NATIONAL RATES OF ADMISSION, MORTALITY AND POST-PERITONITIS TECHNIQUE SURVIVAL ACCORDING TO DAY OF THE WEEK IN ENGLISH PERITONEAL DIALYSIS PATIENTS

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Introduction and Aims: Admissions and deaths have been shown to vary according to day of the week in patients receiving haemodialysis. Patients with a range of chronic diseases are more likely to be admitted on a Monday, and have higher hospital associated mortality at the weekend. We set out to explore these associations in patients receiving peritoneal dialysis (PD). Mortality at the weekend. These associations are explored in patients receiving peritoneal dialysis (PD).

Methods: Information on patients receiving PD from a cohort of patients starting renal replacement therapy in England between 2002 and 2006 collected by the UK Renal Registry was linked to hospitalisation data. Admission and death rates (in hospital and out of hospital) by day of the week whilst receiving PD were calculated. 90 day survival following admission for PD peritonitis according to day of the week was analysed using cox regression with a random effects term for renal centre, comparing each day of the week to Wednesday when services should be optimal.

Results: 27,649 admissions in 6363 patients over 17,620 patient years were available for analysis. Mortality rate was 7.8 per 100 patient years and was stable across the week for patients developing PD peritonitis over the weekend who delay their presentation with adverse consequences.

Conclusions: Unlike haemodialysis patients, PD patients do not demonstrate day of the week variation in mortality rates but are less likely to be admitted at the weekends. The lower hospitalisation rate for peritonitis at weekends may represent either patient reluctance to report ill health at weekends, or greater difficulty in accessing medical care. The increase in technique failure on Monday may represent a proportion of patients developing PD peritonitis over the weekend who delay their presentation with adverse consequences.

PERITONEAL DIALYSIS CAN BE AN OPTION FOR AUTOSOMAL DOMINANT POLYCYSTIC KIDNEY DISEASE: A MULTICENTRE OBSERVATIONAL STUDY

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Introduction and Aims: Currently no diagnostic tool or methodology is available for the early detection of encapsulating peritoneal sclerosis (EPS). Peritoneal transport parameters indicate discrepancies between long-term peritoneal dialysis (PD) patients and those who will develop EPS by means of free water transport (FWT). Levels of cancer antigen 125 (CA125), interleukin-6 (IL-6) and plasminogen activator inhibitor-1 (PAI-1) have been detected in the peritoneal effluent by enzyme-linked immunoabsorbent assays with reasonable measures of diagnostic accuracy for EPS. The objective of this study is to investigate and construct a panel of effluent biomarkers in conjunction with FWT to monitor PD treatment and aid early detection of EPS.

Methods: A case-control study nested in the longitudinal cohort of PD patients from our center was conducted. For each EPS case, three long-term controls were randomly selected. The time-specific area under the ROC curve was calculated for FWT and the effluent biomarkers at a lag time up to three years before the diagnosis of EPS. Threshold values were determined by the optimal balance between estimates of sensitivity and specificity to classify values as test positive or negative. Finally, FWT was combined with AR of CA125, IL-6 or PAI-1 to explore the effect on diagnostic accuracy measures.

Results: The percentage of FWT and appearance rates (AR) of effluent biomarkers were investigated in all EPS patients (n=11) and 34 long-term PD patients. Compared to AR of CA125, IL-6 and vascular endothelial growth factor, the diagnostic performance was most optimal for FWT followed by PAI-1 AR. Throughout the diagnostic panels between FWT and AR of CA125, IL-6 or PAI-1 high specificity estimates above 94% were yielded. However, the panel of FWT and CA125 was able to detect 40% of EPS cases whilst the panels that included FWT and IL-6 or PAI-1 AR respectively identified 60% and 75% of EPS patients.

Conclusions: The measurement of effluent biomarkers complementary to peritoneal function test provides an all-round insight into the state of the peritoneal membrane. Our data indicate that an effluent biomarker panel including the percentage of FWT may aid in the early detection of EPS where high estimates of specificity are present.
Methods: A multicenter (20 PD-Units) prospective matched-cohort study over all ADPKD patients starting PD (n: 106) between Jan-2003 and Dec-2010 and a control group (n:212) with 2 consecutive patients without ADPKD. Mortality, PD-technique failure, peritonitis, abdominal wall leaks and cyst infections were compared.

