploratory study showed substantial ultrafiltration variability between APD cycles. Interestingly, dry day was associated with negative ultrafiltration during the first night cycle. We speculate that possible explanations could be a dehydrated interstitium, increased lymphatic drainage, low aquaporin function, or increased uptake of glucose to cells.

P-224

## THE ROLE OF HYALURONIC ACID (HA) IN THE PERITONEAL CAVITY

Amy Brook, Aled Williams, Soma Meran

Cardiff University, United Kingdom

## Introduction

Mesothelial to mesenchymal transition (MMT) is a driver of peritoneal fibrosis leading to Peritoneal Dialysis (PD) failure. In other cell models and disease states, we have previously shown that pro-fibrotic cell differentiation is dependent on changes in synthesis and macromolecular organisation of the matrix polysaccharide hyaluronan (HA). However, the role of this matrix polymer in peritoneal fibrosis is not known.

## Objectives

Characterise and define the role of HA in PD fibrosis and failure.

Methods: Human Peritoneal Mesothelial Cells cultured from omentum samples of nephrectomy donors. Mesothelial cells isolated and an in-vitro model of MMT was used to study their responses. In parallel experiments PD effluent samples of patients with and without infection were obtained from the Cardiff tissue bio-bank.

## Results

1. Significantly increased HA generation identified in PD effluent of patients with and without PD peritonitis (Stable 155.6 ± 67.92ng/ml vs Infected 641.6 ± 106.1ng/ml, p=0.0016).
2. Induction of MMT is associated with increased pericellular and extracellular HA generation (ELISA and red cell exclusion assay). Increased mRNA expression of the HA Synthase enzymes (HAS1 and HAS2) and downregulation of HA degradatory enzymes (Hyal1 and Hyal2).
3. Immunohistochemistry results demonstrate HA localisation and distribution in mesothelial cells using FITC-labelled HABP. In unstimulated mesothelial cells, intracellular HA was apparent extracellularly and appeared to be distributed diffusely within the cytoplasm. In TGF-β1 induced myofibroblasts, HA was mainly localised at the cell surface with an increased amount of extracellular HA present.
4. Removal of HA through inhibiting its synthesis (4MU and siHAS2) or increasing its breakdown (Hyal treatment) did not prevent MMT.

## Conclusions

Contrary to our findings in other cell models, HA doesn't influence the transdifferentiation of Mesothelial cells in response to factors that promote fibrosis, despite being generated in large quantities. We are now investigating to see if increased HA influences PD inflammation/inflammatory cell recruitment.

P-225

### IMPACT OF HEMOGLOBIN CYCLING ON OUTCOME PARAMETERS IN PEDIATRIC DIALYSIS PATIENTS

Sevcan A. Bakkaoloğlu<sup>1</sup>, Yaşar Kandur<sup>1</sup>, Meltem Akçaboy<sup>1</sup>, Erkin Serdaroğlu<sup>2</sup>, Aytül Noyan<sup>3</sup>, Aysun Karabay Bayazit<sup>4</sup>, Lale Sever<sup>5</sup>, Sare G. Özlü<sup>6</sup>, Gül Özçelik<sup>7</sup>, İsmail Dursun<sup>8</sup>, Caner Alparsalan<sup>9</sup>

<sup>1</sup>Gazi University School of Medicine, Department of Pediatric Nephrology, Turkey, <sup>2</sup>Dr. Behçet Uz Children's Hospital Department of Pediatric Nephrology, Turkey, <sup>3</sup>Baskent University Department of Pediatric Nephrology, Turkey, <sup>4</sup>Cukurova University Department of Pediatric Nephrology, Turkey, <sup>5</sup>Istanbul University Cerrahpasa School of Medicine Department of Pediatric Nephrology, Turkey, <sup>6</sup>Dr.Sami Ulus Maternity and Children Research and Training Hospital Department of Pediatric Nephrology, Turkey, <sup>7</sup>Sisli Etfal Training and Research Hospital Department of Pediatric Nephrology, Turkey, <sup>8</sup>Eciyes University Department of Pediatric Nephrology, Turkey, <sup>9</sup>Tepecik Training and Research Hospital Department of Pediatric Nephrology, Turkey

#### Introduction

During treatment with ESA, level of hemoglobin (Hb) usually fluctuates; this phenomenon is known as "hemoglobin cycling (HC)" and there is some debate about whether or not this may lead to increased morbidity/mortality in adults. It was aimed to evaluate the impact of HC on patient-important outcome parameters including left ventricular hypertrophy (LVH) and inflammation in pediatric dialysis patients.

#### Materials and Methods

Records of patients followed-up in nine centers (2008-2013) were retrospectively reviewed. Biochemical parameters, complete blood count, CRP, echocardiographic data, monthly-Hb and albumin levels for the last one year were collected, where available. More than 1 g/dL decrease or increase in Hb level was considered as HC. Patients were divided into two groups according to 12-month Hb-trajectory as rare cycling (RC)( $\leq 3$ ) and frequent cycling (FC)( $\geq 4$  fluctuation) as well as three groups based on time-averaged-Hb levels;  $<10$ , 10-11 and  $>11$ g/dl.

