Haemodialysis 1

SP624 SALIVARY pH IN CKD PATIENTS AND EFFECT OF HEMODIALYSIS

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Introduction and Aims: Alkaline pH of the saliva accounts for the development and/or progression of oral mucosa diseases, periodontal disease, caries and premature tooth loss in the general population, and likely in CKD patients. Salivary pH values in patients with different stages of CKD or in those treated with maintenance HD *versus* CAPD were not compared, as yet. The effect of HD procedure on salivary pH is not clear, either.
Methods: We measured pH in unstimulated mixed saliva of 126 subjects divided into 5 groups: a) 26 patients undergoing chronic HD therapy [pH 8.0 (6.0 – 8.5)]; b) 26 subjects receiving conventional CAPD (pH 7.64 ± 0.75); c) 28 patients with pre-dialysis CKD and a median creatinine clearance of 19.8 (4.73 - 132) ml/min (pH 7.19 ± 0.55); d) 26 otherwise healthy subjects with advanced periodontal disease (pH 6.93 ± 0.47), and e) 20 healthy individuals without oral pathology [pH 6.80 (6.2 – 8.0)]. The pH values were determined intraorally using sensitive strip paper indicators, according to WHO recommendations. Thrice-weekly HD sessions were of 4 h duration and performed with bicarbonate buffer.
Results: Salivary pH differed significantly among the above 5 groups (Kruskal-Wallis ANOVA $p < 0.0001$). The values before HD session were higher compared with pre-dialysis CKD patients ($p = 0.004$), subjects with periodontal disease ($p < 0.0001$) and healthy controls ($p < 0.0001$). No differences in salivary pH were found between HD and CAPD patients, as well as in between subjects with periodontal disease and healthy controls. Furthermore, a single HD procedure produced a highly significant (Wilcoxon $p < 0.0001$) but only moderate 10% decrease in salivary pH; post-dialysis it reached the value of 7.15 (6.0 – 8.0). The pH lowering effect of HD treatment was observed in 92% of the patients. It lead to pH normalization in 42% of the patients when the cut-off value was set at 7.04, which is the upper limit of 95% confidence interval for mean salivary pH in 46 non-CKD subjects studied.
Conclusions: pH of unstimulated mixed saliva in CKD patients (particularly in those on dialysis) is strongly alkaline, and a likely risk factor for oral diseases. These, in turn, have a profound impact on general health status. Standard HD procedures decrease but not fully normalize salivary pH.

SP625 HOMOCYSTEINE REDUCTION RATE IN DIALYSIS PATIENTS ON INTERNAL HEMODIAFILTRATION, ON-LINE HEMODIAFILTRATION AND HEMODIAFILTRATION WITH ENDOGENOUS FILTRATE REINFUSION

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Introduction and Aims: Uremic syndrome is based on the retention of small water-soluble, larger middle and protein bound molecules. Homocysteine (hcy), a cardiovascular risk factor, is a 80% protein-bound molecule. Internal hemodiafiltration (i-HDF) is a high flux dialysis with a particular dialyser capable to enhance internal filtration and to perform a high removal rate of small and larger middle toxins similar to on-line hemodiafiltration (on-line HDF). We analyzed the capacity of this new dialyser in removing hcy in comparison with other two high efficiency techniques: post-dilution on-line HDF and hemodiafiltration with endogenous filtrate reinfusion (HFR).
Methods: 6 patients on maintenance thrice weekly hemodiafiltration (3 patients on post-dilution on-line HDF and 3 patients on HFR) were submitted to high-flux dialysis with a new high-flux polysulfone dialyser (BS-1.8 UL, 1.8 m^2, Toray Industries). We collected blood samples before and after mid-week dialysis session to compare the reduction rate of urea, creatinine, phosphate, beta-2 microglobulin, total plasma hcy, and other molecules during the treatments. Results are shown as means ± m.s.d. and compared with t test.
Results: Data are shown in the table. Dialysis efficiencies were similar, and there were no hypotensive episodes during the treatments. Beta-2 microglobulin's reduction rate was significantly higher in post-dilution on-line HDF as compared with i-HDF, and in i-HDF as compared with HFR. Hcy's reduction rate was high and about 50% both during i-HDF and HFR, but it was lower in post-dilutional on-line HDF with a polyamide dialysis membrane.

Variable	RR I-HDF VS OL-HDF (%)	P	RR I-HDF VS HFR (%)	P
Urea	79,5 ± 1,1 VS 80,4 ± 0,1	NS	81,3 ± 1,2 VS 80,5 ± 0,2	NS
KT/V	1,59 ± 0,06 VS 1,63 ± 0,01	NS	1,68 ± 0,01 VS 1,64 ± 0,06	NS
Phosphate	59,9 ± 14,5 VS 58,7 ± 7,3	NS	72,1 ± 5,8 VS 62,9 ± 5,3	NS
Beta 2 MG	75,3 ± 1,3 VS 79,1 ± 0,5	< 0,05	73,3 ± 1,9 VS 38,2 ± 1,1	< 0,01
Hcy	47,1 ± 2,8 VS 39,4 ± 2,3	< 0,05	53,1 ± 3,7 VS 47,8 ± 12,2	NS

Conclusions: I-HDF is a technique with a high value of dialysis efficiency for all types of solutes comparable to post-dilution on-line HDF and HFR. I-HDF, a cost-effective alternative to other mixed techniques, could allow to increase the percentage of diffusive-convective treatments in our Dialysis Unit. It is necessary to perform prospective study about its long-term efficacy.

SP626 CONSISTENCY OF SERUM LEVELS OF ALBUMIN AND C-REACTIVE PROTEIN IN HAEMODIALYSIS PATIENTS

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Introduction and Aims: In haemodialysis (HD) patients, serum levels of albumin and c-reactive protein (CRP) are crucial parameters for monitoring nutritional and inflammation status, respectively. Low albumin levels and high CRP levels are closely associated with patient morbidity and mortality. This study is aimed to realize the consistency of serum levels of albumin and CRP in HD patients.
Methods: For this prospective observational study, we recruited the patients undergoing maintenance HD for more than three months at our HD unit. After collecting the on-enrollment data, we recorded serum levels of albumin and CRP every six months throughout a one-year observational period. The relevant data were analyzed with SPSS 10.0 for Windows (SPSS inc., Chicago, Illinois).
Results: Totally, 125 women and 129 men were enrolled. Their mean age (mean ± SD) in year was 58.5 ± 13.4. At the three time-points (M0, M6, and M12), the mean serum albumin levels (g/dL) were 4.0 ± 0.4, 4.0 ± 0.4, and 4.1 ± 0.4, respectively; the mean CRP levels (mg/dL)(range) were 0.86 (0.01-16.8), 0.89 (0.02-8.04), and 0.80 (0.01-13.10), respectively. There were significant correlations between the serum albumin levels at the three time-points, whereas the CRP levels at the three time-points were also significantly correlated with each other. In addition, between the simultaneous serum levels of albumin and CRP, a significant and negative correlation persisted at all three time-points. Considering multiple comparisons and using analysis for repeated measurement, we found among the three time-points there were no significant differences in serum albumin levels nor in CRP.
Conclusions: In HD patients, there is consistency in serum levels of albumin and CRP, respectively. Moreover, serum CRP levels are persistently and negatively correlated with the simultaneous serum albumin levels.

SP628 UNDERESTIMATION OF DIALYSATE SODIUM CONCENTRATION IN UREMIC PATIENTS ON HEMODIALYSIS

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Introduction and Aims: High dialysate sodium concentration [Na] causes positive salt gain and hypervolemia in chronic hemodialysis (HD) patients. Practically we set dialysate conductivity at 14 mS/cm in clinical practice. This study conducted to assess the correlation between conductivity displayed on dialysis machine panel and the dialysate [Na]. The effect of

dialysate [Na] on patients' serum [Na] and the fluid balance were also evaluated.
Methods: Totally 339 patients dialyzed with 76 dialysis machines (Althin system 1000 [A]: 56; Toray 321 [T]: 20 in numbers) was included in this study. The dialysate [Na] was analyzed with Nova Electrolyte/Chemistry Analyzers (Nova CRT-13, Nova Biochemical, MA, US). Maintenance of machines has been performed regularly as manufacturers' guideline.
Results: Although the conductivity was higher (A:T 14.13±0.10mS/cm vs. 13.96±0.12mS/cm; $p<0.001$), the dialysate [Na] was lower in machine A (A:T 141.5±2.1 mEq/L vs. 143.4±0.28mEq/L, p=0.009). The gap between ten times conductivity and dialysate [Na] (10 x conductivity – [Na]) was greater in machine T (A:T -0.24±2.21 vs. -3.73±2.58, $p<0.001$). The dialysate [Na] was not only significantly higher than patients' pre-HD serum [Na] (142.0±2.4mEq/L vs. 137.8±3.5mEq/L, $p<0.001$) but also presented as a normal distribution in both machines rather than a fixed value. The dialysate [Na] was positively correlated to the conductivity in both machines A (r=0.20; p=0.03) and T (r=0.40; p=0.009), and so was to the post-HD serum [Na] (r=0.44, $p<0.001$) and the percentage of post HD serum [Na] decrement (r=0.27; $p<0.001$) but not to the pre-HD serum [Na]. Multiple linear regression analysis showed that inter-dialytic body weight gain (% of ultrafiltration volume over dry weight) was positively correlated to the dialysate [Na] and the difference between pre-HD serum [Na] and dialysate [Na].
Conclusions: Dialysate [Na] was higher than we expected with a resultant of positive salt gain in chronic HD patients. It was indicated to regularly check dialysate [Na] for each machine. The conductivity displayed on machine panel often under-estimated the high level of dialysate [Na] for chronic dialysis patients.