Results: ADPKD patients had similar age but less comorbidity when PD started: Charlson-Index [4.3 (SD 1.6) vs 5.3 (SD 2.5) p < 0.001], Diabetes Mellitus (5.7% vs 29.2%, p < 0.001) and previous cardiovascular events (10.4% vs 27.8%, p < 0.001). No differences were observed in delivered dialysis dose, clinical events that required transient-transfer to HD, nor in peritoneal leakage episodes. The cyst infection rate was low (0.09 episodes per patient-year) and seems not to be associated to peritonitis episodes. Peritonitis rate were 0.54 vs 0.56 per patient-year, (ns) and hospital admission rates were 0.64 vs 0.72, per patient/year (ns). Overall technique survival was similar in both groups. Permanent-transfer to hemodialysis because of surgery or peritoneal leakage was more frequent in ADPKD. More ADPKD patients were included in the transplant waiting list (69.8 vs 58%, p=0.04) but mean time to transplantation was similar (2.08 [1.69-2.47] years). The mortality rate was lower (2.5 vs 7.6 deaths/100 patient-year, p= 0.02) and the median patient survival (kaplan meier) was longer in ADPKD patients (6.04 [5.39-6.69] vs 5.57 [4.95-6.18] years, p= 0.024).

Conclusions: PD is a suitable renal replacement therapy option for ADPKD patients. CI: The authors declare no CI. Supported by an unrestricted grant of Baxter, Amgen and Fresenius through Fundación Madrileña de Nefrología.
of this study was to investigate the rate of early catheter-related complications and catheter survival in two Brazilian centres, for two different percutaneous methods of catheter implantation performed by the nephrologist team.

Methods: Adult incident patients recruited from January 2006 to July 2013 who had undergone first peritoneal dialysis (PD) catheter implantation were included in the analysis. Early rates of mechanical and infectious complications were defined as time to the first event occurring up to 3 months.

Results: Four hundred and forty-five consecutive Tenckhoff catheters were implanted by the nephrologist team percutaneously after antibiotic prophylaxis in an operating room: trocar was used in 349 (78.4%) and the Seldinger technique (S) in 99 (21.6%). The Seldinger technique was significantly associated with a lower rate of leaks (16.3 vs. 3%, p<0.05) and tip catheter migration (22.6 vs. 10.1%, p<0.04), while early rates of infectious complication were similar between the two groups (p=0.59). Long-term catheter survival was higher in the Seldinger group (log-rank p=0.031). By Cox multivariate analysis, adjusted for age, sex, and diabetes, the Seldinger technique remained independently associated with better catheter survival (HR 0.681 [confidence interval 0.462-0.910], p=0.04).

Conclusions: Our experience showed better PD outcomes with the Seldinger technique than the trocar method of catheter implantation by nephrologists.

**SP456**

CELL-FREE PLASMA DNA IN PERITONITIS IS ORIGINATED FROM APOPTOTIC EVENTS

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Introduction and Aims: Peritonitis are a frequent complication of peritoneal dialysis (PD) and a common cause of technique failure. Cell-free plasma DNA (cfpDNA) is a circulating extracellular DNA fragments and originates from necrotic and apoptotic cells derived from inflammation and tissue damage. Cell-free DNA quantification is a possible method to determine cell damage through apoptosis and necrosis in vivo. In particular, cfDNA is increased in PD patients with a recent episode of peritonitis. The first aim of this study was to elucidate the putative causative mechanism involved in cfDNA formation during peritonitis.

Methods: We enrolled 54 PD patients undergoing maintenance PD for a minimum of 3 months and we divided them into 3 groups: 25 PD patients without any history of peritonitis, 21 PD patients whose last episode of peritonitis was more than 3 months prior to enrollment, and 8 patients who had an episode of peritonitis within the 3 months prior to enrollment. CfpDNA was extracted from plasma and was quantified by Real time PCR for the β-globin gene, in triplicate. Subsequent, qualitative analysis of apoptosis was performed by DNA Ladder kit and quantitative plasma levels of Caspase-3 was measured by ELISA test.

Results: Quantitative analysis of cfDNA showed significantly higher levels in patients who had an episode of peritonitis within the 3 months compared with the other two PD groups (p<0.01)(Figure 1). Qualitative analysis of apoptosis showed higher DNA ladder formations, suggesting presence of apoptotic events. The increase of apoptotic events was confirmed by Caspase-3 activation (p<0.01) and a significant correlation was observed between cfDNA and Caspase-3 levels (Figure 2). We observed lower levels of cfDNA and Caspase-3 in patients with a longer peritonitis-free period. cfDNA levels tend to progressively decrease in correlation with peritonitis-free time.

