Valvular calcification and its relationship to atherosclerosis in Peritoneal and Hemodialysis patients.

MERITA RROJI (MOLLA), SAIMIR SEFERI, NEREIDA SPAHIA, ERJOLA LIKAJ, ALMA IDRIZI, MYFTAR BARBULLUSHI,
UNIVERSITY HOSPITAL CENTER MOTHER TERESA, DEPARTMENT OF NEPHROLOGY-DIALYSIS-TRANSPLANTATION, TIRANA, ALBANIA.

- **BACKGROUND AND AIM OF THE STUDY:**

Patients on dialysis are at high risk for cardiovascular events. Cardiovascular calcification is a common complication in patients with chronic kidney disease (CKD). The study aim was to identify the risk factors of valvular calcification in hemo and peritoneal dialysis, and its relationship to atherosclerosis. The presence of valve calcification (VC) was assessed by standard bi-dimensional echocardiography.

- **METHODS:**

In this cross-sectional study, we evaluated 39 stable PD and 53 HD patients on renal replacement therapy (RRT) for 3 up to 36 months duration. B-mode ultrasonography was used to determine carotid artery intima -media thickness (CIMT) as well as the presence of plaques and calcification. We classified patients with atherosclerosis if they have CIMT > 1cm and or presence of plaque. The presence of VC was assessed by standard bi-dimensional echocardiography.

- **RESULTS:**

Out of our total dialysis population of 92 patients 16.3% were diabetics and 57.6% were on hemodialysis. Expectedly, PD patients had a higher RRF ($p<0.001$),CRP ($p=0.047$), and a lower phosphate ($p=0.01$), PTH ($p<0.05$), alkaline phosphatase ($p<0.05$), and albumin levels ($p<0.001$) compared to hemodialysis ones.

Sixty four patients (70.5%) had at least one valve calcified, while the combined prevalences of mitral or aortic valve calcification were 38.8% Aortic valve calcification was found in 51.8% of hemodialysis patients and in 26.8% of peritoneal dialysis ones $p=0.012$. The prevalences of mitral annular calcification were 57.6% and 34.1% respectively $p=0.028$. In multivariate analysis, the risk factors for valvular calcification in CKD were age, Residual renal function and pulse pressure. The prevalence of atherosclerosis was found in 66.3% patients including all diabetic population. There was no significant difference in the presence of atherosclerosis between PD and HD patients [56.4 vs 73.6% HD, respectively].

Multiple regression analysis showed age, diabetes, HD, RRF,

Phosphate, PTH and PP as independent parameters associated with atherosclerosis.

We found a strong association between valvular calcification and increased carotid intima-media thikness >10mm ($r = -0.611$; $p = 0.002$).

- **CONCLUSION:**

We found a a high prevalence of VC in hemodialysis patients in comparison with peritoneal dilaysis ones. The residual renal function which contributes significantly to the maintenance of phosphate balance mainly in PD patients, and better a better mineral and bone control in this group and may explain the lower prevalence of valve calcification in PD patients in comparison with HD patients. Valvular calcification is closely associated with carotid artery intima -media thickness >10mm and may be explained by similarities between carotid atherosclerosis and initial lesions of VC, and with presence of similar non traditional risk factors for both.

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