#### Results

245 dialysis patients aged  $12.3 \pm 5.1$  (range: 0.5–21) years were enrolled in this study. 50% of the patients had 1-3 cycling, 82% had 1-5, only 3% had no cycling. There were no differences between HC groups with respect to age, primary renal disease, dialysis modality, having anemia and hospitalization rate, while RC patients had higher urine output ( $p < 0.01$ ) and higher CRP levels ( $p < 0.001$ ). Echocardiographic data were available in 137 patients. Although LV mass index (LVMI) was higher in RC than FC group ( $65 \pm 37$  vs  $52 \pm 23$ g/m<sup>2.7</sup>,  $p = 0.056$ ), prevalence of LVH was not different between groups. Time-averaged-Hb levels were inversely correlated with ESA requirement ( $r = -0.497$ ), mean arterial pressure ( $r = -0.213$ ), LVMI ( $r = -0.471$ ) and CRP ( $r = -0.443$ ), but positively with urine output ( $r = 0.296$ ) and albumin levels ( $r = 0.275$ ). Patients with time-averaged-Hb levels  $<10$  g/dl had an increased risk of LVH and inflammation.

#### Conclusions

Hb cycling is a common among dialysis patients. Severity of anemia rather than its cycling has more significant impact on the prevalence of LVH and on inflammatory state.

P-226

### PERITONEAL DIALYSIS IN CHILDREN

Nadia Chaouchi, Moufida Hamouche, Katia Amaouche, Tinhinane Yahiamessaoud, Fela Laga, Linda Badaoui, Atmane Seba

Chu Tizi Ouzou, Algeria

#### Objectives

Peritoneal dialysis (PD) represents the technique of choice in the management of the child with end-stage renal disease (ESRD), we report a series of 9 children in ESRD treated with PD.

#### Methods

We report a study of 9 cases of patients aged between 5 and 15 years treated by peritoneal dialysis (CAPD and APD), the parameters of the study are: age, sex, initial pathology, duration of dialysis, The presence of a peritonitis and finally the evolution

#### Results

Children aged between 10 and 15 represent 77.7%. the male population in 66.66% of the cases, the average duration of PD is 3.3 years in APD and 1.6 years in CAPD, peritonitis are present in CAPD : 44.44%. The evolution is favorable for most of our patients.

#### Conclusion

Peritoneal dialysis remains the technique of choice in the management of the child's ESRD and awaiting a renal transplant. Strict adherence to the rules and recommendations of good clinical practice for the adequacy of PD of rule.

P-227

## PEDIATRIC PERITONEAL DIALYSIS IN ACUTE RENAL FAILURE

Moufida Hamouche, Katia Amaouche, Tinhinane Yahiamessaoud, Nadia Chaouchi, Fela Laga, Linda Badaoui, Atmane Seba

Tizi Ouzou hospital, Algeria

## Objectives

Acute renal failure (ARF) is less frequent in children than in adults, but it can be life-threatening by the risk of acute lung edema and hyperkalaemia, requiring early implementation treatment. PD remains the technique of choice for infants and young children

## Methods

We retrospectively studied 15 cases of children with acute renal failure treated with peritoneal dialysis between 2006 to 2016.

## Results

The age of these children was 3 years with a range from newborn to 15.5 years of age. The children are male in 86% and only 14% female.

Causal nephropathy is a hemolytic-uremic syndrome in 100% of cases.

They received continuous ambulatory dialysis (CAPD) with transfusion of red blood cells in 53% of cases, antihypertensive treatment in 23% of the cases, platelet transfusion in 11% of cases, only 01 patient benefits from a specific treatment based on eculizumab. Recovery occurred in 80% of the cases, 13% died and 6% developed ESRD.

## Conclusions

Peritoneal dialysis (PD) is an extra-renal (ERA) method that should be proposed as a first-line treatment for acute renal failure in children

P-228

## TREATMENT OF PERITONITIS IN CHILDREN ON PERITONEAL DIALYSIS

Evgueniy Vazellov<sup>2</sup>, Polina Miteva<sup>1</sup>, Dimitar Roussinov<sup>1</sup>, Russka Shumnalieva<sup>2</sup>

<sup>1</sup>Clinic of Children Nephrology and Hemodialysis, Children University Hospital "Prof. Ivan Mitev", Medical University, Bulgaria, <sup>2</sup>University Hospital St. Ivan Rilski, Medical University, Bulgaria

Peritoneal dialysis (PD) is an established method for dialysis treatment. It was introduced in Bulgaria in 1993 year as an alternative dialysis method in children with renal insufficiency. Peritonitis is one of the most serious complications of PD which may result in catheter removal, switching to hemodialysis or death

## Objectives

To investigate the incidence, causes and outcome of treatment of peritonitis in children on PD.

Methods: 72 patients were included in the study – 40 (56%) boys and 32 (44%) girls. The average age of the patients was 10.29 ± 4.46 years, the youngest one was 3 months old, the oldest one – 17 years old.

## Results

For the period between 1993-2012 years 99 cases of peritonitis were diagnosed. The frequency was 1 case of peritonitis at 20.33 patient-months. The most common causes included: no bacterial growth - 35 (35,3%), St. aureus - 22 (22.2%), St. epidermidis - 9 (9%), Candida - 9 (9%) and others. The treatment was conducted according to the guidelines of the International Society for Peritoneal Dialysis (ISPD) – with intraperitoneal administration of an antibiotic in doses appropriate for the renal failure. 74 cases of peritonitis (74.8%) were treated conservatively, in 20 cases (20.2%) the method was switched to hemodialysis, in 3 cases (3%) the catheter was removed and 2 cases (2%) resulted in death.

## Conclusions

Over the past decade there has been a better survival of the methodology, mostly as a result of the reduced incidence of peritonitis. The treatment of peritonitis could be conservative, by intraperitoneal administration of antibiotics at doses according to the renal failure.

