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CHRONIC KIDNEY DISEASE. CLINICAL EPIDEMIOLOGY - 2

SP346 NEW MARKERS OF VASCULAR AND CARDIAC DYSFUNCTION IN PATIENTS WITH CHRONIC KIDNEY DISEASE (CKD)

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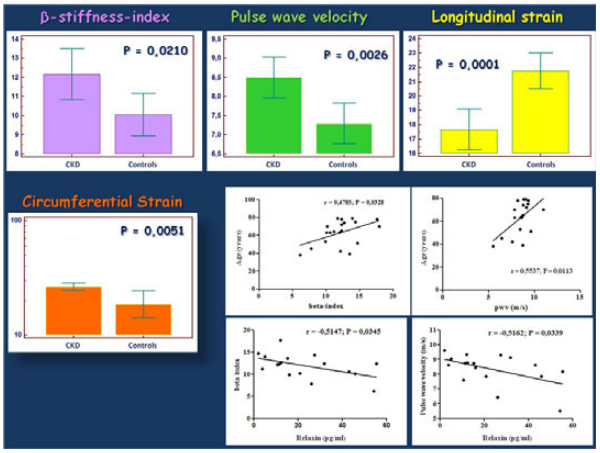
Introduction and Aims: In CKD patients risk of cardiovascular (CV) events (especially congestive heart failure) and mortality results to be 10-20 times higher than in subjects with normal renal function. Then, new markers are required for early identification of patients with high risk to develop CV dysfunction. We analyzed three instrumental techniques able to identify subclinical CV impairment in patients with CKD and no history, clinical signs or symptoms of CV disease. Cardiac strain, β-stiffness-index (β-index) and pulse wave velocity (PWV) were measured in order to assess both cardiac function and carotid arterial stiffness. Moreover we measured serum levels of relaxin-2 (relaxin), a peptide hormone also involved in the pathophysiology of arterial hypertension and heart failure.
Methods: We enrolled 20 patients with CKD (GFR 52.23 ± 35.46 ml/min; age 63 ± 14 years) and 14 control subjects with preserved renal function. Patients with CV diseases, including coronary artery disease, valvular heart disease, arrhythmias, congenital or secondary cardiomyopathies were excluded. Echocardiographic and vascular measurements were collected by using ESAOTE My Lab70, ESAOTE, Italy® and MyLab Desk® software for offline analysis of cardiac strain. Arterial stiffness of the common carotid artery was assessed by positioning the "tracking gates" at level of the tunica adventitia, 1 cm from the bifurcation. Serum relaxin was measured by using Human Relaxin-2 RIA Kit, Phoenix Pharmaceuticals, Inc®.
Results: Significant differences were found between CKD patients and controls regarding: β-index (12.17 ± 2.83 vs 10.05 ± 1.92; p= 0.021), PWV (8.50 ± 1.14 vs 7.29 ± 0.92 m/s; p= 0.0026), circumferential strain (-26.26 [95%CI 24.34-28.33] vs -18.52 [95%CI 14.19-24.17]%; p= 0.0051), longitudinal strain (-17.67 ± 3.04 vs -21.76 ± 2.34%; p= 0.0001). Ejection Fraction (EF) did not differ in the two groups (60.35 ± 3.95 vs 62.50 ± 2.58%, p= 0.0691). β-index was directly correlated with age (r= 0.4785; p= 0.0328), as well as PWV (r= 0.5537; p= 0.0113); relaxin was inversely correlated with PWV (r= -0.5159; p= 0.0284) and β-index (r= -0.5147; p= 0.0288); GFR resulted to be inversely related to diastolic blood pressure (r= -0.4495; P= 0.0467); circumferential strain was directly correlated with uricemia (r= 0.6582; p= 0.0105).



Conclusions: CKD patients showed an increased arterial stiffness, as documented by higher values of β-index and PWV; inverse correlation of these variables with relaxin is important to validate the protective action of the hormone on the CV system. Besides, CKD patients showed a subclinical systolic dysfunction, as demonstrated by reduced longitudinal strain in absence of differences in EF. Circumferential strain increases as a compensatory mechanism aimed at preserving left ventricle pump function. The direct correlation between circumferential strain and uric acid is also very relevant since the latter has been proven to be a CV risk factor related to left ventricular mass.

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