SP629 DURATION OF THE SERUM PTH LEVEL DECREASE AFTER HEMODIAFILTRATION

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Introduction and Aims: Secondary hyperparathyroidism (SHPT) is an important problem in patients treated with hemodialysis. There is much evidence of a critical influence of SHPT on the cardiovascular death rate through different mechanisms, such as accelerated atherosclerosis, left ventricular hypertrophy, lipid metabolism disorders, etc. SHPT is an important factor decreasing the quality of life of dialysis patients through the development of bone disease, skin itch and other disorders. Thus improving the correction of SHPT is important.
Many authors found a change in the PTH level due to hemodiafiltration (HDF). We have investigated the duration of the decrease of the PTH level after a single HDF session, preceded and followed by conventional hemodialysis (HD), in the serum of patients normally treated with standard HD. We measured PTH before, immediately after a single postdilution on-line HDF session, in 2 days (before the first standard dialysis session following HDF) and in 4 days (before the second dialysis session following HDF).
Methods: A prospective trial was conducted in 24 dialysis patients (12 male). Mean age was 40±10.4 years and duration of dialysis treatment 30-72 months. 8 patients had the PTH level of less than 300 pg/ml and 12 patients more than 600 pg/ml. We used Fresenius F-60HPS and F-80HPS dialyzers; substitution volume was 20-25 L, filtration rate 83.3-108.7 ml/min. Duration of procedures was 230±20 min, blood flow 280±20 ml/min and dialysate flow 500 ml/min.
Based on previous work showing lack of influence of standard HD on the PTH level, we neglect possible influence of the dialysis session that follows the HDF session.
Results: See the table.

	Befor HDF	After HDF	In 2 days	In 4 days
PTH, pg/ml	988±166	410±97	550±95	988±310
p		<0.01	<0.01	0.14

Conclusions: The results show a decrease in the PTH level after HDF ($p<0.01$); a level still lowers than the initial one in 2 days ($p<0.01$) and returns to the initial level in 4 days after HDF. Thus, HDF effectively decreases the PTH level at least for two days and this can be used for correction of SHPT independently or together with traditional SHPT corrections.

SP630 APPLICATION OF HIGH CONCENTRATION SODIUM CITRATE IN REGULAR HEMODIALYSIS WITH DIALYSATE CONTAINING CALCIUM

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Introduction and Aims: To study feasibility and safety of high concentration sodium citrate anticoagulation in regular hemodialysis with dialysate containing calcium.
Methods: Seventy maintenance hemodialysis patients were enrolled into hemodialysis with 30% sodium citrate anticoagulation and to be evaluated its dialysis sufficiency, clotting function, adverse effect, predialysis and postdialysis blood gas, serum electrolyte and ion calcium. 37 patients(157 sessions) with relatively complete clinical data were selected to compare with 20 hemodialysis patients using heparin(160 sessions).
Results: (1) All patients with 30% sodium citrate anticoagulation can finish 4-5 hours hemodialysis with sufficient dialysis index, mean Kt/V 1.31, URR71% and ultrafiltration 3.2±0.86kg, Which compared with regular heparin anticoagulation group, no significant difference was observed; (2)In citrate anticoagulation group, the concentrations of serum bicarbonate, ionizing calcium, potassium and sodium between predialysis and postdialysis were significantly different ($p<0.01$or $p<0.05$),but still in normal range. However, the active clotting time and clotting time was not significantly different; (3) Postdialystic blood pH value and TCO_2 in citrate group and heparin group increased significantly($p<0.01$),but PCO_2 and PO_2 without significant change. (4)The number of dialyzer and vessel clot(grade 1 to 2, 16 sessions) in the citrate anticoagulation group (10.3%) was slight higher than that of regular heparin anticoagulation group(2%)($p<0.05$).
Conclusions: High concentration sodium citrate anticoagulation is safe and feasible in regular hemodialysis, which is an ideal dialysis model for hemodialysis patients at risk of hemorrhage.

SP631 NASAL CARRIAGE OF METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS IN OUTCLINIC HAEMODIALYSIS PATIENTS

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Introduction and Aims: Haemodialysis (HD) patients with methicillin-resistant staphylococcus aureus (MRSA) infections face high morbidity and mortality. Although nasal carriage of MRSA has been identified as an important pathogenic factor, dialysis population based data regarding nasal colonization are rare. This prospective investigation in regular out-clinic haemodialysis patients assessed the prevalence of MRSA nasal carriage, defined risk patients and evaluated the rates and clinical impact of MRSA elimination.
Methods: Swabs were taken from the anterior nares of 136 HD patients without signs of overt clinical infection (48 women, 88 men, age 22-88 years). The nasal carriage for methicillin-susceptible SA (MSSA) or methicillin-resistant SA (MRSA) was tested and related to demographic (age, gender, duration on HD), comorbidity (diabetes, malignancy) and exposure to health care (dialysis staff, hospitalisation). Nasal carriers for MRSA received standardized mupirocin therapy and were followed up for elimination and infections for 1 year.
Results: The prevalence of nasal carriage for staphylococcus aureus was 53% (41% MSSA, 12% MRSA). Compared with patients showing no colonization or with MSSA carriers, the 16 patients with nasal carriage for MRSA were mostly older than 65 years and more likely to have acquired the bacteria while hospitalised. Genotyping of MRSA isolates revealed different strains in patients and care-givers. Mupirocin eliminated MRSA in all patients, none of these patients experienced an infection caused by staphylococcus aureus, confirming the known value of MRSA elimination from other studies.
Conclusions: Elderly patients hospitalised for surgery constitute a high risk group for nasal carriage for MRSA. Early diagnosis may help prevent clinically relevant infection. Elimination of colonization by mupirocin appears to be an attractive preventive strategy.

SP632 TOCOPHEROL OF PLASMA IN URAEMIC PATIENTS TREATED WITH CHRONIC HAEMODIALYSIS

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Introduction and Aims: Tocopherol (TPh) is the only and the most potential lipid soluble antioxidant both in plasma and in any cellular membrane.
The aim of the study was to evaluate the concentration of TPh in plasma of 65 uraemic patients treated with the chronic bicarbonate haemodialysis (HD).
Methods: The content of TPh was estimated with the help of spectrophotometric method which is based on the determination of the colored complex formed in the presence of $FeCl_3$ and 2, 2'-dipyridyl (λ=532 nm).
Results: We have determined that in patients the level of TPh was 0.477±0.016 mmole/l which is considerably higher than in healthy people ($p < 0.01$): 0.259±0.008 mmole/l, n=82. Earlier we have stated that the increase of the TPh concentration in patients with chronic renal disease (CRD) starts on the stages of CRD associated with renal failure. The maximal level of TPh is registrated on the terminal stage of CRD. This increase is possibly linked with the disturbances in excretion of TPh and the products of its degradation with urine. According to our data the concentration of TPh in patients without renal dysfunction is 0.266±0.007 mmole/l (n=142). In chronic renal failure (CRF), stage I, the content of TPh equals to 0.269±0.019 mmole/l (n=36); in stage II – 0.313±0.016 (n=56); in stage III – 0.470±0.067 mmole/l (n=13). In two last cases the TPh level is considerably higher than in healthy people ($p < 0.05$). The similar changes are detected in patients with CRD with respect to the concentration of homocysteine. The mean value of homocysteine in case of CRD, stage I, was 12.6 μmole/l and in case of CRD, stage V, - 23.0 μmole/l, while in HD patients – 31.3 μmole/l. We have also revealed the reliable positive correlation between the contents of TPh and homocysteine ($r = + 0.31$; n=48; $p < 0.031$). The results of our study prove that the level of TPh becomes 15% lower at the end of the HD procedure: from 0.477±0.016 to 0.409±0.014 mmole/l (n=65). It is well known that TPh takes part in haemoglobin synthesis, in erythropoiesis process, TPh prolongs the erythrocyte life duration, facilitates their functional activity. However we have revealed the negative correlation between the levels of TPh and haemoglobin ($t = - 0.184$; n=61; $p < 0.036$), of TPh and erythrocytes number ($t = - 0.205$; n=61; $p < 0.02$). In the accordance with the data presented in literature we have also established that the TPh content is associated with the triglycerides concentration ($t = + 0.173$; n=63; $p < 0.045$). We can not exclude also that in plasma of patients on HD albumin transfers TPh besides the fraction of high density lipoproteins: there is positive correlation between the levels of TPh and albumin ($t = + 0.240$; n=63; $p < 0.005$).
Conclusions: Thus the increase of TPh concentration in plasma of patients on HD unfortunately does not enhance the antioxidant potential of plasma and is inadequate. So the patients treated with HD need additional introduction of TPh to support the adequate AO potential of plasma and erythrocytes.

