

만성신부전 환자에서 혈관 석회화와 골밀도

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Vascular Calcification and Bone Mineral Density in Non-Dialysis Patients with Chronic Kidney Disease State 5

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Background: Vascular calcification (VC) is highly correlated with cardiovascular disease in chronic kidney disease (CKD) and is inversely correlated with bone mineral density (BMD). Few studies have investigated the VC in the predialysis CKD population, with associated measurements of BMD. We evaluated the relationship between VC and BMD, in predialysis patients with CKD stage 5.

Methods: We performed a retrospective study with 43 predialysis CKD 5 (GFR <15 ml/min/1.73m²) patients. We analysed the non-contrast abdominal computed tomography (CT) scans of abdominal aorta from which the VC scores were determined. BMD at the spine, femoral neck, 33% radius, ultradistal radius was assessed by dual-energy X-ray absorptiometry (DEXA) scans.

Results: Patients were 58.3±15.7 years of age, 51.2% males, 55.8% diabetics. Mean estimated GFR was 8.4±3.4 ml/min/1.73m² and mean aortic VC score 247.2±171.2 Housfield units, with 72.1% of subjects having some aortic VC present. In univariate linear regression analysis, aortic VC number correlated positively with age (r=0.682, p<0.001), eGFR (r=0.369, p=0.015), DM (r=0.476, p=0.001) and smoking (r=0.334, p=0.028). Increasing aortic VC scores was positively associated with age (r=0.761, p<0.001), eGFR (r=0.421, p=0.005) and DM (r=0.651, p=<0.001). In the multivariate regression analysis, age and smoking were significantly associated with aortic VC numbers, whereas age and DM were associated with aortic VC scores. Z-score of lumbar spine showed a strong positive correlation with aortic VC scores (r=0.454, p=0.001). However, no significant correlation was between Z-score of other sites and aortic VC. The mean Z-scores at all sites were within 1 SD and there was no significant difference in bone density of each sites.

Conclusion: There is a high incidence of aortic VC in predialysis CKD 5 patients, worse with increasing age, diabetes and smoking. Aortic VC is positively (likely false) correlated with BMD of lumbar spine. However, aortic VC is not significant correlated with BMD of cortical bone.

Key Words: 만성신부전, 혈관석회화, 골밀도

Chronic kidney disease, Vascular calcification, BMD