P-229 Moderated Poster Session 1

## URAEMIC TOXIN ACCUMULATION IN PAEDIATRIC CKD PATIENTS IS ONLY PARTIALLY REFLECTED BY ESTIMATED GFR

Evelien Snauwaert<sup>1</sup>, Wim Van Biesen<sup>1</sup>, Ann Raes<sup>1</sup>, Els Holvoet<sup>1</sup>, Griet Glorieux<sup>1</sup>, Koen Van Hoeck<sup>2</sup>, Maria Van Dyck<sup>3</sup>, Nathalie Godefroid<sup>4</sup>, Sanne Roels<sup>5</sup>, Johan Vande Walle<sup>1</sup>, Sunny Eloot<sup>1</sup>

<sup>1</sup>Ghent University Hospital, Belgium, <sup>2</sup>Antwerp University Hospital, Belgium, <sup>3</sup>Leuven University Hospital, Belgium, <sup>4</sup>UCL, Belgium, <sup>5</sup>Ghent University, Belgium

**Objective**

Chronic kidney disease (CKD) in childhood is characterised by the accumulation of uraemic toxins contributing to a multisystem disease that negatively impacts quality of life and lifespan of children. Childhood CKD is predominantly defined by a decrease in glomerular filtration rate, estimated (eGFR) by a single serum measurement of endogenous biomarkers such as creatinine and cystatin C. The objective of this study was to evaluate how accurate eGFR predicts the concentration of uraemic toxins in a paediatric CKD cohort.

**Methods**

In 65 children with non-dialysis CKD, serum concentrations were determined of different small solutes [uric acid (UA), urea, creatinine, symmetric dimethyl-arginine (SDMA), asymmetric dimethyl-arginine (ADMA)], middle molecules [ $\beta$ 2microglobuline ( $\beta$ 2M), complement factor D (CfD), fibroblast growth factor 23 (FGF23)], and protein-bound solutes [p-cresylglucuronide (pCG), hippuric acid, indole acetic acid, IxS (indoxyl sulfate), pCS, (p-cresylsulfate) and 3-carboxy-4-methyl-5-propyl-furanpropionic acid (CMPF)], using ELISA for the water soluble and middle molecules and UPLC for protein-bound toxins. Spearman's rho correlation coefficients (rs) were calculated to correlate uraemic toxins with eGFR.

**Results**

eGFR was also highly correlated with water soluble solutes, e.g. creatinine (rs=-0.98), urea (rs=-0.84) and SDMA (rs=-0.82), and middle molecules CfD and  $\beta$ 2M (both rs=-0.90). In contrast, low correlation coefficients (rs<0.5) were found for CMPF (rs=-0.32), UA (rs=-0.45), ADMA (rs=-0.47), and pCG (rs=-0.48). The other uraemic toxins, all protein bound, had intermediate rs between -0.75 (IxS) and -0.57 (pCS). Similar correlations between the Schwartz, FAS-height and  $\beta$ 2M-based equation, versus the uraemic toxin concentrations were found.

**Conclusions**

This study demonstrated that the accuracy of eGFR in predicting concentrations of uraemic toxins in childhood CKD was high for middle molecules and water-soluble uraemic toxins urea and SDMA, but low for protein-bound uraemic toxins, UA and ADMA. As a consequence, eGFR is only partially reflecting the complexity of the accumulation pattern of uraemic toxins in childhood CKD.

## P-230

## AN EXPLORATION OF THE ASSOCIATION BETWEEN URAEMIC TOXIN CONCENTRATIONS AND QUALITY OF LIFE IN CHILDREN WITH CHRONIC KIDNEY DISEASE

Evelien Snauwaert<sup>1</sup>, Elke De Bruyne<sup>1</sup>, Charlotte Van Herzele<sup>1</sup>, Els Holvoet<sup>1</sup>, Wim Van Biesen<sup>1</sup>, Ann Raes<sup>1</sup>, Griet Glorieux<sup>1</sup>, Koen Van Hoeck<sup>2</sup>, Nathalie Godefroid<sup>4</sup>, Maria Van Dyck<sup>3</sup>, Sanne Roels<sup>1</sup>, Johan Vande Walle<sup>1</sup>, Sunny Eloot<sup>1</sup>

<sup>1</sup>Ghent University Hospital, Belgium, <sup>2</sup>Antwerp University Hospital, Belgium, <sup>3</sup>Leuven University Hospital, Belgium, <sup>4</sup>UCL, Belgium

**Introduction**

As kidney function deteriorates, uraemic toxins accumulate and contribute to the clinical picture of children with chronic kidney disease (CKD), resulting in an overall poorer quality of life (QoL). The aim of this study was to explore the association between levels of uraemic toxins and QoL.

**Methods**

In 23 children (11.0[6.9;14.6]years, 61%boys) with non-dialysis CKD stage 1-5, plasma concentrations of small solutes (asymmetric dimethyl arginine, symmetric dimethyl arginine, creatinine), middle molecules ( $\beta$ 2microglobuline, complement factor D), and protein-bound solutes [p-cresylglucuronide, hippuric acid (HA), indole acetic acid (IAA), indoxyl sulfate, p-cresylsulfate, and 3-carboxy-4-methyl-5-propyl-furanpropionic acid (CMPF)] were measured. Their parents were asked to fill in the general (PedsQL 4.0 Generic Core: total score, physical & education subscale) and disease-specific QoL questionnaire (PedsQL End Stage Renal Disease (ESRD): disease & fatigue subscale). Lasso regression was used as an explorative method to select predictive uraemic toxins (when  $\beta \neq 0$ ) in models for the PedsQL questionnaires.

**Results**

The mean estimated GFR was 50.4 [31.2;74.5]mL/min/1.73m<sup>2</sup>. CMPF was found to predict the total PedsQL ( $\beta$ =-0.34) and physical PedsQL subscales score ( $\beta$ =-1.19). Besides CMPF, IAA was predominant in the prediction of total PedsQL and physical PedsQL subscale score (respectively  $\beta$ =-0.84 and  $\beta$ =-1.26); and HA in the education PedsQL subscale ( $\beta$ =-0.31). The disease subscale of PedsQL ESRD questionnaire was predominantly predicted by HA ( $\beta$ =-1.18) and IAA ( $\beta$ =-2.30). Using this model, creatinine was for none of the questionnaires selected as a possible predictor.