Conclusions: In conclusion, our data has demonstrated that cfDNA is increased in the plasma of PD patients with recent peritonitis and cell apoptosis induced by Caspase-3 activation is one of the potential sources of cfDNA.

**SP457**

RIGOROUS CATHETERS BY ORAL LACTULOSE IS HIGHLY EFFECTIVE IN RESTORING A MIGRATED PERITONEAL CATHETER

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Introduction and Aims: Displacement of peritoneal dialysis (PD) catheter has known for the major cause of catheter malfunction in continuous ambulatory peritoneal dialysis patients. We designed this study to evaluate the effect of conservative treatment using a rigorous catharsis in restoring a migrated PD catheter in CAPD patients following percutaneous implantation without break-in procedure.

Methods: ESRD patients who initiated PD is from January 2003 to February 2012 in our hospital were enrolled in this study. All catheters (double-cuffed Tenckhoff catheter with a straight intraperitoneal segment; swan-neck 28, non-swan-neck 114) were inserted using a modified percutaneous placement method under local anesthesia. PD was initiated immediately after the catheter insertion without a break-in period. The catheter tip migration was documented by abdominal radiography. When the catheter migration was documented, rigorous catharsis was induced by the administration of oral lactulose with/without enema.

Results: The migration rate of PD catheter was 19.7% (28 catheters). Left upward migrations were significantly more common than right upward migrations (77.7% vs. 22.3%, p<0.05). The rates of catheter migration of swan-neck catheters and non-swan-neck catheters were 22.2% and 13.3%, respectively (p<0.05). Diminished outflow volumes were accompanied in only 14.9% (4 of 28 catheters) of catheter migration. After vigorous catharsis using oral lactulose, successful restoration of PD catheter migration was achieved in 96.3%. Only one case, which could not be repositioned by non-invasive methods, needs catheter change to correct outflow failure due to catheter migration.

Conclusions: Migration of PD catheter, even though the catheter tip translocated into right upper abdomen, could be easily corrected by a rigorous catharsis with oral lactulose.

**SP458**

DIFFERENTIAL PATTERNS OF ANXIETY AND DEPRESSION IN PATIENTS ON PERITONEAL DIALYSIS OVER 12 MONTHS: THE ROLE OF SOCIAL SUPPORT, AND PD CARER

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Introduction and Aims: Depression is common in patients on peritoneal dialysis and has been shown to be associated with higher morbidity and mortality, but little is known about the course of symptoms over time. The objectives of the present study were to explore group and individual patterns of change in anxiety and depression in the two PD modalities and to identify factors that may be associated with different trajectories of emotional distress.

Methods: 115 PD patients (N=52 CAPD and N=63 APD) completed self-report measures of depression, anxiety and quality of life on two occasions 12 months apart. Clinical cut offs were used to identify individual patterns of change in anxiety and depression across time and general linear models were employed to establish predictors of these trajectories.

Results: Mean levels of anxiety and depression remained unchanged ever 1 year. More than 60% of patients scored above cut offs for depression and more than 40% scored above cut offs for anxiety at both baseline and follow up assessments. Individual level
analyses showed that the course of symptoms does not follow a single trajectory. While most patients remained either within the persistent high symptom range (38.9% depression and 19.5% anxiety) or no depression (23%) or no anxiety (46%), a total of 16% of the patients became depressed after the recovered phase. Patients with new onset symptoms of depression or anxiety were older (> 65 years), assisted by carer and reported diminishing social support and increased symptom burden and loneliness to the no depression or anxiety subgroup.

Conclusions: Different patterns of symptoms reflect heterogeneity in patients’ emotional reactions and intervention. Studies need to explore support options for PD patients especially those at assisted PD schemes.

SP459 ASSOCIATION TOO-LATE INITIATION OF DIALYSIS WITH MORTALITY IN PERITONEAL DIALYSIS

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Introduction and Aims: It is controversial whether early or late initiation of peritoneal dialysis (PD) is associated with mortality in end stage renal disease (ESRD) patients. We analyzed impact of the timing of PD initiation on mortality in ESRD patients.

Methods: Patients enrolled in the Clinical Research Center for ESRD cohort in Korea. We analyzed the all-cause mortality according to the estimated glomerular filtration rate (eGFR) with MDRD equation initiation of PD in ESRD patients undergoing PD from 2009 to 2013. We defined reference group (late-start PD) arbitrarily as eGFR PD initiation < 5-10 mL/min/1.73m2, early-start PD as eGFR >10 mL/min/1.73m2, and too-late-start PD as eGFR < 5 mL/min/1.73m2. Cox proportional hazards regression models were used to assess the association between timing of PD initiation and all-cause mortality.

