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저칼슘 혈액투석액이 관상동맥 석회화에 미치는 영향에 관한 1년간의 무작위 전향적 연구

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Low Calcium Dialysate and Progression of Coronary Artery Calcification in Patients on Chronic Hemodialysis; A 1-year Randomized Trial

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Background: Coronary artery calcification (CAC) has been shown to be a significant predictor of cardiovascular mortality and morbidity in hemodialysis (HD) patients. Some concern regarding the calcium loading is raised as an inducer of CAC. We hypothesized that lowering of dialysate calcium levels would result in decreased the progression rate of CAC with compared to that of standard calcium dialysate.

Methods: Seventy-six HD patients were randomized to receive low calcium dialysate (LCD; 1.25 mmol/L, n=36) or continue on standard calcium dialysate (SCD; 1.5 mmol/L, n=40) for 12 months. The 64-slice multidetector computed tomography was performed at entry into the study and again at 12 months to calculate coronary artery calcium scores (CACS). Biochemical data were evaluated every 3 months.

Results: Baseline demographic or clinical characteristics were not different between two groups. Serum calcium, phosphorus and calcium x phosphorus product at baseline, 3, 6, 9, 12 month were similar in both group. However, intact-PTH levels of LCD group showed an increase at 3 month and maintained higher thereafter. At 12 month, the CACS significantly increased in LCD group and not at all in SCD group (LCD: mean 425.1 at baseline vs 605.6 at 12 months, p=0.001, SCD: mean 334.4 vs 407.3, p=0.1, between group p=0.4). There was no difference in doses of a calcium-based phosphate binder and the frequency of intradialytic hypotension between two treatments.

Conclusion: Use of LCD appears to be associated with more progression of CAC than use of SCD. While the exact mechanisms accounting for this result cannot be ascertained, increased serum PTH levels in LCD group might have influenced on the progression of CAC. However, a larger study should be undertaken to confirm these results.

Key Words: 투석, 칼슘, 혈관 석회화
Hemodialysis, Calcium, Coronary calcification