

복막 투석 환자에서 혈관 경직도를 예측하기 위한 단순 방사선 촬영 혈관 석회화 방법의 비교

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Comparison of Vascular Calcification Scoring Systems using Plain Radiographs to Predict Vascular Stiffness in Peritoneal Dialysis Patients

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Background: Vascular calcification is associated with arterial stiffness and cardiovascular mortality in dialysis patients. The use of simple and inexpensive methods to evaluate vascular calcification is practically required. The objective of this study is to compare predictability of two different vascular calcification scoring systems using plain radiographs in peritoneal dialysis (PD) patients.

Methods: We enrolled 79 PD patients, aged 49.6 ± 13.4 years (mean \pm SD) and with dialysis duration of 28.5 (7–56) months (median, inter-quartile range). At baseline, age, pulse pressure (PP), diabetes, serum albumin, calcium, phosphorus, intact parathyroid hormone, high-sensitivity C-reactive protein, residual renal function and peritoneal protein concentration (PPC) were included in association analysis with aortic stiffness represented by heart-to-femoral PWV (hfPWV). Simple vascular calcification (SVC) score was evaluated from plain radiographs of the pelvis and both hands. Abdominal aortic calcification (AAC) score was measured from lateral lumbar spine radiographs. Correlation analysis and the receiver operating characteristic (ROC) curve analysis were used to evaluate predictive power in relation with aortic stiffness.

Results: The hfPWV revealed a correlation with SVC score ($r=0.374$, $p=0.001$) and AAC score ($r=0.338$, $p=0.002$), as well as age, diabetes, PP, serum albumin, and PPC. After controlling confounding factors affecting hfPWV, SVC score ($r=0.254$, $p=0.035$) independently predicted hfPWV. AAC score ($r=0.166$, $p=0.174$) failed to prove a significant correlation with hfPWV. In the ROC curve analysis, area under the curve (AUC) of SVC score was 0.702 with 57.9% of sensitivity and 86.7% of specificity ($p=0.008$). AUC of AAC score was 0.685 with 78.9% of sensitivity and 59.3% of specificity ($p=0.0131$). The two AUROC's were not significantly different. Although not significant ($p=0.263$), the combination of SVC score and PPC was more predictable for arterial stiffness (AUC 0.811) than any of the two parameters alone.

Conclusion: It is assumed that two vascular calcification scoring system employed in our study using simple radiographs have equivalent predictability for vascular stiffness. Moreover, the combination of vascular calcification score and peritoneal protein clearance can be more useful as a screening test for vascular stiffness.

Key Words: 혈관경직도, 석회화, 복막투석

Vascular Stiffness, Calcification, Peritoneal dialysis