PLASMA LEVELS OF KIDNEY INJURY MOLECULE-1 (KIM1) AND CHRONIC INFLAMMATION IN CHRONIC KIDNEY DISEASE (CKD) PATIENTS

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INTRODUCTION AND AIMS: Plasma KIM1, a marker of renal tubular injury, has been mentioned in some previous studies to be associated to cardiovascular risk factors. Chronic inflammation is one of the non-traditional cardiovascular risk factors in CKD patients. The purpose of this study was to show the relationship between chronic inflammation, plasma KIM1 levels and cardiovascular factors in CKD patients.

METHODS: We conducted a single-center cross-sectional study that included 63 CKD G3D patients (hemodialysis duration for 1-5 years) and 63 CKD patients not on dialysis (stages 1-5, mean eGFR 65.15±32.45 ml/min). All patients have been assessed regarding cardiovascular disease (history, echocardiography and ECG). Using an enzyme-linked immunosorbent assay method we assessed plasma levels of KIM-1 and interluekin 6 (IL6) and using standard methods blood biochemistry.

RESULTS: Mean plasma KIM1 levels in hemodialysis patients was 267.1±/482.9 pg/ml while in predialysis patients it was 217.48±/267.10 pg/ml, without being statistically significant. Mean IL-6 values in hemodialysis patients was significantly lower compared to patients in the predialysis stage (7.3±/5.1 pg/ml vs. 9.5±/7.6 pg/ml, p=0.05). In hemodialysis patients serum KIM1 levels showed a statistically significant correlation with mean CRP (r=0.28, p=0.02) and IL6 (r=0.36, p=0.005), a correlation that was not observed in predialysis patients. We found out using ANOVA that patients with left ventricular hypertrophy showed decreased levels of KIM1 (155.51 vs 432.12 pg/ml, p=0.026), and also patients with vascular calcifications on echocardiography had lower levels of serum KIM1 (210.01 vs 462.58 pg/ml, p=0.04). There was no statistically significant correlation between plasma KIM1 and ejection fraction, but patients with ejection fraction below 40% have been excluded from the study. We also did not find any correlation between inflammation markers and the studied cardiovascular markers in our patients.

CONCLUSIONS: The fact that the inflammatory biomarker IL-6 is lower in hemodialysis patients compared to predialysis CKD patients could suggest that dialysis-related factors are not the main factors involved in the inflammatory state in CKD patients. Regarding the tubular injury marker KIM-1, we found an association with chronic inflammation only in hemodialysis patients, and surprisingly lower values in patients with vascular calcifications or left ventricular hypertrophy. These findings raise the question of the usefulness of plasma KIM-1 as a cardiovascular marker in hemodialysis patients.