

SCREENING OF VALVE CALCIFICATIONS IN HEMODIALYSIS AND PERITONEAL DIALYSIS PATIENTS

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Abstract

Valve calcifications (VC) are a major contributor of increased mortality in dialysis patients. The present study aimed to detect the presence of valve calcifications in peritoneal and hemodialysis patients and to evaluate potential risk factors.

Methods:

We conducted a cross-sectional study, enrolling 30 stable pts in peritoneal dialysis (60% males; mean age 57 +/-12.36 years and average duration of dialysis 22.5 +/-10 months) and 34 pts on hemodialysis (58.8% males; mean age mean age 50.8 +/-10.4 years and average duration of dialysis 26.5 +/-10.9 months) who were in RRT more than 6 months- up to 36 months. Baseline echocardiography was performed to screen for calcification of valve. RRF was calculated by a standard technique.

Results: Valve calcifications were significantly more frequent in hemodialysis pts ($p=0.007$). Valve calcifications were found in 10 of pts (33.3%) in PD; mitral valve calcifications; aortic valve calcifications; and both valves calcifications in 8; 7; 5 pts respectively. 24 hemodialysis pts (70.6%) had valve calcifications; mitral valve calcifications; aortic valve calcifications and both valves calcifications in 14;9;9 pts respectively. Significant difference was found between patients on PD and HD for phosphate level [4.3 ± 1.29 mg/dl vs 6.17 ± 1.08 mg ($p<0.001$)]; RRF [4.03 ± 2.09 ml/min vs 0.62 ± 0.89 ml/min ($p<0.001$)] and age ($p=0.033$). The presence of valve calcifications were significantly correlated with phosphate level ($r=0.28$, $p=0.005$) and negatively with RRF ($r=-0.304$, $p=0.004$). Multivariable analysis revealed increased age and lower RRF as independent predictors of VC in dialysis patients.

Conclusion:

Our study showed once again that presence of valve calcification is relatively high in dialysis patients. Residual renal function contributes significantly to the maintenance of phosphate balance and may explain the lower prevalence of valve calcification in PD pts in comparison with HD pts during the first years of RRT.

Key words: Valve calcification, Hemodialysis, Peritoneal dialysis, Phosphate, Residual renal function

Introduction

The cardiovascular disease is the primary cause of death in end-stage renal disease (ESRD) patients receiving long-term hemodialysis (HD) and peritoneal dialysis (PD) therapy. Vascular/valve calcifications are also important and highly prevalent complications among ESRD patients including the patients under PD therapy. The increased prevalence of risk factors for atherosclerosis [1], dysregulation of mineral metabolism with a high calcium load and the resulting poor calcium-phosphorus balance are [2], as well as the loss of inhibitors of calcifications are believed to be largely responsible for the excessive valve and vascular calcification in this population. Hyperphosphatemia is a frequent complication in PD patients as it is in HD patients. Several cross-sectional clinical studies have consistently reported a kind of association between hyperphosphatemia and vascular and valve calcification in ESRD patients. It has been linked to vascular calcification and increased cardiovascular mortality in the HD population [3]. Having a serum phosphorus level >1.78 mmol/L was associated with a time-dependent adjusted hazard ratios of 1.6 and 1.4 for all-cause mortality in PD and hemodialysis patients, respectively. Residual