**Conclusion**

This model selected CMPF, IAA and HA as promising predictors for the hard endpoint QoL in children with CKD. Moreover, creatinine was not selected as a predictor for any of the QoL measures. A more extensive longitudinal study is necessary to strengthen our findings about the impact of uraemic toxins on the QoL in children with CKD.



- G
- García-Brizuela, Leire P-92, P-93  
 Gardiner, Lorraine P-201  
 Gaspar, Augusta P-89, P-214  
 Gaspar, Maria Augusta P-40, P-41, P-42, P-176  
 Gauci, James P-172,  
 Gelabert, Arantxa P-64  
 Genc, Nurten P-124  
 Georgilas, Nikolaos P-11  
 Georgoulidou, Anastasia P-10  
 Gergely, Laszlo P-79  
 Ghyar, Praful P-167  
 Giammarioli, Elisa P-207  
 Gibyeli Genek, Dilek P-66  
 Gil Cunquero, José Manuel P-50  
 Giusti, Riccardo P-173  
 Glorieux, Griet P-217, P-229, P-230  
 Godefroid, Nathalie P-229, P-230  
 Godinho, Iolanda P-199  
 Goitia, Victoria P-94  
 Gokcay Bek, Sibel P-27, P-136  
 Golembiewska, Edyta P-182  
 Gomes da Costa, António P-143, P-199  
 Gomez, Rafael P-222, P-223  
 Gómez, Carmen P-105, P-106  
 Gómez, Concepción P-13  
 Gomez Castilla, Antonia Concepción P-181  
 Gonçalves, Hernâni P-6, P-58, P-137, P-203, P-204, P-220  
 Gonenir, Lale P-113  
 Gonullu, Nuri P-27, P-136  
 Gonzales, Archie P-201  
 Gonzalez-Parra, Emilio P-3  
 Gonzalez, Francisco P-67  
 Gonzalez, Jorge P-59  
 González, Carlota P-156  
 González, Guadalupe P-84, P-168, P-208  
 González, Olga P-193  
 Gonzalez Casaus, Maria Luisa P-3  
 González Fernández, África P-7  
 González Peña, Olga P-50  
 González-Mateo, Guadalupe P-169  
 Gourgoulianis, Konstantinos P-211  
 Govi, Mariarosa P-145  
 Grajewska, Magdalena P-182  
 Grdan, Zeljka P-165  
 Greco, Rosita P-95  
 Gregori, Marco P-44  
 Gregorini, Mariacristina P-145  
 Grima, Maria Angela P-172  
 Guasch, Marilisa P-59  
 Gudmundsdottir, Helga P-183  
 Guedes, Anabela P-104  
 Guedri, Yosra P-36, P-128, P-163, P-171, P-196, P-205, P-209  
 Guillaume, Benoît P-194  
 Guillouët, Sonia P-68  
 Gulin, Marijana P-165  
 Gunduz, Murat P-124  
 Guney, Ihsan P-124
- H
- Hachicha, Jamil P-19  
 Hackert, Thilo P-166  
 Hamouche, Moufida P-70, P-226, P-227  
 Harada, Kenji P-151  
 Hassan, Kamal P-162  
 Hatzoglou, Chrissi P-211  
 Hamouche, Moufida P-69, P-71  
 Havasi, Anett P-37, P-114  
 Hdiji, Mounir P-19  
 Heaf, James O-1, O-2  
 Hegbrant, Jörgen P-85, P-86, P-87  
 Heibel, Françoise P-50  
 Heimbürger, Olof O-1, P-183  
 Heiro, Maija O-1  
 Herrero, María Angeles P-186  
 Herzog, Rebecca P-17, P-169, P-210
- Hiramatsu, Takeyuki P-72  
 Hisole, Nora P-152  
 Ho, LY P-122  
 Ho, Thanh P-194  
 Ho, Thien Thanh P-56  
 Hollingsworth, Lee P-164  
 Holvoet, Els P-144, P-229, P-230  
 Hoskovec, David P-102  
 Hu, Shouci P-24  
 Hubaux, Véronique P-194  
 Huddam, Bulent P-66  
 Hueso, Miguel P-156  
 Hurtado Carceles, Ana P-88  
 Hurtado Carceles, Irene P-88
- I
- Iannuzzella, Francesco P-145  
 Ignjatovic, Ljiljana P-154  
 Ilic Begovic, Tanja P-108, P-155  
 Imamura, Katsuro P-151  
 Imbrico, Massimo P-28  
 Iñigo, Victoria P-59  
 Ismail, Emna P-163, P-205, P-209
- J
- Jacques, Richard P-129  
 Jagodziński, Piotr P-182  
 Jakic, Marko P-165  
 Jankovic, Aleksandar P-184  
