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CKD & associated complications

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The relation between sclerostin, peripheral vascular calcification, and cardiovascular events in ESRD patients

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Background: Sclerostin, a negative regulator of Wnt signaling pathway produced by osteocyte, is a potent regulator of bone metabolism and a novel candidate for the bone vascular axis in chronic kidney disease patients. Although sclerostin is known as an inhibitor of vascular calcification, recent studies demonstrated conflicting results about the association between sclerostin and cardiovascular events or mortality. In this study we tested the association between sclerostin, peripheral vascular calcification, and cardiovascular events in end stage renal disease (ESRD) patient starting peritoneal dialysis.

Methods: In this prospective study, we included 45 ESRD patients admitted to Korea University Anam Hospital for starting peritoneal dialysis. Circulating sclerostin level was measured in all patients before the start of peritoneal dialysis. Simple vascular calcification score (SVCS) was measured using plain radiographic films of both hands and the pelvis. Median follow up period was 36 months.

Results: Higher sclerostin level was associated with male sex, diabetes mellitus, higher left ventricle (LV) mass index, and lower LV fractional shortening in univariate analysis. ESRD patients with severe vascular calcification (SVCS $\geq$3) had significantly higher prevalence of diabetes mellitus. They had higher pulse wave velocity, alkaline phosphatase, and lower cholesterol levels, LV fractional shortening and in multivariate analysis, the presence of diabetes mellitus (OR, 44.59, p=0.023), lower cholesterol levels (OR, 0.94, p=0.032) were independent risk factors predicting severe vascular calcifications. In multivariate Cox regression model, higher pulse wave velocity (HR 1.03, p=0.028) was significant predictor for cardiovascular events. In addition higher sclerostin group (HR 9.82, p=0.094) and lower albumin levels (HR 0.23, p=0.081) display a strong tendency of increased cardiovascular events.

Conclusion: This study showed the possible important role of sclerostin in the development of vascular calcification and cardiovascular events in PD patients. Longer term follow up with larger sample size will be needed to clarify this issue.

Keywords: Sclerostin, Peripheral vascular calcification, Cardiovascular events, ESRD patients