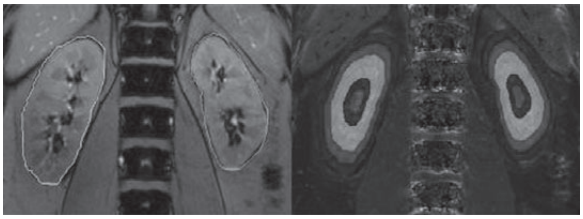
Methods: MR imaging (3.0 Tesla) was performed under standardized conditions before and after furosemide in ten CKD patients and ten healthy volunteers, and R2* maps determined on four coronal slices covering both kidneys. In the ROI technique, the R2* values in medulla and cortex were based on the manual placement of circles (ROIs), whereas in the CO technique, a semi-automatic procedure divided each kidney in six equal layers based on the kidney contour (see figure). The mean R2* values (a low R2* value indicating high oxygenation) as assessed by two independent investigators were compared.
Results: With the ROI technique, inter-observer variability for mean cortical and medullary R2* values was 3.6 and 6.8% in non-CKD, versus 4.7 and 12.5% in CKD subjects; with the CO technique, inter-observer variability was between 0.7 and 1.9% across all layers in non-CKD, and between 1.6 and 3.8% in CKD patients. Similar results were seen after furosemide. There was a trend towards higher R2* values in CKD patients than healthy controls with the CO technique, whereas opposite results were obtained with the ROI technique.
Conclusions: The classical ROI-based technique is not a reliable way to estimate renal tissue oxygenation in CKD patients. The CO technique offers a new, highly reproducible alternative and suggests, in line with animal studies, that CKD is characterized by chronic renal tissue hypoxia.



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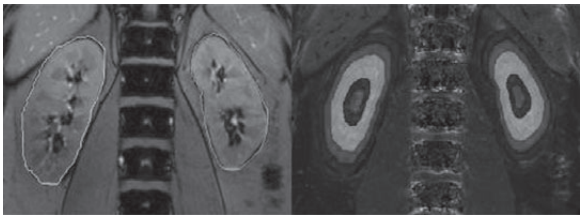

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SP144 SERUM OSTEOPROTEGERIN IS A PREDICTOR OF DIASTOLIC DYSFUNCTION AND VASCULAR STIFFNESS IN CHRONIC KIDNEY DISEASE PATIENTS

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Introduction and Aims: The aim of the present study is to evaluate the association between osteoprotegerin (OPG) and fibroblast growth factor 23 (FGF23) concentrations with respect to vascular stiffness and cardiac disease in chronic kidney disease (CKD) patients.
Methods: We enrolled 54 subjects: 44 chronic kidney disease patients in pre-dialysis (8 patients with CKD stage 2, 24 patients with CKD stage 3, 12 patients with CKD stage 4), and 10 healthy controls. OPG, FGF23 intact parathyroid hormone (iPTH) were measured using xMAP technology (Luminex® 200™). Arterial stiffness measurements were performed with the SphygmoCor device. Echocardiographic evaluation was performed in order to evaluate left ventricular function, including the transmitral early tiastolic velocity/tissue Doppler mitral annular early diastolic velocity ratio (E/E'). Statistical analysis was performed using IBM SPSS Statistics Version 21.
Results: Levels of OPG, FGF23 and iPTH were significantly higher ($p<0.05$) in CKD patients than in healthy controls. The levels of FGF23 inversely correlated with estimated glomerular filtration rate. PWV mean value was significantly elevated in CKD patients versus control group. Diastolic dysfunction was present in 89.3% patients, left ventricular hypertrophy in 72.2%, and aortic valve calcifications were present in 58.2% patients.OPG levels significantly correlated with left ventricular mass index and E/E' ($p<0.05$). A stepwise multiple regression analysis showed that OPG and iPTH levels positively reflected an increase of pulse wave velocity ($p<0.0001$). We didn't find significant correlation between FGF23 and PWV. FGF23 correlated with aortic valvular calcifications ($p=0.01$).
Conclusions: Our results demonstrated that OPG is correlated with increased vascular stiffness and diastolic dysfunction in CKD patients. Our data underscore that cardiovascular disease appear even from early stages of CKD and mineral-bone disease serology parametres could be used as surrogate biomarkers for cardiac complications among patients with CKD.
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SP145 CAROTID PLAQUES AND PROGRESSION OF RENAL DYSFUNCTION IN PATIENTS WITH CHRONIC KIDNEY DISEASE