 Jankovic, Nikola P-165  
 Jarraya, Faical P-19  
 Jelčić, Ivo P-180  
 Jennische, Eva P-1  
 Jensen, Joergen P-183  
 Jianhui Zhou, Jianhui Zhou P-45, P-46  
 Jiménez, Luis P-186  
 Jimeno, Isabel P-92, P-93, P-94  
 Jimeno Garcia, Luisa P-88, P-147  
 Johansson, Ann-Cathrine P-183  
 Johnson, Donna P-201  
 Johnston, Fiona P-121  
 Jordi, Calabria P-63  
 Jovanovic, Dijana P-74  
 Jovanovic, Natasa P-74  
 Juric, Klara P-165
- K
- Kadlecova, Martina P-102  
 Kalender, Betul P-27, P-136  
 Kalita, Krzysztof P-182  
 Kaltzidis, Theotokis P-11  
 Kammoun, Khawla P-19  
 Kampmann, Jan Dominic O-1  
 Kanai, Hidetoshi P-151  
 Kandur, Yaşar P-225  
 Kaplan, Serkan P-113  
 Karabay Bayazit, Aysun P-225  
 Karakus, Volkan P-66  
 Karamani, Triantafyllia P-103  
 Kardesler, Aysen P-26  
 Karlidag, Rifat P-113  
 Katsoudas, Spyros P-10  
 Kelly, Frank P-167  
 Kelly, Ian P-167  
 Kim, YL O-6  
 Király, Mónika P-114  
 Kiriakoutzik, Iliana P-11  
 Kirmizis, Dimitrios P-75  
 Kiss, Istvan P-79  
 Kitoukidi, Eleni P-11  
 Kladou, Helen P-103  
 Klak, Renata P-182  
 Klaric, Dragan P-76, P-165  
 Klimek, Kamila P-181  
 Knap, Bojan P-77  
 Knap, Kristof P-77  
 Knezevic, Violeta P-53  
 Kochman, Pawel P-85, P-86, P-87
- Koga, Kazuki P-151  
 Kolářová, Jana P-100  
 Koraichi, Zakariae P-67  
 Kostic, Emina P-18  
 Kostic, Jelena P-18  
 Kostopoulou, Myrto P-10  
 Kovacevic-Vojtusek, Ivana P-165  
 Kovács, Laszlo P-78, P-109, P-110, P-116  
 Kratochwill, Klaus O-5, P-17, P-169, P-210  
 Krawczyk, Robert P-182  
 Krediet, Raymond P-2  
 Kubisiak, Kristine P-195  
 Kūlahçı, Özgül P-5  
 Kulcsar, Imre P-78, P-79, P-97, P-109, P-110, P-115, P-116  
 Kurahashi, Motoyasu P-151  
 Kurfis, Terez P-4  
 Kuwahara, Fumiko P-151  
 Kwok, Shing P-23  
 Kwok, WT P-122  
 Kyriazis, Ioannis P-10
- L
- Labeta, Mario O-7  
 Laga, Fela P-69, P-70, P-71, P-226, P-227  
 Lagreid, Inger O-1  
 Lambie, Mark O-6, O-8, P-23, P-135, P-160, P-161, P-219  
 Lança, Alice P-58, P-80, P-81, P-82, P-137, P-203, P-204, P-220,  
 Lanot, Antoine P-68, P-83, P-200  
 Lanuza Luengo, Manuel P-88, P-147  
 Laranjinha, Ivo P-41  
 Laranjo, Ceu P-104, P-187  
 Lasitschka, Felix O-5  
 Laudon, Alessandro P-99  
 Lazaridou, Foteini P-11  
 Lazer, Sue P-121  
 Leavey, Sean P-167  
 Lee, HB O-6,  
 Leite Costa, Natacha P-221  
 Leme Britto, Zita Maria O-2  
 Leonardi, Sabina O-3  
 Lerma, José Luis P-84  
 Lewis, Sarah P-153  
 Liakopoulos, Vassilios P-211  
 Lichodziejewska-Niemierko, Monika P-182  
 Lichtenauer, Anton P-17  
 Lindholm, Bengt O-1, P-216, P-223  
 Liuzzi, Anna Rita O-7 P-57  
 Ljungman, Susanne P-183  
 Ljutić, Dragan P-108, P-155, P-165, P-180  
 Lloberas, Nuria P-156  
 Lo, KC P-122  
 Lo, KY P-122  
 Lo, MW P-122  
 Lobbedez, Thierry P-68, P-83, P-200  
 Lobo, Sara P-176  
 Locsei, Zoltan P-78  
 Løkkegaard, Niels O-1  
 Lopes Barreto, Deirisa P-2  
 Lopez, Noelia P-199  
 López Jimenez, Inmaculada P-88  
 Lopez-Anton, Melisa O-7  
 López-Cabrera, Manuel P-168, P-169, P-206, P-208  
 López-Iglesias, Antía P-221  
 Lorenzo, Victor P-3  
 Lorenzo Bermejo, Justo O-5  
 Loureiro, Marta P-206  
 Lucarini, Roberta P-173  
 Lucarotti, Ilaria P-173  
 Lucas, Cristina P-22  
 Luz, Ivan P-6