SP633 ELEVATED RESISTIN IS RELATED TO INFLAMMATION AND RESIDUAL RENAL FUNCTION IN HEMODIALYZED PATIENTS

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Introduction and Aims: Resistin is an adipocytokine that recently generated much interest. In patients without CKD resistin was related to inflammatory markers and coronary artery disease. Moreover, resistin upregulates adhesion molecules and may be mechanistically linked to cardiovascular disease in the metabolic syndrome. Due to the fact that inflammation, endothelial cell damage or injury is invariably associated with such clinical conditions as thrombosis, atherosclerosis, and their major clinical consequences i.e. CVD and resistin play a role in linking inflammation and CVD, the aim of the study was to assess resistin in correlation with markers of inflammation and endothelial cell injury in 95 hemodialyzed patients and 21 healthy volunteers.
Methods: We assessed resistin, markers of coagulation: thrombin-antithrombin complexes-TAT, prothrombin fragments 1+2; fibrinolysis: tissue plasminogen activator-tPA, plasminogen activator inhibitor-PAI-1, plasmin-antiplasmin complexes-PAP; endothelial function/injury: von Willebrand factor- vWF, intracellular adhesion molecule-ICAM, inflammation: hsCRP and IL-6 using commercially available kits. Hemoglobin, erythrocyte count, platelet count, fibrinogen, total protein, cholesterol, triglycerides, albumin concentration, CRP (for screening purposes) were measured by standard laboratory methods.
Results: Healthy volunteers and hemodialyzed patients did not differ significantly regarding BMI, leukocyte, total protein, cholesterol, HDL, LDL. Triglycerides, CRP (assessed by high sensitivity method), phosphate, creatinine, IL-6, TNFα, vWF, prothrombin fragments 1+2, and resistin, were elevated in HD patients when compared to the control group, whereas serum albumin were significantly lower in HD patients when compared to the control group. In patients with CRP ≥6mg/dL, resistin, IL-6, vWF and F1+2 were significantly higher than in patients with CRP less than 6 mg/dL, whereas tPA was significantly lower than in patients with CRP less than 6 mg/dL. Moreover, hemodialyzed patients with residual renal function have significantly lower serum iron, TIBC and resistin when compared to hemodialyzed patients without residual renal function. Resistin was significantly higher in diabetics, but similar in hemodialyzed patients with and without coronary artery disease as well as in hypertensive and normotensive hemodialyzed patients, In hemodialyzed patients resistin correlated significantly, in univariate analysis, with calcium, phosphate, PTH, TIBC, vWF residual renal function, urea, hsCRP, IL-6 and tended to correlate with tPA and ferritin. In the healthy volunteers resistin was related to IL-6 and hsCRP.
In multiple regression analysis resistin was independently related to hsCRP (beta value 0.48, $p<0.001$), IL-6 (beta value 0.37, $p<0.01$), residual renal function (beta value -0.29, $p<0.05$) in the hemodialyzed patients.
Conclusions: Elevated resistin related to makers of inflammation may represent a novel link between inflammation and adipocytokines in hemodialyzed patients. Impaired renal function is responsible for elevated resistin in hemodialyzed patients.

SP634 CHANGES IN QUALITY OF LIFE (QoL) AND ILLNESS REPRESENTATIONS IN A HAEMODIALYSIS (HD) POPULATION – A LONGITUDINAL STUDY

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Introduction and Aims: Although QoL (as measured by SF-36) is associated with mortality and hospitalization in haemodialysis (HD) patients, there are a relatively few longitudinal studies assessing changes in QoL, their determinants and potential relevance. In contrast, there is no longitudinal study concerning mental illness representations of HD patients – major determinants of the QoL. Therefore, the aim of our study was to describe for the first time, in the same group of HD patients the dynamic of ***both*** QoL and illness representations over a significantly long follow-up period and to describe the relationship between these two parameters.
Methods: 81 clinically stable HD patients completed at baseline and after 2 years *The Revised Illness Perception Questionnaire* (assessing beliefs about time-line, consequences, coherence, emotional response, personal control and treatment control of the disease) and *The Short Form Health Survey Questionnaire* (SF-36) to assess eight dimensions of QoL: physical functioning, social functioning, role-functioning emotional, role-functioning physical, vitality, bodily pain, mental health and general health perceptions. These dimensions were subsequently used to compute a physical component score (PCS) and a mental component score (MCS). The means for Hb, P, PTH and Kt/V over the 2 years interval were computed and used as independent variables.
Results: Overall QoL scores improved over the 2 years-period. PCS improved from 46 to 52.8 ($p<0.01$) while a non-significant positive trend was observed for MCS (from 51.3 to 54.4, p=ns). Individual QoL dimensions that significantly improved in the PCS and MCS scores were: physical function, role-physical, general health and general health, mental health, respectively. As for the dynamics of mental illness representations dimensions, patients'

beliefs improved in 3 out of the 6 evaluated dimensions: understanding of the illness (p=0.003), treatment control (p=0.02) and the emotional reaction to the disease (p=0.002). After two years all mental representations - except for the beliefs related to illness duration -were associated with PCS and MCS scores (*versus only* 2/6 dimensions for PCS and 3/6 for MCS at baseline). Furthermore all significant correlations were stronger than at baseline. Comparing the group of patients who improved their QoL with those who got worse scores at follow-up we observed that patients with a better PCS score also had a significantly higher Hb (p=0.004), better Kt/V (p=0.001) lower levels of PTH (p=0.001) and a lower emotional response to disease (p=0.004). Patients with better MCS scores at follow-up had a better Hb (p=0.002), lower levels of PTH (p=0.001) and a better understanding of their illness (p=0.004).

Conclusions: Improvement in quality of life scores in HD patients is associated with a better representation of illness besides an improved individual biological profile.

SP635 L-CARNITINE MAY DECREASE PLATELET ACTIVATION RESPONSE WITH PHOSPHATIDYLSERINE EXPOSURE IN CHRONIC URAEMIA

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Introduction and Aims: Several studies have shown that platelets from end-stage renal disease (ESRD) patients on maintenance haemodialysis (HD) are in a state of chronic activation which may contribute to the thrombotic tendency of uraemia. Among other responses to a variety of different stimuli, activated platelets expose phosphatidylserine (PS) at their outer surface. PS exposure generates a cell procoagulant phenotype and seems at least partly due to an increase in cell caspase-3 activity. It has been recently shown that the presence of L-carnitine (LC) in the storage bag decreases surface-exposed PS in stored apheresis platelets. LC is frequently used in HD but its effects on platelet activation response with PS externalization have not been ascertained as yet.

In the present study, we first examined the in vitro effects of LC on the exposure of PS in platelets obtained from ESRD patients. We next carried-out a randomized cross-over trial in vivo, to assess the effects of LC supplementation on platelet PS exposure.

Methods: Platelet PS-exposure was assayed by flow cytometry using annexin V. Caspase activity in platelets was determined by the cleaving activity of DEVD-pNA, a specific substrate for effector caspases. For the effects of LC *"in-vivo"*, 10 HD patients were randomly allocated to two different treatment groups: LC (2 gr i.v.) for four months followed by placebo (2 gr i.v.) for other 4 months (group A), or placebo followed by LC (group B).

