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투석환자에서 전산화 단층촬영 상의 관상동맥 석회화 지수와 골밀도 검사상의 T-score의 예측인자로서 단순방사선 촬영상 복부 대동맥 석회화 지수

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Abdominal Aortic Calcification Score on Plain Radiograph as a Predictor of Coronary Artery Calcification Score on Computed Tomography and T Score on BMD in Dialysis Patients

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Not only coronary artery calcification scores (CACS) on computed tomography (CT) but also several VC scores on plain radiographs can predict cardiovascular events. However, there is no study about the correlation between CACS on CT and VC scores of several sites on plain radiographs. Therefore, we evaluated which VC scores among several VC scores on plain radiographs are a predictor of CACS on CT in dialysis patients. We also investigated the association between VC scores and bone mineral density (BMD). We conducted this single center cross-sectional study from March 2013 to September 2014. We checked the plain radiographs of the feet, hands, pelvis, and lateral lumbar spine and estimated the VC scores. CACS on CT and BMD were evaluated. We defined severe CACS as CACS >1000. Testosterone was measures in male and FGF-23, fetuin-A, osteoprotegerin (OPG) and receptor activator of NF-kB ligand (RANKL) were analyzed with ELISA. The mean ages of 61 enrolled dialysis patients including 38 hemodialysis (HD) patients and 23 peritoneal dialysis (PD) patients were 58.6±10.2 years and their dialysis vintages were 50.1±36.8 months. The prevalence rate of significant VC was 75.4% and prevalence rate of severe CACS was 26.2%. The ratio OPG to RANKL (p=0.040) and fetuin-A levels (p=0.046) were higher and FGF-23 (p=0.013) was lower in PD patients than HD patients. The OPG levels were higher in patients with severe CACS (p=0.019) and significant VC (p=0.009). Patients with AAC score ≥5 had lower T score of both wrist and hip than patients with AAC score <5. CACS is positively correlated with AAC score (r=0.639, p<0.001), VC score of the hands and pelvis (r=0.494, p<0.001), medial artery calcification of the feet (r=0.300, p=0.026), OPG (r=0.418, p=0.005) and OPG/RANKL (r=0.339, p=0.037). CACS is negatively correlated with HDL (r=-0.309, p=0.022). AAC score is negatively correlated with T score of both wrist (right: r=-0.286, p=0.027) and hip (right: r=-0.259, p=0.045) on BMD. Testosterone is positively correlated with T score of left hip (r=0.427, p=0.029) on BMD. AAC score (B=59.4, C.I.=18.3-100.6, p=0.006) and VC score of the hands and pelvis (B=225.8, C.I.=69.7-381.8, p=0.006) on plain radiographs were independently associated with CACS on CT. AAC score among several VC scores on plain radiographs is the most reliable predictor of CACS on CT and T score on BMD in dialysis patients.

Key Words: 혈관 석회화, 관상동맥 혈관 석회화, 투석
Vascular calcification, Coronary artery calcification, Dialysis