M					
Mabuchi, Masatsuna	P-72	Mseddi, Fatma	P-19	Petro, Cristian	P-222
Macário, Fernando	P-170	Mulé, Marica	P-96	Petrovic, Lada	P-53
Machado, Domingos	P-41, P-89, P-214	Munier, Alexandra	P-85	Petrovic, Marijana	P-154, P-202
Maghella, Scilla	P-119	Munteanu, Dan	P-85, P-86, P-87	Petzold, Max	P-183
Mahdi, Amar Monaf	P-146	N		Pharro, Georgina	P-153
Mahfoudh, Hichem	P-19	Nadia, Martin	P-63	Phillips-Darby, Louise	O-8
Mai, Antonello	P-207	Nagy, Eva	P-97	Pichl, Sebastian	P-166
Majster, Zdenka	P-184	Naumnik, Beata	P-182	Pietribiasi, Mauro	P-223
Mak, SK	P-122	Naumovic, Radomir	P-74	Pilcevic, Dejan	P-154, P-202
Maksic, Djoko	P-154, P-202	Navaratnarajah, Arunraj		Pimentel, Ana	P-104, P-187
Malho Guedes, Anabela	P-187			Pinto Abreu, Cristina	P-143, P-199
Malvar, Beatriz	P-198			Pires, Carlos	P-130, P-159, P-198
Manenti, Chiara	P-118, P-218, P-120	Nemeth, Reka	P-78	Pisanidou, Pinelopi	P-11
Manolis, Georgios	P-103	Neri, Loris	P-98, P-99	Pletinck, Anneleen	P-217
Manzanedo, Rosario	P-57	Neves, Pedro	P-104, P-187	Poleszczuk, Jan	P-216
Manzano Sánchez, Diana	P-88, P-147	Névrumont, Vinciane	P-194	Polfliet, Nathalie	P-144
Manziona, Andrea	P-207	Niemczyk, Stanislaw	P-182	Popa, Cristina	P-179
Marchetti, Valentina	P-173	Nieto Abad, Inmaculada		Postiglione, Andrea	P-28
Marcykiewicz, Bernadeta	P-182			Pou, Monica	P-54
Maresca, Immacolata	P-28, P-157, P-158	Noce, Valeria	P-207	Poulsen, Dag	P-183
Marinaki, Smaragdi	P-90, P-185	Nolasco, Fernando	P-140	Povlsen, Johan V.	O-1
Marinangeli, Giancarlo	P-99	Noyan, Aytül	P-225	Prata, Catarina	P-138
Mariño, Santiago	P-22	Ntaountaki, Irini	P-103	Prgomet, Sandra	P-32
Marrón, Belén	P-85, P-86, P-87	Nunes, Ana	P-20, P-91, P-141,	Prieto, Mario	P-22
Martika, Antigoni	P-11		P-142, P-174, P-175, P-197	Prieto Velasco, Mario	P-52
Martin, Nadia	P-65	O		Próspero, Fernando	P-138
Martín, Claudia	P-86	O'grady, Mary	P-167	Psoma, Maria	P-103
Martin Arribas, A.	P-84	Oh, Jun	O-5	Puide, Ilze	P-52
Martinez, Carlos	P-94	Ojeda, Maria Angeles	P-13	Puig, Cassandra E.	P-105, P-106
Martinez, Mar	P-106	Oliveira, Ana	P-20, P-91, P-141,	Q	
Martínez Jiménez, Víctor	P-88, P-147		P-142, P-174, P-175, P-197	Quero, Maria	P-156
Martínez Losa, Adoración	P-88, P-147	Oliveira, José Carlos	P-215	Quintana, Ainhoa	P-94
Martínez Martínez, Luis	P-188, P-190	Oliveira, Luís	P-138	Quintana Lartundo, Jose Antonio	
Martins, Ana Rita	P-40, P-41, P-42,	Oliveira, Miguel	P-215	P-107, P-188, P-189, P-190, P-191, P-192	
P-89, P-176, P-214		Olivieri, David	P-7	Quiros Ganga, Pedro Luis	P-14, P-15, P-16,
Marusic, Eugenija	P-32	Opatrná, Sylvie	P-100	P-48, P-49, P-133, P-134	
Más, Sebastian	P-89, P-214	Ornelas, Rita	P-104	R	
Matteini, Francesca	P-206	Orosz, Attila	P-85, P-86	Rabrenovic, Violeta	P-154, P-202
Matuszkiewicz-Rowińska, Joanna	P-182	Ostrowski, Janusz	P-85, P-86, P-87	Raby, Anne-Catherine	O-7
Mavromatidis, Kostas	P-10	Ots-Rosenborg, Mai	O-1	Racki, Sanjin	P-165, P-212
McGrory, Jacqueline	P-152	Ouled Sidi Amar, Taib	P-9, P-8	Radic, Josipa	P-32 P-108, P-155,
Mehmetaj, Alma	P-44, P-132	Ounissi, Mondher	P-148, P-149, P-150	P-165	
Melexopoulou, Christina	P-90, P-185	Özgelik, Gül	P-225	Radivojevic, Jasmina	P-18
Mellotte, George	P-201	Özener, Cetin	P-25	Radulovic, Goran	P-165
Memoli, Andrea	P-28, P-157, P-158	Özlü, Sare G.	P-225	Raes, Ann	P-229, P-230
Menè, Paolo	P-207	P		Ragusa, Antonino	P-99
Menendez, David	P-57	Páez, Maria Castillo	P-13	Rakossy, Wanda	P-4
Meng, Catarina	P-91	Palladino, Marco	P-207	Rama, Inés	P-156
Menon, Madhavan	P-146	Palomar Fontanet, Rosa		Ramírez, Miguel Ángel	P-13
Meran, Soma	P-224			Ramirez de Arellano, Manel	P-54
Mesbahi, Tasnim	P-148, P-149, P-150	Pangidis, Panagiotis	P-11	Randers, Else	O-1
Michalik, Jifí	P-100	Papadaki, Panagiota	P-103	Rayane, Taher	P-8, P-9, P-30
Migliaccio, Silvia	P-28, P-157, P-158	Papalia, Teresa	P-95	Regueiro Rodríguez, Carla	P-7
Mijuskovic, Mirjana	P-154, P-202	Pappas, Apostolos	P-90	Remon Rodríguez, Cesar	P-14, P-15, P-16,