Results: The mean percentage of PS-exposing platelets (both unstimulated and agonist-stimulated) in blood samples obtained from HD patients was significantly higher than in healthy control subjects ($p<0.001$). When uraemic platelets were preincubated with LC before agonist stimulation, platelet PS-exposure proved to be significantly reduced (-13.7% for 0.5 mM LC and -25% for 5 mM LC). Platelet caspase activity was significantly ($p<0.05$) reduced in uraemic platelets preincubated with LC as compared to carnitine-untreated cells. In group A HD patients, plasma levels of carnitine fractions (total, free and acyl carnitine) declined during the placebo period following carnitine administration, and returned at pre-study levels after 4 months. Carnitine supplementation was associated in group A patients with a significant decrease ($p<0.05$) in platelet PS exposure followed by a progressive increase during treatment with placebo. In group B patients, no change was observed in platelets PS exposure during the 4 months of placebo treatment. When patients received LC, a significant reduction ($p<0.05$) in platelets PS externalization was observed at both 2 and 4 months of LC therapy.

Conclusions: Our data show that LC may reduce exposure of PS on activated uraemic platelets possibly via inhibition of caspase activity. LC supplementation at the end of each dialysis session might improve thrombotic tendency in ESRD patients.

SP636 C- REACTIVE PROTEIN DISTINGUISHES FUNCTIONAL IRON DEFICIENCY FROM INFLAMMATORY IRON BLOCKADE IN CHRONIC HEMODIALYSIS PATIENTS

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Introduction and Aims: Low iron and transferrin associated with increased ferritin- resembling the pattern anemia of chronic disease (ACD)- occurs in hemodialysis (HD) representing 2 distinct entities: inflammatory iron blockade (IIB) or functional iron deficiency (FID). Aimming to better characterize these poorly defined situations, HD patients presenting the ACD pattern were analyzed according to the presence of normal or elevated C- reactive protein (CRP).

Methods: Cross-sectional study evaluated individuals with iron <60 mg/dl, transferrin <250 ng/dl and ferritin >100 ng/ml, separated into normal (N-CRP:$\leq$0.5 mg/dL) or elevated CRP (Hi-CRP:$>$0.5 mg/dL). Statistics employed Student's t, chi-square and Mann- Whitney U tests.

Results: ACD occurred in 52/184 HD patients: N-CRP comprised 17; Hi-CRP 35. N-CRP had no infection- inflammation, while 31/35 Hi-CRP revealed it. Temporary access wasn't required in N-CRP while 13/35 Hi-CRP need it (p=.005). Hospitalizations occurred once in N-CRP, in Hi-CRP=17/35 (p=.002). Hemoglobin in N-CRP=10.5$\pm$1.0 and Hi-CRP=8.6$\pm$1.8 g/dL (p=.0001). Serum Iron in N-CRP=48.6$\pm$8.9 and Hi-CRP=38.3$\pm$10.3 ng/dl (p=.0001). Blood transfusion requirements in N-CRP=7units/17 patients/3 months and Hi-CRP=64/35/3 months (p=.003). Mortality in N-CRP didn't occur and in Hi-CRP 9/35 died (p=.02).

Conclusions: N-CRP individuals with the ACD pattern showed no inflammation, required no temporary access, had less anemia and no hospital admissions was necessary, demanded less blood transfusions and no deaths occurred: corresponded to FID. In Hi-CRP almost all had infection-inflammation, required significantly more temporary access, hospitalizations and blood transfusions. Anemia and morbidity- mortality rate significantly augmented: corresponded to IIB. CRP was able to distinguish both conditions in HD.

SP637 EFFECT OF LOVASTATIN ON HIGH-SENSITIVITY C-REACTIVE PROTEIN AND HEMOGLOBIN IN HEMODIALYSIS PATIENTS. EFFECT OF LOVASTATIN ON HIGH-SENSITIVITY C-REACTIVE PROTEIN AND HEMOGLOBIN IN HEMODIALYSIS PATIENTS

Farrokh lagha Ahmadi[1], Khadijeh Eslami[1], Sima Maziar[2], Mahboob Lessan-Pezeshki[1], Mohamad Reza Khatami[1], Mitra Mahdavi-mazdeh[1], Effat Razeghi[3], Sepideh Seifi[1], Mohamd reza Abasi[1]. *[1]Immam Khomeni Hospital, [2]Amir-Alam Hospital, [3]Sina Hospital, Tehran University of Medical Science, Tehran, Iran*

Introduction and Aims: The prevalence of chronic inflammation,as reflected by increased level of proinflammatory cytokines or acute phase protein,such as C-reactive protein(CRP), is high in dialysis patients. In hemodialysis patients high CRP level are also associated with lower hemoglobin (Hb) levels resistant to Epo. Recently statin have shown anti inflammatory properties in addition to their lipid lowering effect.

Methods: We designed a 3 month prospective randomized control study to assess the safety and efficacy of lovastatin in reduction serum CRP level and increment Hb. Patients presenting with illnesses and or use of drugs that may affect CRP level excluded.We evaluated 27 chronic hemodialysis patients with CRP$\geq$10mg/l (20 men and 7 women). After randomization, group A included 14 patients (mean age 57$\pm$8y) treated with lovastatin 20 mg/day orally and group B included 13 patients (mean age 56$\pm$9y) without any medication. Qualitative/quantitative parameters were homogeneous Between groups at baseline. After 3 month we evaluated Hb and CRP in two groups.

Results: In group A median CRP level decreased from 21 (10.5-73) mg/l at baseline to 10 (2-56.5) mg/l after 3 month, P=0.04. In group B, values were 20(10-79) mg/l at baseline and 32(0.1-92) mg/l after 3 month, p=0.7. mean Hb level in group A increased from 9.5$\pm$2 to 10.5$\pm$-1.5mg/dl (p=0.1). in group B values were 9$\pm$1.8 at baseline and 10$\pm$1.7 after 3 month (p=0.1).

Conclusions: administration of lovastatin is safe in patients on long-term hemodialysis therapy.In addition has beneficial effect on CRP level, but did not different in hemoglobin between two groups.

SP638 EFFECT OF STATINS ON CHRONIC DIALYSIS PATIENTS' SURVIVAL

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Introduction and Aims: The inhibitors of 3-hydroxy-3-methylglutaryl CoA reductase (statins) are known to decrease total and LDL cholesterol levels and to reduce the mortality from coronary heart disease in the general population. A reduction of the biochemical markers of inflammation has also been reported. The course of cardiovascular disease in chronic dialysis patients (pts) can be atypical and may differ to that observed in other high-risk populations.The aim of our retrospective study was to evaluate the effect of statin therapy on chronic dialysis pts all treated in the same dialysis centre.
Methods: We investigated retrospectively 136 pts admitted for chronic haemodialysis treatment in a 3-year period (between July 2002 and June 2005). The average age of the pts initiating chronic dialysis treatment was 64,7 years. 48 out of them were treated with statins for at least 3 months (Group A), 88 pts were without this therapy (Group B). Among group A, 21pts were treated with lovastatin, 12 pts with atorvastatin, 9 pts with simvastatin and 6 with fluvastatin. We collected the biochemical data of total cholesterol (TC) and high-sensitive C-reactive protein (hs-CRP) levels in all pts and compared the survival curves of treated and untreated pts. We also divided group A into "fast responders" with a reduction of TC at least by 1mmol/l after 3 months of statin therapy and "fast responders" without such a prompt response. We investigated a possible correlation between TC and hs-CRP reduction as well as their individual influence on mortality. All pts were dialysed on polysulphone high-flux dialysers FX 50-80 three-times a week. Statistical methods used were Chi-square test, pair T-test, log-rank test and Kaplan-Meier survival curve.
Results: According to the results of the Kaplan-Meier survival curves we found out that in group A there was a significantly better prognosis for the patient, the survival was 93,7% in 1 year, while in group B it was only 70% (p=0,0001). In group A, TC decreased significantly after 3 months of statin therapy (p=0,0003) while the decrease of hs-CRP was not significant (p=0,753). After 3 months of therapy, in the subgroup of "fast responders" there was a mean decrease of TC 2,02mmol/l, in the subgroup of "fast responders" the mean decrease of TC was only 0,22mmol/l. There was no difference in a 1-year survival between these two subgroups (92,3% v.s.93,7%, p=0,827). We also observed that there was no correlation between lowering TC and hs-CRP (p=0,216). In pts with a decrease of hs-CRP after 3 months of statin therapy, the 1-year survival rate was 100% vs. 86,5% in the other treated pts (p=0,08).
Conclusions: In our study, statin therapy of chronic dialysis pts was associated with significantly better survival in comparison with non-treated pts, independently on their effect on TC. Statin therapy significantly lowered TC while the decrease in hs-CRP was not significant and did not correlate with TC reduction. This study suggests the possible efficacy of statins in decreasing mortality in the chronic dialysis population. Further large-scaled randomized controlled trials are needed to evaluate potential beneficial effects of statin therapy in chronic dialysis pts and pts with chronic kidney disease in general.