Results: This prospective observational study included incident 495 PD patients (279 PD patients in reference group, 107 patients in early-start PD, and 109 patients intoo-late-startPD). The patients in early-start group were older, male predominance, and too-late-start group had higher prevalence of co-morbidity, including diabetes, coronary vascular disease, peripheral artery disease, and heart failure. All groups had similar pre-dialysis serum albumin and higher pre-dialysis hemoglobin compared to other groups. After a median 23 months of follow-up, all-cause mortality in early-start group and too-late-start group was significantly compared to reference group (P = 0.007 by log-rank test). On univariate analysis, all-cause mortality was positively correlated with early-start PD, too-late-start PD, older age, absence of diabetes, heart failure, peripheral vascular disease, and stroke, and negatively correlated with serum albumin level. On multivariate analysis adjusted with age, gender, cause of ESRD, co-morbidity, BMI and serum albumin level, increased all-cause mortality was associated with early-start PD (HR 1.25, 95% CI, 0.45-3.46, P = 0.01), while too-late-start PD remained significant compared to reference group (HR 3.07, 95% CI, 1.11-8.57, P = 0.026).

Conclusion: The outcomes of patients undergoing PD from 2009 to 2013. We defined reference group (late-start PD) arbitrarily as eGFR PD initiation < 5-10 mL/min/1.73m2, early-start PD as eGFR >10 mL/min/1.73m2, and too-late-start PD as eGFR < 5 mL/min/1.73m2. Cox proportional hazards regression models were used to assess the association between timing of PD initiation and all-cause mortality. The patients in early-start group were older, male predominance, and too-late-start group had higher prevalence of co-morbidity, including diabetes, coronary vascular disease, peripheral artery disease, and heart failure. All groups had similar pre-dialysis serum albumin and higher pre-dialysis hemoglobin compared to other groups. After a median 23 months of follow-up, all-cause mortality in early-start group and too-late-start group was significantly compared to reference group (P = 0.007 by log-rank test). On univariate analysis, all-cause mortality was positively correlated with early-start PD, too-late-start PD, older age, absence of diabetes, heart failure, peripheral vascular disease, and stroke, and negatively correlated with serum albumin level. On multivariate analysis adjusted with age, gender, cause of ESRD, co-morbidity, BMI and serum albumin level, increased all-cause mortality was associated with early-start PD (HR 1.25, 95% CI, 0.45-3.46, P = 0.01), while too-late-start PD remained significant compared to reference group (HR 3.07, 95% CI, 1.11-8.57, P = 0.026).
**Introduction and Aims:** Volume markers are used to follow the ultrafiltration process in experimental peritoneal dialysis (PD). An ideal volume marker is confined to the peritoneal cavity and can therefore be used to measure the kinetics of net ultrafiltration. Labeled albumin, the most frequently used volume marker, distributes to a larger volume that also includes the surrounding tissue. The present study was performed in order to evaluate labeled erythrocytes as intraperitoneal volume markers and combine them with labeled albumin in order to measure the tissue albumin space in relation to tissue edema.

**Methods:** Single 4-hour PD dwells in rats were used to compare the distribution volumes of labeled erythrocytes and albumin with drained volumes. 20 mL of a laboratory-made, filter sterilized, lactate buffered PD fluid was supplemented with 51Cr erythrocytes and 125I bovine serum albumin and infused by an implanted PD catheter. Three different glucose concentrations (0.5%, 2.5% and 3.9%) were used in order to vary the ultrafiltration volumes. In a separate group of rats, 5 µg/mL of histamine hydrochloride was added to the PD fluid in order to induce edema in the peritoneal tissue. The dialysate was sampled at 0, 1, 2, 3 and four hours dwell time. A blood sample was obtained at the end of the dwell to allow calculations of lymphatic clearance of volume markers.

**Results:** Erythrocyte and albumin distribution volumes at the end of the dwell both correlated significantly (p<0.0001) with drained volumes. Linear fits yielded slopes of 1.03 and 0.99 and intercepts at 3.3 mL and 7.8 mL respectively. Distribution volumes combined with washout data from the peritoneal cavity and from tissue biopsies indicate that erythrocytes corresponding to at the most 1.5 mL of dialysate were adhering to the peritoneal tissue and trapped in the lymphatic system, thus overestimating the intraperitoneal volume. Assuming that the erythrocyte distribution volume was equal to the intraperitoneal volume allowed calculations of the extracellular tissue volume that was accessible to labeled albumin: “the tissue albumin space”. This space increased rapidly to 1.5 mL during the first minutes of the dwell and then slowly expanded, finally reaching 4 mL during a normal dwell. When using histamine supplemented PD fluid, the tissue albumin space reached a maximum of 5.2 mL after 3 hours dwell and declined to 4.5 mL at 4 hours.