Millan, Isabel	P-186	Parekh, Gita	P-178	P-48, P-49, P-133, P-134	
Minguela, Jose Ignacio	P-92, P-93, P-94	Paříková, Alena	P-100	Ribera-Sanchez, Roi	P-221
Miquel, Fulquet	P-54	Parker, Kathrine	P-117	Rivera, Angela	P-222, P-223
Miteva, Polina	P-228	Passadakis, Ploumis	P-10	Rivero, Karen	P-84
Mitic, Branka	P-18	Passam, Andreas	P-103	Rocca, Anna Rachele	P-99
Mitic, Igor	P-53	Patterson, Teresa	P-101	Rocha, Joana	P-138
Mitrovic, Milos	P-184	Paudice, Nunzia	P-132	Rodrigues, Anabela	P-131, P-215
Miura, Saeko	P-151	Pavone, Mario	P-105, P-106	Rodrigues, Valerio	P-50
Moioli, Alessandra	P-207	Pei, Ming	P-24	Rodriguez, Mariano	P-3
Molgora, Sara	P-96	Peiskerova, Martina	P-102	Rodríguez, María Ángeles	P-13
Mollica, Agata	P-95	Peppá, Vassiliki	P-211	Rodríguez Palomares, Jose Ramón	P-21
Mollica, Francesco	P-95	Perakis, Kostas	P-10	Rodríguez Suárez, Carmen	P-51
Monfá, Elena	P-22	Pere, Torguet	P-63, P-65	Rodríguez-Carmona, Ana	P-221
Montero, Nuria	P-156	Pereira, Fernando	P-131	Roels, Sanne	P-229, P-230
Montoli, Alberto		Pereira, Marta	P-143, P-199	Roesch, Michael	P-87
Moreno, Fatima	P-54	Pérez, Daniel	P-85, P-87	Romãozinho, Catarina	P-170
Moreno, Roberto	P-206	Pérez Fontán, Miguel	P-221	Rončević, Dušan	O-2
Moretta, Gustavo	P-85, P-87	Pérez Martínez, Juan	O-2	Ronco, Claudio	O-2, P-50, P-51, P-52
Morgado, Teresa	P-138	Perysinaki, Garyfalia	P-103	Roper Knowles, Mary	P-61
Mosakowska, Magdalena	P-182	Pestana, Manuel	P-20, P-91, P-141,	Rosado, Consolación	P-57
Mrabet, Sanda	P-36, P-128,		P-142, P-174, P-175, P-197	Rosch, Michael	P-85, P-86
P-163, P-171, P-196, P-205, P-209		Petersons, Aivars	O-1, P-183	Rosenberg, Mai	P-183
				Rossi, Lucia	P-206, P-207
				Roumeliotis, Stefanos	P-211
				Roussinov, Dimitar	P-228
				Ruiz, Elena	P-84
				Ruiz de Gauna, Ramón	P-92, P-93, P-94
				Russo, Domenico	P-28, P-157, P-158
				Russo, Roberta	P-28
				Rydström, Margareta	P-183
				S	
				Sá, Helena	P-170
				Sabri, Ferdaous	P-36, P-128, P-196,
				P-171,	
				Saeed, Ibrahim	P-125, P-126, P-127
				Saha, Heikki	P-183
				Sahin, Tefvik Tolga	P-5, P-124
				Sahtout, Wissal	P-36, P-128,
				P-163, P-171, P-196, P-205, P-209	
				Saiz, Mercedes	P-105, P-106
				Salas, Mario	P-60
				Salas Venero, Carlos Antonio	P-188, P-190
				Salgueira, Mercedes	P-13, P-181
				Sánchez, Jennifer	P-193
				Sanchez-Gonzalez, Carmen	P-3
				Sánchez-Jáuregui, M	P-84
				Sandoval, Pilar	P-206, P-208
				Sandrini, Massimo	P-96, P-118,
				P-119, P-120, P-218	
				Sannino, Giuseppina	P-28
				Santos, Joana	P-130, P-159, P-198
				Santos, Olívia	P-215
				Santos, Paulo	P-6, P-220, P-137
				Saraga, Marijan	P-32
				Sastre, Aranzazu	P-22
				Satchithananda, Duwarakan	P-146
				Schaefer, Betti	O-5, P-166
				Schaefer, Franz	O-5
				Schmitt, Claus P.	O-5, P-17, P-166
				Schnabel, Daniel	P-85
				Schneider, Karoly	P-116
				Sclauzero, Paola	O-3
				Seba, Atmane	P-69, P-71, P-70,
				P-226, P-227	
				Sebastià, J.	P-84
				Selgas, Rafael	P-168, P-208
				Senol, Hande	P-26
				Serdaroğlu, Erkin	P-225
				Sever, Lale	P-225
				Sheina, Irina	P-123
				Shin, Suk-Kyun	O-2
				Shummalieva, Russka	P-228
				Silva, André	P-197
				Silva, Natália	P-138
				Silva, Rui	P-130, P-159, P-198
				Silva Costa, Joana	P-170
				Sin, HK	P-122
				Singh, Seema	P-35
				Sirvent, Ana Esther	P-186
				Skalioti, Chrysanthi	P-90, P-185
				Skaricic, Rozarija	P-180
				Slavicek, Jasna	P-32
				Sloand, James	P-60, P-61
				Smith, Claire	P-121
				Snauwaert, Evelien	P-229, P-230
				Soares, Elsa	P-139
				Solenov, Evgeniy	P-211
				Solis, Angel	P-105, P-106
				Somma, Chiara	P-132
				Sørensen, Anette Bagger	O-1
				Sorrentino, Annasara	P-44
				Soveges, Erzsebet	P-116
				Spaia, Sofia	P-11
				Spanos, Giorgos	P-90, P-185
				Stachowska-Pietka, Joanna	P-216, P-223
				Stanojevic - Stosovic, Mirjana	P-74
				Stark Aroeira, Luiz	P-7
				Stavenuiter, Andrea	P-213
				Stefan, George	P-22
				Stefani, Alfredo	P-145
				Stegmayr, Bernd	P-183