SP639 EFFECT OF THE SUPER-FLUX CELLULOSE TRIACETATE DIALYZER MEMBRANE ON THE REMOVAL OF NON-PROTEIN BOUND AND PROTEIN BOUND UREMIC SOLUTES

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Introduction and Aims: Uremic solutes accumulate in hemodialysis (HD) patients and interfere with physiological functions. Urea is used as a marker molecule for dialysis efficiency; its kinetic behavior however, is not representative for all uremic compounds. Several modifications in dialytic strategies were proposed; none seemed to affect the removal of protein bound solutes. More permeable super-flux (SF) cellulose triacetate (CTA) membrane with larger pore size were developed. We investigated whether those SF membranes result in a better removal and clearance of uremic solutes than low flux (LF) membranes and we examined whether the elimination of protein bound compounds was related to the albumin loss into the dialysate.
Methods: Eleven patients were dialyzed consecutively with LF-CTA and SF-CTA during 3 weeks. Blood flow, dialysate flow and ultrafiltration rate were the same during all sessions, at the end of each period, pre-HD and post-HD blood and dialysate were collected. Urea (UR), creatinine (CR), uric acid (UA), 3-carboxy-4-methyl-5-propyl-2-furanpropionic acid (CMPF), indole-3-acetic acid (IAA), indoxyl sulfate (IS), hippuric acid (HA), pentosidine (PENT) and low-MW AGEs (AGEs) and albumin were determined. Reduction rate (RR), dialytic clearance and mass transfer-area coefficient (KoA) were calculated. Protein binding was determined for IAA, IS, HA and AGEs. The theoretical amount of protein bound compounds that could be removed bound to the albumin in spent dialysate was calculated, and compared to the measured quantity.
Results: The reduction rates ranged from -10.2 to 75.7%. SF-HD resulted in a higher RR than LF-HD for IS and AGEs. Urea RR correlated with HA (r=0.59, P=0.05), IS (r=0.68, P=0.02), and IAA (r=0.67, P=0.02) for SF. Dialytic clearance ranged from 20±5 to 191±24 mL/min, being higher with SF vs LF for UA (P=0.05), HA (P=0.03), IS (P=0.05) and IAA (P=0.05). The lowest KoA was observed for IS and was 21±6 mL/min for LF and 26±6 mL/min for SF, the highest KoA was for urea 328±60 and 376±89 mL/min (LF and SF); KoA was higher for most compounds with SF-HD. Albumin loss per SF session was 3.4±1.3g. The protein binding increased after LF-HD as well as after SF-HD for the 4 protein bound compounds. The retrieved amount of uremic solutes in dialysate with LF and SF was comparable. The ratio of the measured amount to the theoretical amount was calculated; those ratios were related to the protein binding of the compounds (n=44, r=0.61, P=0.03). The highest ratio was observed for IS, the protein-leaking effect of the membrane was most important for IS.
Conclusions: In conventional HD, SF-CTA was superior to LF-CTA for clearances of most protein bound compounds, especially IS. Urea RR correlated with RR of protein solutes for SF-CTA, indicating that those solutes behaved more like non-protein bound solutes with SF. SF-CTA membrane is albumin-leaking; however this could not completely explain the amount of retrieved protein bound compounds in dialysate.

SP640 CIRCULATING ENDOTHELIAL AND PLATELET MICROPARICLES IN END-STAGE RENAL DISEASE PATIENTS TREATED WITH HEMODIALYSIS

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Introduction and Aims: End-stage renal disease (ESRD) patients have high incidence of thrombotic events. The pathogenesis of the thrombophilic tendency in those patients is not clearly defined. Endothelial dysfunction and/or platetet activation may have an important role in thrombosis in ESRD. Circulating endothelial microparticles (EMPs) are circulating small fragments of plasma membranes of activated endothelial cells. Increased levels of circulating activated platelets and platelet hyperaggregability have been described in ESRD patients. Circulating platelet microparticles (PMPs) are small vesicles with procoagulant activity released from activated platelets. The aim of this study was to determine the levels of both circulating EMPs and PMPs in ESRD patients under maintenance hemodialysis therapy.
Methods: Circulating levels of both EMPs and PMPs were measured by flow cytometry in platelet-poor plasma of 25 hemodialysis patients younger than 40 years old (14 females and 11 males) and 20 age-matched healthy controls. The blood samples were taken from the venous line before the start of the dialysis session. All patients were subjected to full history taking and clinical examination. Patients known to have any of the disease conditions that is known to cause endothelium and/or platelet activation (Diabetes mellitus, systemic lupus erythematosus, cerebrovascular or ischemic heart disease) were excluded.
Results: The level of EMPs was higher in dialysis patients (45.20 ±11.03) than in the control subjects (25.2±13.13) with a statistically significant difference between the two groups [p=0.002]. Also, the level of PMPs showed a statistical significant difference [p=0.01] between dialysis patients and the control group (755.0±187.9*vs* 576.0±117.70). In the dialysis group, the EMPs counts were negatively correlated with platelet counts (r=-

0.41; p=0.04) but were positively correlated with the pre-dialysis diastolic blood pressure (r=0.34; p=0.02), while the levels of PMPs were negatively correlated with the hemoglobin levels in the dialysis group (r=-0.41; p=0.04). The levels of PMPs were positively correlated with the pre-dialysis systolic blood pressure (r=0.34; p=0.02) and the duration of hemodialysis therapy (r=0.4; p=0.05).

Conclusions: Increased concentrations of both endothelial-derived (EMPs) and platelet-derived (PMPs), were detected in hemodialysis patients. This may indicate endothelium and platelet activation or injury in ESRD patients. Further large scale studies are needed to confirm their roles in thrombotic events and their clinical implications.

SP641 SOLUBLE ADHESION MOLECULES AS MARKERS OF BIOCOMPATIBILITY IN PATIENTS ON CHRONIC HEMODIALYSIS (HD)

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Introduction and Aims: Adhesion molecules determine leukocyte movement toward inflamed tissues. L-selectin is present on leukocytes, P-selectin – on platelets and endothelium, whereas ICAM-1 and VCAM-1 – mainly on activated endothelium. Their soluble forms appear in circulation when cell migration takes place. *The aim of the study* was to search for any relationship between a single dialysis session, a type of dialysis membrane and concentrations of soluble(s) cell adhesion molecules (CAM), thus evaluating the possible role of CAM as biocompatibility markers in HD.

Methods: The subjects enrolled in the study were: 14 patients dialyzed on cuprophane (CU), 8 on polysulfone (PS) and 10 on vitamin E modified cellulose (VE) membrane.The levels of sL-selectin, sP-selectin, sICAM-1 and sVCAM-1 were assessed by ELISA in sera before and after a single dialysis session. Age, BMI, time of therapy, several biochemical parameters were evaluated and then regression analysis was performed.

Results: Linear correlation was found between sL-selectin and the type of dialyzer before and after a single dialysis session. Correlation coefficient for the linear regression equation after HD was higher than before the session (R=0.6 vs. R=0.5). Linear correlation was also revealed between sVCAM-1 and the type of membrane after HD (R=0.5).

Conclusions: Relationships between sL-selectin, sVCAM-1 and the type of dialyzer used in the study suggest that these soluble adhesion molecules may serve as markers of membrane biocompatibility. Correlation of sL-selectin with the dialyzer type, present both before and after HD, may mean that the impact of material on this molecule extends for the time between HD sessions. sVCAM-1 correlation, observed only after HD, may show that a single HD session influence on this molecule is less pronounced and does not concern interdialytic period.

SP642 EXPERIMENTAL AND CLINICAL STUDIES WITH A NEW MACHINE DESIGNED FOR DAILY DIALYSIS

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Introduction and Aims: The Valemont concept refers to a machine whose characteristics are simplicity, sterility, and versatility. Simplicity follows from use of compressed air driven fluid, ultrafiltration (UF) that is regulated without a pump by volume measurement through calibrated lines and clamps. Absolute sterility is guaranteed by the use of 15 to 40 liters of dialysis fluid contained in pre-packaged sterile bags with ultra pure water, and the use of standardized disposable lines. Versatility refers to 4 dialysis strategies that are possible; hemodialysis (HD), hemodiafiltration (HDF), hemofiltration (HF), and automated peritoneal dialysis (APD).