**Conclusions:** In conclusion, labeled erythrocytes are reliable markers of the intraperitoneal volume during peritoneal dialysis. Experimental models based on this concept offer new possibilities for kinetic studies of transperitoneal transport. In the present study, combining erythrocytes with labeled albumin allowed a characterization of the albumin exchange between the peritoneal cavity and the surrounding tissues in the presence and absence of edema.

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**Cytokines: A Possible Indices of Peritoneal Adequancy**

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**Introduction and Aims:** Inflammation is highly prevalent in chronic kidney disease (CKD) patients. Renal replacement therapy itself may also promote inflammation and long-term peritoneal dialysis (PD) is related to chronic inflammatory response. In PD inflammation causes range from traditional factors to those related to CKD, as well as from the PD treatment, including PD catheter, dialysis solution, infectious peritonitis. Many systemic and local inflammatory mediators induce histopathological alterations in the peritoneal membrane that may lead to peritoneal ultrafiltration failure and increased mortality risk. Furthermore, the most important problem during long-term PD is related to chronic inflammatory response. In PD inflammation, cytokines play a crucial role in the regulation of the immune response.

**Methods:** A total of 120 subjects with mean age of 49.1±13.7 years were enrolled into the study. Mean NLR level, a novel measure of inflammation, was significantly higher in biocompatible group compared with standard group. Supporting this finding, serum CRP levels were also significantly higher in biocompatible group compared with standard group. We want to underline that, biocompatible solutions seem to be related with increased inflammation in PD patients.

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**The Effect of Biocompatible Peritoneal Dialysis Solutions on Neutrophil to Lymphocyte Ratio**

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**Introduction and Aims:** It is suggested in some studies that superior inflammatory marker levels were reported with biocompatible peritoneal dialysis (PD) solutions and standard solutions may contribute to peritonitis rates. However, the confusion about the effects biocompatible solutions on inflammation is still continuing. Therefore we aimed to evaluate the effects of PD solutions (standard vs. biocompatible) on some parameters like CRP and Neutrophil-to-Lymphocyte ratio (NLR) which is an emerging inflammation marker.

**Results:** This was a cross-sectional study involving prevalent PD patients. The introduction of a new PD solution (standard vs. biocompatible) on some parameters like CRP and Neutrophil-to-Lymphocyte ratio (NLR) which is an emerging inflammation marker.

**Conclusions:** Mean NLR level, a novel measure of inflammation, was significantly higher in biocompatible group. Supporting this finding, serum CRP levels were also significantly higher in biocompatible group compared with standard group. We want to underline that, biocompatible solutions seem to be related with increased inflammation in PD patients.

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**Exit Site Dressing and Infection in Peritoneal Dialysis: A Randomised Controlled Trial**

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**Introduction and Aims:** Peritoneal dialysis (PD) related infection is a common cause of catheter loss and the main reason for PD drop-out. Exit site infection (ESI) is a pathway to developing tunnel infection and peritonitis, hence rigorous exit site care has
always been emphasized in PD therapy. The aim of this study was to evaluate the effect of exit site dressing versus non-dressing on the rate of PD-related infection.

Methods: A prospective randomised controlled study was conducted in prevalent PD patients from April 2011 until April 2013. All patients were required to perform daily washing of the exit site with antibacterial soap during a shower. In the dressing group (n=54), patients were required to clean their exit site using povidone-iodine after drying, followed by topical mupirocin antibiotic application to the exit site. The exit site was then covered with a sterile gauze dressing and the catheter immobilised with a tape. In the non-dressing group (n=54), patients were not required to do any further dressing after drying. They were only required to apply mupirocin cream to the exit site and then left the exit site uncovered. The catheter was immobilised with a tape. The primary outcome was ESI. The secondary outcomes were evidence of tunnel infection or peritonitis.