- Stonelake, Stephen P-164  
 Stopic, Bojan P-184  
 Stosovic, Milan P-74  
 Stove, Veronique P-56  
 Strippoli, Raffaele P-206, P-207  
 Strohalmova, Sabina P-102  
 Stroumza, Paul P-85, P-87  
 Szigeti, Zsuzsanna P-111  
 Szollosi, Andras P-116  
 T  
 Tabinor, Matthew P-23, P-160, P-161  
 Takeda, Kazuhito P-112  
 Talarico, Roberta P-95  
 Tandara, Leida P-108, P-155  
 Tapia, Irati P-54  
 Tarakji, Ahmed P-31  
 Tarantino, Silvia O-5, P-17  
 Taskapan, Hulya P-113  
 Taylor-Sutton, Jean P-121  
 Teixeira, Laetícia P-131, P-215  
 Temiz, Özge P-5  
 Ter Wee, Piet P-213  
 Terzic, Brankica P-154, P-202  
 Tesaf, Vladimír P-100, P-102  
 Theodoridis, Marios O-2, P-10  
 Thomas, Enfys P-121  
 Thomas, Mark P-164  
 Thomas, Rajesh P-195  
 Timofte, Delia P-85, P-86, P-87  
 Timoumi, Rim P-209  
 Tischler, Christian P-166  
 Toksoy, Zuhra P-66  
 Toldy, Erzsebet P-78  
 Tölgyesi, Katalin P-114  
 Topley, N O-6,  
 Török, Marietta P-85, P-86, P-87  
 Toth, Judit P-115  
 Toumi, Salma P-36, P-128, P-171,  
 P-196, P-205, P-209  
 Treille, Serge P-194  
 Tripodi, Marco P-206, P-207  
 Tsirpanlis, George P-10, P-50  
 Tsoumpou, Ioanna P-185  
 Tsounos, Ioannis P-11  
 Tuglular, Serhan P-25  
 Türüt, Nevin P-5  
 Tyszkiewicz, A P-84  
 U  
 Udvardi-Bukits, Brigitta P-109, P-110, P-116  
 Unterwurzacher, Markus P-169  
 Usama, Saira P-31  
 Uyar Gazezoglu, Oksan P-66  
 V  
 Vaccarella, Daniele P-105  
 Vaccarisi, Sebastiano P-95  
 Vada Manzanal, Noelia P-107, P-188, P-189,  
 P-190, P-191, P-192  
 Vakiani, Styliani P-11  
 Valente, Sergio P-207  
 Valério, Patricia P-139  
 Valério Alves, Rita P-203, P-204  
 Van Biesen, Wim O-2, P-50, P-51, P-52,  
 P-56, P-144, P-217, P-229, P-230  
 Van Dorpe, Isabel P-144  
 Van Dyck, Maria P-229, P-230  
 Van Herzele, Charlotte P-230  
 Van Hoeck, Koen P-229, P-230  
 Van Ittersum, Frans P-213  
 Vande Walle, Johan P-229, P-230  
 Vardhan, Anand P-117  
 Vaz, Alvaro P-139  
 Vaz, Ana Margarida P-104  
 Vazelon, Evgueny P-228  
 Vazquez, Jesus P-206  
 Velioglu, Arzu P-25  
 Venere, Baibar O-1  
 Vera Rivera, Manel P-51  
 Verdelho, Miguel P-140  
 Verger, Christian O-2, P-50, P-51, P-52,  
 P-68, P-83, P-200  
 Vernier, Isabelle P-83, P-200  
 Verrina, Enrico O-5  
 Vervloet, Marc P-213  
 Vicente, Rita P-130, P-159, P-198  
 Viglino, Giusto P-98, P-99  
 Vigo Gago, Eva María P-7  
 Viklický, Ondrej P-100  
 Vila Lobos, Ana P-6, P-58, P-80, P-81,  
 P-82, P-137, P-203, P-204, P-220  
 Villabon Ochoa, Paola Milena P-21  
 Vinhas, Jose P-139  
 Vitale, Maria P-43  
 Vizzardì, Valerio P-96, P-118, P-119,  
 P-120, P-218  
 Vlachopoulos, Georgios P-103  
 Vladislavic, Silvija P-180  
 Vlahakos, Demetrios P-10  
 Vlahu, Carmen P-2  
 Vujčić, Bozidar P-165, P-212  
 W  
 Wabel, Peter P-51  
 Waddington, Paul P-121  
 Wagner, Anja P-169  
 Waniewski, Jacek P-216, P-223  
 Weinhandl, Eric P-195  
 Wilkie, Martin P-55, P-129, P-135,  
 P-160, P-161, P-183  
 Williams, Aled P-224  
 Williams, Oliver P-1  
 Willicombe, Michelle P-35  
 Wilmink, Teun P-164  
 Wlodkowski, Tanja T. P-166  
 Wojtaszek, Ewa P-182  
 Wong, AKM P-122  
 Wong, PN P-122  
 Wong, YY P-122  
 Woodrow, Graham P-135  
 Wright, Alison P-121  
 X  
 Xoana, Barros P-63  
 Y  
 Yagbasan, Yesim P-124  
 Yagci, Ahmet Baki P-26  
 Yahiamessaoud, Tinhinane P-69, P-70, P-71, P-226, P-227  
 Yang, Hongtao P-24  
 Yankovoy, Andrey P-123  
 Yu, Zanzhe P-135  
 Yuasa, Misako P-151  
 Yuksel, Peruze P-66  
 Z  
 Zaher, Maha P-162  
 Zallema, Dorsaf P-36, P-128  
 Zaloszyk, Ariane O-5  
 Zargiannis, Sotirios P-211  
 Zavos, George P-90, P-185  
 Zavvos, V. O-6  
 Zellama, Dorsaf P-163, P-171, P-196,  
 P-205, P-209  
 Zümürtdal, Emin P-124, P-5