The aim of the study was to test the machine pre-clinically and clinically.

Methods: For pre-clinically study, normal and nephrectomized sheep were used, and clinically with 4 patients previously treated on sDHD. Measurements include UF, urea and B2 microglobulin extraction capacity. Feasibility, tolerance and time of preparation will be analyzed.

Results: Obtained with 2 to 2.30 hours dialysis session and 300 ml/min dialysate flow for HD, 15 to 20 Liters (40% of total body water) for HF post dilution and HDF at 5 L on post dilution.

UF capacities: experimental results show UF obtained was 5% of UF requested.

Clinical dry weight was easily maintained with HD and HDF sessions. Its was more difficult to maintain dry weight using HF strategy if the blood flow was < 300 ml/min.

Feasibility and tolerance of the machine were excellent. Time of preparation was 15 to 20 minutes.

Conclusions: The Valemont concept appears to be valid. The machine is able to perform the different dialysis strategies. A 300 ml/min dialysate flow allows urea std(Kt/V) above 2. During HF strategy, 15 to 20 litres dialysis fluids (40% of total body water) for HF and HDF allows urea std(Kt/V) ≥ 2 and good B2m extraction capacity. No coagulation in the dialyzer appeared during HF apparently due to automatic push - pull effect. The most practical strategy appears to be HDF.

SP643 VERY STRONG CORRELATION BETWEEN ESRD PATIENTS' QUALITY OF LIFE AND MOOD DISORDERS – BASED ON 1215 OBSERVATIONS

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Introduction and Aims: Recently there is a growing interest in chronically dialyzed patients' quality of life (QOL). Many trials, including our ones, show that QOL influences not only ones fettle, but also the dialysis outcome and the mortality risk.

From the other hand 25-70% HD patients suffer from depression or anxiety. The aim of this study was to estimate the correlation between mentioned mental disorders and QOL.

Methods: For 24 months we have been observing 425 HD patients from six dialysis centers in Poland. Every three months they were asked to fill up a comprehensive form including among others the Kidney Disease Quality of Life - Short Form (KDQOL), Beck Depression Inventory (BDI), Clinical Anxiety Scale (CAS) and Hospital Anxiety and Depression Scale (HADS) questionnaires.

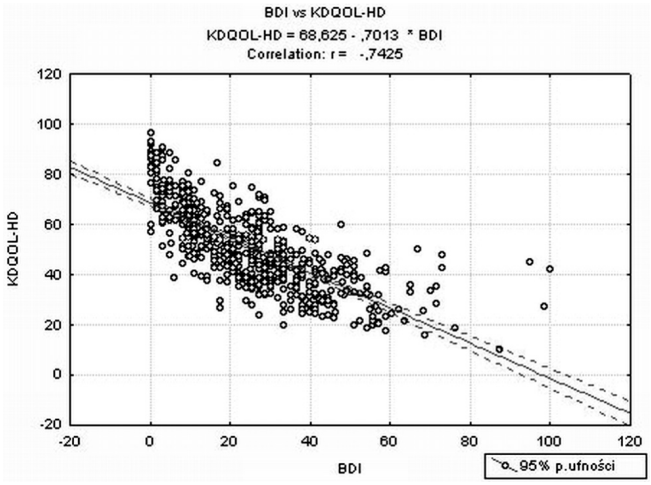
As some patients died and other were not willing to participate for the whole period od the trial after two years of observation we have collected 1215 properly completed forms (n=1215).

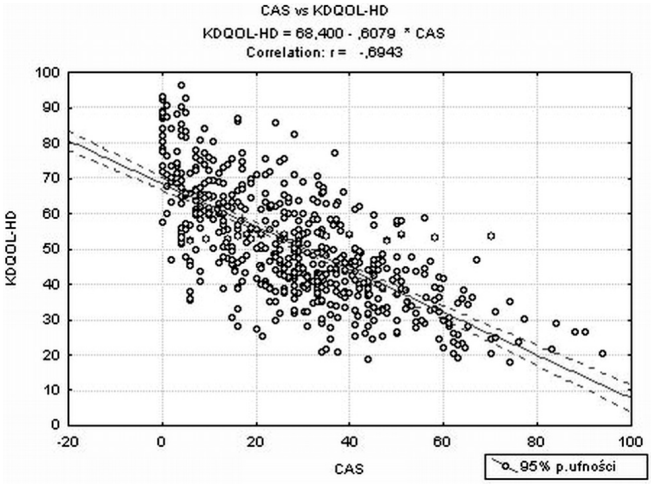
Results: Polish HD patients' QOL was very low. Average KDQOL score was only 53,09 ± 16,01 when the possible maximum was 100. Diagnosed mental disorders were much more common than observed by other investigators - according to BDI and CAS 67% of population were depressed and 42% had anxiety disorders. What is more we have observed very strong negative

Abstract SP642 – Table 1. Urea and B2 microglobulin extraction

	UREA			B2 microglobulin		
	HD	HDF	HF	HD	HDF	HF
Urea and B2 RR (%)	44.59 ± 2.57	36.62 ± 4.38	35.61 ± 1.67	35.45 ± 2.59	49.63 ± 5.86	68.88 ± 2.99
TAC Urea (mmol/L), B2m (mg/L)	17.16 ± 2.78	25.48 ± 4.62	22.56 ± 1.79	27.22 ± 1.93	19.18 ± 1.93	15.87 ± 2.30
sp (Kt/V)/session	0.67 ± 0.05	0.54 ± 0.07	0.52 ± 0.04	0.50 ± 0.03	0.79 ± 0.11	1.32 ± 0.12
Sdt (Kt/V)/week	2.38 ± 0.15	2.03 ± 0.21	1.97 ± 0.11	1.92 ± 0.09	2.68 ± 0.28	3.79 ± 0.21

correlations between the total KDQOL score and BDI (r = -0,74; $p<0,001$) and CAS (r = -0,69, $p<0,001$). Correlations between KDQOL and HADS scores were only a little bit weaker (r = - 0,70 and r= -0,66 respectively for depression and anxiety; $p>0,001$).





Conclusions: 1. Examined population was satisfyingly large and all obtained scores are statistically important.
2. Presented data show strong negative correlation between both depression and anxiety disorders and Polish patients' QOL.
3. There are well documented publications indicating that proper treatment of HD patients' depression and anxiety can reduce their symptoms to normal or subnormal levels in 60-70% of treated ones. Thus is it possible that such treatment is the most effective and the cheapest way to improve HD patients' QOL and to reduce their mortality.
4. We suggest the problem should be investigated in longitudinal studies not only in Polish population.

SP644 DOES C-REACTIVE PROTEIN (CRP) SINGLE TIME POINT OR TIME COURSE MEASUREMENT PREDICT MORTALITY IN CHRONIC HAEMODIALYSIS PATIENTS?

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Introduction and Aims: About 50% of patients on chronic haemodialysis have elevated levels of CRP that seem to correlate with cardiovascular mortality. Variability of CRP values is 70%. It is controversial which assessment is suitable to define CRP as risk factor. Aim of our study is to determine whether basal CRP or time course CRP are predictive of mortality in 241 incident patients (148 males, 93 females, mean age = 65±13 years) from 1/1/1995 to 31/12/2005 at our Dialysis Centre.
Methods: One hundred seven patients died. CRP was measured pre-haemodialysis session every two months with immunoturbidimetric assay. Patients were stratified according to basal or mean CRP values quartiles (groups 1, 2, 3, 4). Beside, other laboratory parameters were considered: albumin, ferritin, haemoglobin, parathormone (PTH), lymphocytes. Patients groups were not different as far sex, nephropathy, cardiovascular disease, diabetes, dialysis technique, vascular access are concerned.
Results: Patients with higher *basal CRP* (group 4) were older than patients with lower CRP values (group 1) (69±14 vs 63±14 years; p=0.04), whereas there were no differences with the other groups. Albumin was lower in the group 4 compared with other groups (3,4±0.5 vs 3,7±0.5, 3,7±0.4, 3,6±0.3 gr/dl; p<0.01). Group 4 had different ferritin values in relation to group 1(293±381 vs 166±186 ng/ml; p=0.014) and different PTH values in relation to the other groups (124±121 vs 220±249, 212±231, 270±255 pg/ml; p=0.01).
Dividing patients according to age (< o > 70 years), 1 year (<70 years: 0; 3,4; 13,6; 23% -p=0.02-; >70 years: 13; 6,2; 19; 40%-p=ns-) and 3 years (<70 years: 10; 14; 30; 43% -p=0.03- e <70 years: 44; 33; 58; 71% -p=ns-) mortality were different between the 4 CRP groups only for younger patients. One year RR: high vs low CRP = 10,3; 3 years RR: 1.38.Patients with higher *mean CRP* (group 3 and 4) values were older than patients of the 2 others groups (68±11 and 67±12 vs 62±15 and 62±13 years; p=0.05). Mean albumin level was lower in the group 4 than in the group 1 e 2 (3,8±0,3 vs 4,0±0.3 and 4,0±0.2 gr/dl; p<0.02). Group 3 had different mean ferritin values than group 1 (365±142 vs 296±152 ng/ml; p=0.018). Mean haemoglobin was lower in the group 4 than in the group 1 and 2 (9,7±0,9 vs 10,4±0,7 and 10,4±0,9 gr/dl; p=0.0001), like mean lymphocytes (1,3±0,3 vs 1,5±0,5 e 1,5±0,5 10^3/ul; p=0.05). One year and three year mortality were not significantly different in the four groups according to mean CRP (whether < or > 70 years).
Conclusions: Elevated basal CRP levels predict mortality in younger patients. In our population time course of CRP does not seem to influence 1 year and 3 years mortality.

