

만성신부전 환자에서 말초혈관 석회화의 예측인자로서 iPTH의 유용성

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Low iPTH can Predict Peripheral Vascular Calcification in ESRD Patients in ESRD Patients

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Background: Cardiovascular diseases are most common cause of morbidity and mortality in patients with end stage renal disease and frequently associated with vascular calcifications (VC) and arterial stiffness. In addition to high turnover bone disease, there is substantial evidence that low levels of serum intact PTH (iPTH) is also associated with vascular and cardiac calcium deposition and subsequent increased cardiovascular risks. The objective of this study was to evaluate the association of iPTH levels with simple vascular calcification score (SVCS), arterial stiffness and also to identify risk factors contributing to VC and arterial stiffness in dialysis patients.

Methods: 198 dialysis patients were included [105 hemodialysis (HD) and 93 peritoneal dialysis (PD), 99 males and 99 females, 42.4% diabetes mellitus (DM), 66.7% hypertension (HTN), mean age: 56.2 year, dialysis duration: 50.7 months]. SVCS was obtained by X-ray of both hands and pelvis. Brachial ankle-pulse wave velocity (ba-PWV) and other biochemical parameters were also measured.

Results: Severe VC (SVCS \geq 3) was observed from 54 patients (27.3%, 22 in PD patients, 32 in HD patients). When patients were divided into three groups according to serum iPTH levels (low iPTH: $<$ 150, intermediate iPTH: 150 $<$ and $<$ 400, high iPTH: $>$ 400 pg/mL), low iPTH ($<$ 150) patients were older and showed significantly higher SVCs, higher pulse pressure and baPWV, more prevalent DM and HTN. In multivariate analysis, DM and low iPTH were independent risk factors that predict severe VCs (P $<$ 0.001). Same results were also found in the analyses performed on each subgroup (HD or PD). In addition, older age, higher diastolic BP, higher CRP, the presence of DM, HTN, and severe VC were identified as independent predictors of increased baPWV. We also observed that VCs determined by simple X-ray can further predict the co-existence of CACs in PD patients.

Conclusion: A low iPTH and the presence of DM are thought to be independent risk factors for predicting VCs in both HD and PD patients, and simple VCs can further predict the increased arterial stiffness that ultimately might contribute to increased cardiovascular morbidity and mortality. Further studies exploring mechanisms involved in bone turnover status and vascular calcification are warranted to develop preventive and therapeutic strategies.

Key Words: 부갑상선호르몬, 혈관석회화, 심혈관합병증 위험도

iPTH, Vascular calcification, Cardiovascular risk