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Vascular calcification and incident fracture in patients with end-stage kidney disease

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Objectives: Vascular calcification (VC) is a major component of mineral bone disorders in patients with end-stage kidney disease (ESKD). The presence of VC is associated with low bone volume in ESKD patients. However little is known about the relationship between VC and incident fractures in ESKD patients. This study investigated whether the degree of VC can predict incident fractures in ESKD patients starting dialysis.

Methods: This was a retrospective cohort study including 595 incident dialysis patients from a single center. The aortic calcification index (ACI), an estimated of abdominal aortic calcification, was calculated by abdominal computed tomography as a measure of VC. Patients with ACI in the upper tertile range were considered to have high ACI (>25.8). The occurrence of fracture was assessed as study outcome. The association between high ACI and incident fracture was analyzed.

Results: During a median follow-up duration of 34.7 (0.03 – 147.5) months, 74 patients (12.4%) developed fracture. The fracture-free survival rate was significantly lower in patients with high ACI compared to those with low ACI ($P < 0.001$). In multivariable Cox proportional hazard model, the high ACI was associated with incident fracture (adjusted hazard ratio, 1.89; 95% confidence interval, 1.13– 3.14; $P = 0.015$).

Conclusions: In conclusion, the degree of VC at dialysis initiation independently predicted higher risk of incident fracture in ESKD patients.