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DIALYSIS. CARDIOVASCULAR COMPLICATIONS - 2

SP544 CALCIFICATION PROPENSITY OF HEMODIALYSIS AND HEMODIAFILTRATION PATIENTS

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Introduction and Aims: Increased vascular calcification in dialysis patients, due to hyperphosphatemia in combination with decreased calcification inhibitor concentrations as Fetuin A (Fet-A), is an independent predictor for cardiovascular mortality. Fet-A, calcium (Ca) and phosphate (P) form calciprotein particles (CPPs), protein mineral complexes with transform from primary CPP to more stable secondary CPP. This is the underlying principle of a novel blood test for the measurement of calcification propensity (T50). The effects of hemodialysis (HD) and hemodiafiltration (HDF) on the clearance of Fet-A and the T50 value have never been studied.
Methods: In this cross-sectional pilot study we included stable prevalent HD and HDF patients treated on a 4 hours three times weekly basis at the Catharina Hospital in Eindhoven, the Netherlands. We included patients with a dialysis vintage of at least 3 months and a vascular access providing a blood flow rate of at least 300ml/min in both groups. Measurements were performed in the first week of October 2014 during all in-centre dialysis sessions.
Results: 64 patients (mean age 70 years, 53,1% male, vintage 50 months, 53.1% postdilution HDF (mean substitution volume 21.3±4.5L) and 46.9% high-flux HD) were included, in total 376 samples were analysed. Patients were divided in two groups based on dialysis modality. Fet-A and T50 pre- and post-dialysis were 0,37(±0,07)-0,41 (±0,08) g/L and 244(±64)-301(±57) min in the HD group and 0,40(±0,07)-0,41(±0,08) g/L and 253 (±55)-304(±61) min in the HDF group. The delta values of Ca, P and albumin (Alb) were equal in both groups. The delta-T50 was mostly influenced by delta-P (r2-0.342; p = 0.002 HD and r2-0.420; p <0.001 HDF) and delta-Fet-A concentrations by the delta-Alb concentration (r20.482; p < 0.001 HD and r2 0.396; p = <0.001 HDF) of one dialysis session in both groups.
Conclusions: Calcification propensity score is significantly reduced by HD and HDF sessions as measured by transition time from primary to secondary CPP levels, but HD and HDF patients present with same baseline vascular calcification risk values predialysis. Phosphate clearance during dialysis strongly and favourably influences T50. These results deserve further studies to identify the best strategy to improve calcification risk.