SP645 UNIQUE DATA REVEAL MODEL EVOLUTION OF HD PATIENTS QUALITY OF LIFE AND DEPRESSION

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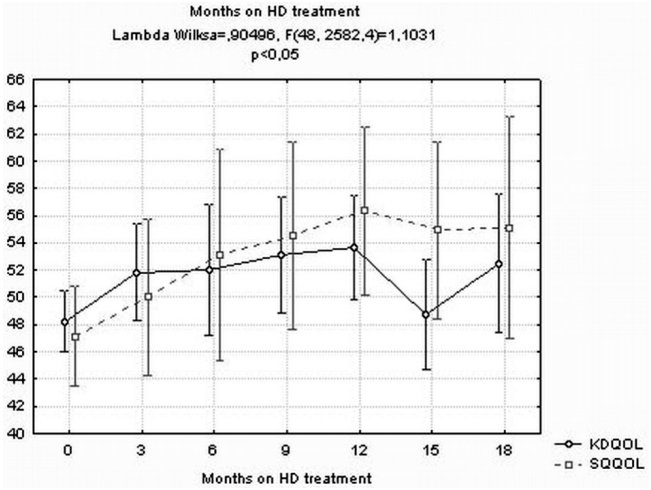
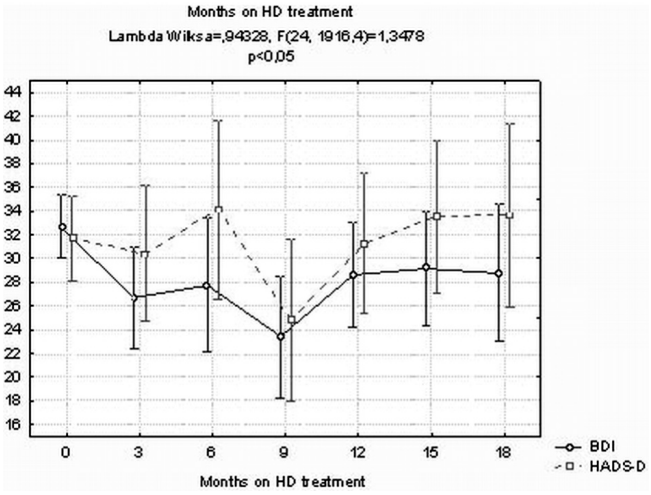
Introduction and Aims: Although many researchers sense HD patients' QOL and mood disorders are fluctuating there are only few published data presenting the direction of changes. The most important and crucial for dialysis therapy outcome are the first 12 months of HD treatment. The aim of this study was to find out the HD patients' QOL and depression evolution patterns.
Methods: For 18 months we have been observing 69 patients who had started the hemodialysis program in six dialysis centers in Poland. Every three months they were asked to fill up a comprehensive form including among others the Kidney Disease Quality of Life - Short Form (KDQOL), Likert's type QOL single question scale (SQQOL), Beck Depression Inventory (BDI), Hospital Anxiety and Depression Scale (HADS). Collected data were analyzed in Statistica 6,0 and Excel XP programs.
Results: Obtained data show that measured with both KDQOL and SQQOL scales initially low average HD patients' QOL improves during the first year of ESRD therapy with the peak on the 12th month, and than more (KDQOL) or less (SQQOL) slightly decreases after15th and 18th months of treatment.
When we have analyzed data for depression it appeared they evaluate in a contrary way. Average depression measured on the first day of ESRD treatment is very high, and than it decreases for the first 9 months. Since that moment it gradually increases and forms a plateau around 15th month of treatment.
Conclusions: Presented data illustrate important, from the clinical point of view, evolution of patients' QOL and mood disorders. They suggest that





psychotherapy and antidepressive treatment should be considered on early stages of HD therapy.
As the obtained scale scores were nearly the worst on the beginning of ESRD treatment it emphasizes the role of predialysis education and psychotherapy. HD patients' depression influences changes in their QOL. Depression and QOL are negatively correlated.

SP646 BECK DEPRESSION INVENTORY – THE MOST POPULAR SCALE FOR ESTIMATING HD PATIENTS' DEPRESSION IS AN IMPROPER ONE

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Introduction and Aims: Beck Depression Inventory (BDI) is one of the oldest scales created to determine depression, and is the most frequently used one in HD patients' examination.
In the first part of our study we were trying to estimate Polish HD patients' level of depression. As the BDI scores were unexpectedly high we have decided to find out if BDI does not overestimate the diagnosis of depression. As the result we have proposed a shortened version of original BDI which in our opinion is better adapted to HD treatment circumstances.
Methods: First for over two years we have been estimating Polish HD patients' level of depression. Observation took place in 6 dialysis centers. Every three months HD patients filled up a form containing BDI and Hospital Anxiety and Depression Scale (HADS). Participation was voluntary. We have collected 1215 properly completed HD patients' questionnaires and 63 ones from the control group created from patients' spouses.
BDI consists of 21 questions lettered from A to U. The final score ranges from 0 to 63 points and the suggested by A.T. Beck cutting score is 11 points.
In the second step we have studied variance and factor analysis of the scales and we have calculated their reliability.
In the third step according to statistical analysis we have worked out the shortened form of BDI called BDI-HD.
Results: 67% of HD patients and 22% of control group had BDI score $\geq$ 11 points what according to A.T. Beck should diagnose at least mild depression. Even when after suggestions of J.L. Craven we have changed the cutting score on 15 points BDI still diagnosed depression in 49,5% of HD population. At the same time HADS has revealed depression only in 29% of HD patients and in 0% of the control group.
The factor analysis has indicated that BDI did not measure only one factor - the depression - but at least three factors: "somatic problems", "somatic problems" and "somatic problems". HADS depression subscale appeared to be unifactorial one.
Conclusions: HD patients suffer somatic disorders as: fatigability, irritability, insomnia, loss of energy, loss of libido or appetite. They may be caused by either the hemodialysis therapy or/and by depression.
It seems the somatic disorders influences BDI score too much what vitiates the proper estimation of depression. It overestimates the depression. As BDI is sensitive it can be used for quick screening tests, but the initial diagnosis should always be verified with proper psychiatric examination.
As HADS ignores somatic problems it is less sensitive and more specific. It can be used to find out moderate and severe depression but might neglect borderline cases.
In our opinion the best scale for balanced screening diagnosis of HD patients' depression is modified scale worked out as the result of this study. It consists of only 9 of 21 positions of original BDI (questions: A, B, C, D, E, G, H, O and Q). More observations should be prepared to confirm the true value of such BDI-HD questionnaire.

