

## 혈액투석 환자에서 혈관석회화 점수와 혈관경직, 염증, 영양상태와의 상관관계

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### Vascular Calcification Scores on Plain Radiographs of Hands and Pelvis is Associated with Arterial Stiffness, Inflammation, Nutrition in Hemodialysis Patients

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**Background:** Vascular calcification(VC) have been shown to independent predictors of cardiovascular mortality in hemodialysis(HD) patients. Various VC scores have been evaluated in hemodialysis patients using plain radiographic films of the pelvis and hands. The presence of VC in HD patients is associated with increased stiffness of arteries. The purpose of this study was to analysis the association of VC and arterial stiffness, inflammation, nutrition in HD patients.

**Methods:** We studied for 101 stable HD patients. All patients underwent both hands and pelvis X-ray. All patients were carried out to measurement of the carotid-femoral pulse wave velocity (PWV), the ankle brachial index (ABI) and augmentation index (AI). The presence of calcifications were analysed as a score (0 to 8) according to the number of arterial sites with calcifications on both hands and pelvis X-ray. Laboratory tests such as albumin, calcium, phosphate, iPTH, C-reactive protein, homocysteine, lipid profile were measured.

**Results:** Sixty of 101 patients (Diabetes 48 patients) were male. The mean age was  $55.7 \pm 13.2$  years and the mean HD duration was  $185 \pm 55.8$  months. The study patients were grouped according to VC scores to three groups. Group 1 (61 patients) was not investigation of VC and group 2 (25 patients) had VC score of 1 to 4 and group 3 (14 patients) had VC score of 4 to 8. The serum albumin had significant negative correlation with C-reactive protein and VC scores ( $p < 0.05$ ). The comparisons of different groups showed that the PWV and the ABI of group 3 were significantly increased than group 1 and 2 ( $p < 0.05$ ). There was not significant difference of AI among three groups. C-reactive protein and homocysteine were not significant difference among three groups. There was positive correlation between C-reactive protein and PWV ( $p < 0.05$ ) and not correlation between homocysteine and PWV.

**Conclusion:** The presence of vascular calcifications in HD patients may be associated with increased arterial stiffness, inflammation and nutrition. The plain X-ray of both hands and pelvis is a useful technique associated with arterial stiffness in HD patients. Hence, we thought that VC scores of the pain X-ray of hands and pelvis may be important for estimate of cardiovascular diseases and mortality in HD patients.

**Key Words:** 혈관석회화, 혈액투석, 동맥경직

Vascular calcification, Hemodialysis, Arterial stiffness