Results: Four patients in each group developed ESI (1 episode per 245.1 patient-months vs 1 episode per 218.1 patient-months in the dressing and non-dressing groups, respectively; p=0.95). Time to first ESI episode was shorter in the non-dressing group than in the dressing group, but not significantly. Incidence of gram-positive ESI isolates in both groups was similar. There were no gram-negative ESI isolates in the non-dressing group compared with 2 in the dressing group. There was no significant difference in peritonitis rate between the 2 groups (1 per 48.46 patient-months in the dressing group and 1 per 40.84 patient-months in the non-dressing group). The incidence of Staphylococcus aureus or Pseudomonas aeruginosa in the non-dressing group was not greater than in the dressing group.

Conclusions: Use of non-dressing technique with only prophylactic topical mupirocin cream application alone is effective in preventing PD-related infection. The non-dressing technique is more cost effective and more convenient for PD patients.
Results: Data of 202 patients were available to review: 72 (35.6%) patients had no RRF (46 female, mean age 43.5±14.7 years, mean duration of hemodialysis before PD 0.46 ±0.05 months), while 130 (64.5%) patients had RRF (60 female, mean age 43.5±14.5 years, mean urine volume 639.0±438.5mL/day, mean duration of hemodialysis before PD 0.47±0.06 months). Mean follow time was 41.2±28.9 months. Mean survival rates of patients with versus without RRF at 1, 3, and 5 years were 96.5% vs 91.3% (p = 0.05), 95.4% vs 88.0% (p = 0.05), and 90.2% vs 74.4% (p = 0.05), respectively. Peritonitis was slightly, but insignificantly more common in patients without RRF (1.88±2.5 vs 1.48 ±1.8) and the most common cause of death in both groups (no RRF 26.6% vs RRF 36.3%). Two patients died due to dialysis insufficiency among those without RRF, while none in the other group. Urine volume at the beginning of PD was correlated negatively with mortality (r = -0.245; p = 0.05) and positively with total creatinine clearance (r = +0.259; p = 0.039).

Conclusions: PD patients with residual renal function have a survival advantage both early and late in the course of treatment. The advantage in rates of peritonitis did not reach a statistical significance due to low event rate. Higher urine volume may be an indicator of a higher glomerular creatinine clearance, which translates into lower mortality.

SP470

THE PERITONEAL ENDOTHELIAL GLYCOCALYX IN UREMIC RATS - THE EFFECT OF DIALYSIS SOLUTIONS AND RELATIONSHIPS WITH PERITONEAL TRANSPORT

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Introduction and Aims: Continuous peritoneal dialysis (PD) leads to continuous exposure of the peritoneal membrane to high concentrations of glucose and its degradation products, causing inflammation and angiogenesis, which may alter the endothelial glycocalyx. Here, we investigated the changes in peritoneal endothelial glycocalyx induced by chronic kidney failure (CKF) and by long-term PD, using a conventional or a ‘biocompatible’ dialysis solution. These changes were related to peritoneal transport and morphological alterations of the peritoneal membrane).

Methods: Forty-four Wistar rats were divided in 4groups: normal kidney function (NKF), CKF, CKF exposed to Dianeal 4.25% (CKDD), or Physioneal 3.86% (CKDP).

Conclusions: Apart from age and dialysis vintage, S-Ca and Hb levels were the only significant risks factors of mortality in patients on PD if being outside the guidelines targets.

Results: During the follow-up period, 89 patients died, 1 was transplanted, 6 were lost from the follow-up and 66 remained on PD. By univariate Cox proportional hazard analysis, the following variables were significant predictors of death: age, dialysis vintage, underlying kidney disease (glomerulonephritis), S-calcium (Ca), S-phosphate (PO4), BUN and creatinine, use of ESA, phosphate binders and vItD metabolites. Multivariate Cox proportional hazard analysis selected following variables as independent predictor of death: age, dialysis vintage, S-Ca and Hb (Table 1, Figure 1 and 2).

Conclusions: Higher residual urine volume means better survival in peritoneal dialysis patients.

SP468

SP469

ESTIMATION OF PERITONEAL MEMBRANE TRANSPORT STATUS FROM CLEARANCE MEASUREMENTS

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Introduction and Aims: Regular measurement of Kt/V and creatinine clearance (Crea-Cl) is suggested in peritoneal dialysis (PD) in order to document sufficient depuration, whereas measurement of peritoneal membrane transport status from peritoneal equilibration test (PET) is carried out less frequently. The aim of the study is...
to estimate membrane transport status from peritoneal clearance measurements.