SP647 LOW DOSE INTRADERMAL VACCINATION IS SUPERIOR TO HIGH DOSE INTRAMUSCULAR VACCINATION FOR HEPATITIS B IN UNRESPONSIVE HEMODIALYSIS PATIENTS

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Introduction and Aims: Following Hepatitis B vaccination unresponsiveness is still a problem affecting 20-50% of hemodialysis (HD) patients. Despite having two times 40 mcg intramuscular (IM) vaccination protocol (0,1,2 and 6 months), patients who were unresponsive to Hepatitis B vaccination were collected from our three HD centers. Our aim was to compare the effectiveness of intradermal (ID) and repeated IM vaccination protocols in unresponsive HD patients.
Methods: Thirty three (20M, 13F) of 639 HD patients were found to be unresponsive. We randomly assigned patients into two groups one (n:17) to receive 8 times ID (10 mcg per week) and other (n:16) 40 mcg IM vaccination protocol (0,1,2 and 6 months).
Results: Two patients were dropped out from IM group (one exitus, one transferred to another HD center) during the study. Thirty one patients (19M, 12F) with a mean age 53.4$\pm$17.4 years completed the study. Both ID (p=0.000) and IM (p=0.03) groups disclosed statistically significant seroconversion rates (HBs-Ab titer $>$10 IU/L) at 6 months after the last vaccination dose. The seroconversion rate was 94.1% in ID and 50% in IM group and was significantly better in ID group (p = 0.011). Mean HBs-Ab titer in ID and IM groups were 209.6$\pm$239.8 IU/L and 52.8$\pm$117.9 IU/L, respectively (p=0.003). There was no difference between the two groups regarding to age, gender, duration of HD, laboratory parameters, body mass index, Kt/V and normalized nitrogen protein appearance (p$>$0.05).
Conclusions: Low dose ID is superior to standard IM vaccination protocol and also cost effective in unresponsive HD patients. However, repeated vaccination protocols significantly increase seroconversion rate in unresponsive HD patients.

SP648 TEN YEARS SURVIVAL AND MORTALITY RISK FACTORS AMONG CHRONIC DIALYSIS PATIENTS IN AN ITALIAN REGION

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Introduction and Aims: End-stage renal disease patients on renal replacement therapy are at high risk of mortality. Survival analysis among these subjects may be useful to identify predictable risk factors. The aim of the study is to analyze cumulative survival at 10 years and the determinants of mortality among patients undergoing renal replacement therapy.
Methods: Source of data is Lazio Dialysis Registry. We enrolled and followed-up 7234 subjects starting chronic dialysis in Lazio dialysis units from 1-1-1995 to 31-12-2004. Survival analysis was performed using Kaplan-Meyer method. A Cox multivariate model was preformed to analyze mortality determinants.
Results: We observed 2794 deaths in the whole cohort. The survival proportion was: 87% (95%CI 86.2-87.7%) at 1 year, 77% (95%CI 76-78%) at 2, 68.6% (95%CI 67.3-69.7%) at 3, 61.4% (95%CI 60.1-62.7%) at 4, 55.7% (95%CI 54.3-57.1%) at 5, 50.7% (95%CI 49.2-52.2%) at 6, 46.5% (95%CI 44.9-48.1%) at 7, 43.5% (95%CI 41.6-45%) at 8, 41.1% (95%CI 39.9-43%) at 9 and 39.6% (95%CI 37.3-41.9%) 10 years after undergoing chronic dialysis. Median survival was 73 months. A lower survival (log-rank test, $p<0.001$) was found among subjects who at the beginning of chronic dialysis were older than 64, diabetic, HCV-positive; we did not find differences for gender (log-rank test, p=0.38). The multivariate Cox model showed a higher mortality risk among patients who at the beginning of chronic dialysis were older than 64 (HR 2,59 IC95% 2,35-2,86), diabetic (HR 1,41 IC95% 1,29-1,54), HCV-positive (HR 1,19 IC95% 76-78%), with hematocrit level <30% (HR 1,26 IC95% 1,15-1,37), with serum albumin level <3,5 grams/dl (HR 1,37 IC95% 1,27-1,49), with a low self-sufficiency degree (HR 2,08 IC95% 1,90-2,26) and male (HR 1,24 IC95% 1,14-1,34). We did not find a higher mortality risk for type of dialysis and for subjects undergoing dialysis in the period 1995-1999 compared to 2000-2004.
Conclusions: Few Italian studies performed population-based 10 years survival analysis among chronic dialysis patients. Our survival proportion at 1 year (87%) was better than other European (84%) and U.S. studies (78%). The findings about mortality determinants suggest to focus prevention activity in pre-dialysis period, for conditions as malnutrition and anaemia and for pathologies as diabetes and HCV-virus infection.

SP649 SERUM OXIDIZED-LDL IS INVERSELY CORRELATED TO TELOMERASE ACTIVITY IN PERIPHERAL BLOOD MONONUCLEAR CELLS OF HEMODIALYSIS PATIENTS

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Introduction and Aims: Telomerase preserves telomeres' function and structure preventing cellular senescence. Its activity is reduced in peripheral blood mononuclear cells (PBMCs) of hemodialysis (HD) patients. The purpose of this study is to investigate the potential correlation between increased oxidative stress/inflammation and telomerase activity in PBMCs of HD patients.
Methods: Telomerase activity was measured by PCR-ELISA in PBMCs isolated from a group of 42 HD and 39 non-renal failure subjects. Serum oxidized-LDL (ox-LDL), Tumor Necrosis Factor – α (TNF) and Interleukin-10 (IL-10) was also measured in both groups by ELISA.
Results: Serum levels of ox-LDL and TNF were significantly higher in HD patients than in control subjects (91.2±33.9 vs. 66.9±26.4 U/L and 24.5±6.1 vs. 17.4±7.1 pg/ml, P = 0.001 and < 0.001, respectively). Ox-LDL was negatively correlated to % telomerase activity in PBMCs (r = -0.506, P = 0.000 in the whole group of 81 HD and normal subjects and r = -0.559, P = 0.000 in HD patients). TNF was also inversely associated with % telomerase activity in the whole group studied (r = -0.492, P = 0.000) while IL-10 was not. In stepwise multiple linear regression, taking into consideration the most important characteristics of the HD patients and control group, the only significant predictors for % telomerase activity in PBMCs were ox-LDL and TNF (β = -0.421, t = -4.083, P = 0.000 and β = -0.381, t = -3.691, P = 0.000, respectively) while examining separately HD patients, the predictors for the same parameter were ox-LDL and HD duration (β = -0.671, t = -4.709, P = 0.000 and β = -0.349, t = -2.447, P = 0.023, respectively).
Conclusions: Ox-LDL serum level is inversely correlated to telomerase activity in PBMCs of HD patients. Our study proposes a new consequence of increased oxidative stress in HD patients: the premature cellular senescence potentially related to atherosclerosis through LDL oxidation.

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SP650 OUTCOME, PROGNOSIS FACTORS AND ANTIRETROVIRAL PRESCRIPTIONS IN FRENCH HIV HEMODIALYZED PATIENTS

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Introduction and Aims: HIV infected hemodialyzed patients have a worse prognosis than non infected hemodialyzed patients. Despite abundant literature, their outcome in the High Activity Anti-Retroviral Therapy era remains unclear. We determined survival and mortality risk factors in patients enrolled in the French cohort of HIV infected hemodialyzed patients.
Methods: HIV infected hemodialyzed patients were numbered in France on January 1st, 2002 (cross sectional study), and prospectively followed until January 1st, 2004. Survival was estimated by Kaplan Meier method and mortality risk factors were analyzed by uni- and multivariate analyses. The prescribed doses of anti-retroviral agents were compared to what is recommended for hemodialysis patients.
Results: 27 577 patients benefited from hemodialysis in France on 01/01/02, 164 (0.59%) of which were HIV infected. Their clinical characteristics are the following: males: 72%, mean age: 44.8±10.9 years, black: 65%, HCV co-infection: 27% and HBV co-infections: 17%, intra-venous drug users: 15%. During follow up, 17 patients died (mean HIV infection duration: 9.5±5.4 years). The death causes are infections, cancers and sudden deaths. Two-year cohort survival rate is 89±2%. Significant risk factors for death in univariate analysis are: a low CD4 cell count (hazard ratio [HR] 1.4 every less 100 CD4 cells/mm^3, $p<0.04$ and HR 6.0 if CD4 cell count is less than 200/mm^3, $p<0,0001$), a high viral load (HR 2.5 every other Log/ml; $p<0.0001$), the absence of HAART (HR 2.7; $p<0.05$) and a history of opportunistic infection (HR 3.7; $p<0.01$). Viral load (HR 2.6; $p<0.0001$) and history of opportunistic infection (HR 3.6; $p<0.05$) were independent prognosis factors. HIV immuno-virological parameters were controlled in only 41% of the patients. More than 50% of the patients receiving lamivudine, didanosine and stavudine are prescribed 196%-386% of the daily recommended dose for hemodialyzed patients. Conversely, the prescribed dose of indinavir, ritonavir and saquinavir are commonly insufficient (34%-61% of the daily recommended dose).
Conclusions: HIV infection is not optimally controlled in hemodialyzed infected patients. Survival greatly depends on HIV infection-related parameters. A better collaboration between caregivers and extension of HAART use in this young population might improve survival.