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Introduction and Aims: Carotid plaque is a surrogate marker of systemic atherosclerosis and closely associated with adverse cardiovascular outcomes. However, data regarding the predictive role of carotid plaque for progression of renal dysfunction are limited.
Methods: This is a longitudinal observational study with a cohort of 411 Stage 3 and 4 chronic kidney disease (CKD) patients. A carotid plaque was defined as a focal structure encroaching into the arterial lumen of at least 0.5mm or 50% of the surrounding carotid intima-media thickness (cIMT) or a thickness >1.5mm. Renal function decline was measured by estimated glomerular filtration rate (eGFR) slope and renal endpoint was defined as the start of dialysis.
Results: Baseline eGFR was 44.5±11.6 mL/min/1.73m^2 and eGFR slope was -2.87 ±3.76 min/1.73m^2/yr. A carotid plaque was found in 282 (68.6%) patients, and these patients had significantly faster rates of renal decline than those without plaque (-3.64±3.84 vs. -1.20±2.85 mL/min/1.73m^2/yr, $p<0.001$). According to multivariate analysis, statistically significant variables determining eGFR slope were diabetes ($\beta=-0.77$, $p=0.033$), increased pulse pressure ($\beta=-0.02$, $p=0.015$), proteinuria ($\beta=-0.50$, $p<0.001$), cIMT ($\beta=-4.36$, $p<0.001$) and the presence of carotid plaques ($\beta=-1.48$, $p<0.001$). During the 2.5-year follow-up, 47 (11.4%) of patients started dialysis. Patients with carotid plaque had a poorer dialysis-free survival rate than those without carotid plaque (hazard ratio 3.3: 95% confidence interval 1.01, 10.77). Particularly, irregular plaque surface significantly increased the risk of dialysis by 2.2-fold.
Conclusions: Carotid plaque was closely associated with rapid decline of renal function and progression to dialysis in stage 3 and 4 CKD patients.

SP146 DIALYSIS IN THE END-STAGE RENAL DISEASE: COMORBID PSYCHOLOGICAL ISSUES

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Introduction and Aims: The haemodialysis as a treatment of choice for the end-stage renal diseases disrupt a normal life-style and require considerable psychological and social adaptation. Chronic stress related to the process of dialysis increases the level of depression and leads to some personality changes like alexithymia construct. The purpose of the study was a) to evaluate the level of depression in patients treated with maintenance chronic haemodialysis and b) to assess the presence of the alexithymia construct as a stable personality trait.
Methods: The evaluated sample comprises 230 patients; 110 were females (mean age 55.5 ± 13.5 years), and 120 males (mean age 54.5± 14.3 years). The mean duration of maintenance dialysis was 8.3 ± 5.8 years (from 0.5 to 24 years). Patients were recruited randomly from three dialysis centers in R. Macedonia.As a psychometric instruments Beck Depression Inventory and TAS-20 was applied. Both are translated and validated for Macedonian population.
Results: Obtained results showed that mild depression is most frequent in evaluated patients (35.71%), but the percentage of severe depression is also very significant (14.28%). Moderate depression was present in 17.85% and minimal in 21.43% of all examinees. The depression was positively correlated with age and educational level and negatively with the duration of dialysis.
Results for TAS-20 showed that 50% of patients obtained scores indicative of alexithymia construct, 18% had possible alexithymia, and the rest of 32% were non-alexithymic. The age and the duration of dialysis positively influenced the scores