**Methods:** D/P creatinine was calculated from PET and peritoneal clearance measurements in patients under automated (APD: 244 measurements in 125 patients) and continuous ambulatory PD (CAPD: 84 measurements in 45 patients). APD patients presented 24-hour dialysate volume of 7355 ml up to 28416 ml (mean±SD 15793±3222 ml, median 15000 ml), whereas CAPD patients respectively 4900 ml up to 15000 ml (mean±SD 8361±1906 ml, median 8500 ml). Dialysis duration in APD was in median 9 hours, respectively in CAPD in median 24 hours. Correlation matrices for the two PD modalities were elaborated.

**Results:** D/P creatinine from peritoneal clearance measurements correlated significantly to D/P creatinine from PET (APD r=0.62, p<0.001; CAPD r=0.62, p<0.001). Patients with fast peritoneal membrane transport type in PET presented significantly higher D/P creatinine in peritoneal dialysis collections (APD: mean±SD 0.4±0.08, median 0.42; CAPD: mean±SD 0.84±0.18, median 0.84), in confront to patients with slow transport type (APD: mean±SD 0.24±0.07, median 0.23; CAPD: mean±SD 0.60±0.07, median 0.58). D/P creatinine from peritoneal clearance measurements appeared not to be related to dialysate volume.

**Conclusions:** Peritoneal transport status can be estimated from peritoneal clearance measurements in APD and CAPD. From a clinical viewpoint, the calculation of D/P creatinine by peritoneal clearance measurements is helpful to distinguish between fast and slow peritoneal membrane transport status, even without having performed previously a PET.
**SP477** CONTRIBUTION OF VOLUME STATUS TO TRANSPORT IN PERITONEAL DIALYSIS PATIENTS

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**Introduction and Aims:** An increase in peritoneal solute transport rate (PSTR) is associated with loss of peritoneal ultrafiltration capacity and has been reported as a risk factor for volume overload. However, our previous prospective longitudinal study found that volume overload, as evaluated using the ratio of extracellular water (ECW) to total body water (TBW) using multifrequency biocapacitance impedance analysis, may increase PSTR on peritoneal dialysis (PD). Elevated ECW/TBW may also occur in malnutrition, which may be associated with increased PSTR. Therefore, to determine whether volume overload is directly associated with increased PSTR, we examined relationships between volume status evaluated using cardiac biomarkers and PSTR.

**Methods:** This cross-sectional study evaluated 50 PD patients at our hospital. PSTR was evaluated using the fast peritoneal equilibration test. Volume status was evaluated using human atrial natriuretic peptide (hANP) and N-terminal pro-brain natriuretic peptide (NT-pro-BNP). Data including dialysate-to-plasma creatinine ratio (D/P Cr) and albumin ratio (D/P Alb), hANP, NT-pro-BNP, high-sensitivity C-reactive protein (hs-CRP), clinical data, serum albumin, residual renal function, ultrafiltration, urea and creatinine clearance and diastolic blood load were collected.

**Results:** Patients with more volume overload showed significantly higher D/P Cr and D/P Alb in comparisons between subgroups divided according to median hANP. Multivariate analysis showed that higher hANP was independently associated with higher D/P Cr and D/P Alb. Significant positive correlations were found between both hANP and NT-pro-BNP and both D/P Cr and D/P Alb. Furthermore, significant positive correlations were found between hs-CRP and both hANP and NT-pro-BNP.

**Conclusions:** Volume overload can lead to inflammation and may cause increases in PSTR on PD.

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**Methods:** One hundred and seventy consecutive new patients who had more than 3 months in therapy were included in this prospective longitudinal study (52.1% males; mean age 53.50 ± 15.22 years and mean time in therapy 25.59 ± 17.87 months). Cox regression model for survival was used to predict mortality and technique failure.

**Results:** There were 28 deaths and 33 technique failures. The two-year patient survival was 82.1%, and the two-year technique survival was 79.5%. Albumin level [HR= 3.72 (1.19-11.6) p= 0.024], SGA M+S [HR= 4.25 (1.71-10.6) p=0.002] and Davies index score [HR= 3.98 (1.81-9.0) p<0.007] were independent predictors of mortality after adjusted Cox regression model of survival for age, sex, diabetes, Davies index score and for referral. The number of peritonitis [HR= 2.44 (1.59-3.74) p<0.001], high transport type of membrane [HR=1.8 (0.5-3.9) p=0.061] and late referral [HR= 2.38 (1.10-4.95) p=0.027] were independent predictors of technique failure after adjusted Cox regression model of survival for the same above variables. We didn’t found diabetes after adjusted the two models of survival as an independent risk factor nor for mortality neither for technique survival.

**Conclusions:** In our cohort we didn’t found diabetes as an independent risk factor for mortality and technique survival. Malnutrition and comorbidity were an independent predictor of mortality. The type of membrane, number of peritonitis, late referral were independent predictors for technique survival.

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**SP476** THE RELATION OF 25-HYDROXY VITAMIN D LEVELS WITH FUNCTIONAL CHARACTERISTICS OF THE PERITONEUM IN PERITONEAL DIALYSIS PATIENTS

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**Introduction and Aims:** 25(OH)D Vitamin D (25(OH)D) is the major circulating form of vitamin D and the parameter used to reflect vitamin D status. Patients with chronic kidney disease (CKD) are likely to have low levels of 25(OH)D and recent observations have linked suboptimal vitamin D levels with adverse cardiovascular outcomes, inflammation, insulin resistance and the rate of progression of renal insufficiency. The aim of this study was to investigate the possible correlation of 25(OH)D levels with functional characteristics of peritoneal membrane in Peritoneal Dialysis (PD) patients.

**Methods:** This is a single center cohort study of 30 PD patients (20 male, 10 female) with mean values of age 63.21±11.5 years , PD duration 35.21±25.8 months, weekly total Kt/V 2.5±1.07, daily urine volume (Vu) 1021.5±627 cc, combined urea and creatinine clearance (Clur) 8.40±16.5 ml/min, dialysate to plasma creatinine ratio 0.69 ±0.12 (D/P, at the end of a 4 hour dwell: PSTR test), peritoneal mesothelial marker (CA125) 17.5±2.92 U/ml, plasma calcium (Ca++) 9.01±0.55 mg/dl, plasma phosphorus (PO4) 4.49±1.17 and intact parathormone 300/191.86 pg/ml. The patients did not receive any vitamin D supplementation and their daily urine volume was > 100 ml. The mean values of 25(OH)D were 8.97±5.82 ng/ml, all of them below the normal values (30-70 ng/ml).

**Results:** In this study, 25(OH)D levels were statistically significant correlated (Spearman’s non-parametric correlation) with residual renal function markers such as daily urine volume (Vu= r=0.4, p=0.04) as well as combined urea and creatinine clearance (Clur r=0.69, p<0.001). Additionally vitamin D levels were positively statistically significant correlated with 4 hour dwell (DW 2.5%) ultrafiltration (UF r=0.54, p=0.0017) and negatively correlated with creatinine D/P ratio (r=-0.39, p=0.03). There was not any statistical significant relation with the mesothelial marker (CA125) even though there was a negative relation with PD duration.

**Conclusions:** Serum 25(OH)D levels correlated positively with solute transport as it’s apparent from the negative correlation with dialysate to plasma (D/P) creatinine ratio and the positive correlation with ultrafiltration in PSTR test. As expected patients with the smallest PD duration and better residual renal function had better values of vitamin D. Whether the pleiotropic protective role of vitamin D supplementation will have an effect on peritoneal membrane status has to be proven in further studies.

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**SP479** PLASMA GRELIN LEVELS IN PERITONEAL DIALYSIS PATIENTS

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**Introduction and Aims:** Grelin, is a a 28-amino acid peptide hormone that is predominantly produced by the stomach. It is an endogenous ligand for growth hormone secretory receptor. Besides orexigenic properties, grelin is a regulator of energy homeostasis. Our study aimed to determine plasma concentrations of grelin in PD patients, whether there is a correlation between plasma grelin levels and demographic properties, laboratory levels, BMI, malnutrition, depressive mood changes of patients. We aimed to quantify serum grelin levels and to explore...
correlations between ghrelin and selected nutritional and inflammatory markers in patients with end stage renal disease (ESRD).

Methods: We studied 87 peritoneal dialysis (PD) patients. Besides ghrelin levels, the laboratory and demographic data were studied. Beck depression inventory and malnutrition inflammation scoring (MIS) were performed to all patients, and results were compared to changes in plasma grelin levels.

Results: Serum ghrelin levels were (7.66±4.20 pg/ml) in PD patients. When laboratory data were compared, ghrelin had no significant coorelation with any parameter in PD patients. No significant coorelation between grelin and BMI, MIS and results of Beck depression inventory was obtained. Only patients with amino acid (p<0.004) and icodextrin based (p<0.02) peritoneal solutions had higher levels of grelin.

Conclusions: Serum ghrelin level increases in PD patients. Since multiple parameters affect serum ghrelin level, no significant relationship between grelin and MIS, Beck depression inventory score, BMI could be found in our homogeneous patient group.