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Relationship between blood myostatin levels and abdominal aortic calcification in patients with dialysis patients

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Objectives: Myostatin which is a member of the transforming growth factor-β superfamily, regulates synthesis and degradation of skeletal muscle protein and it is up-regulated in the skeletal muscle of chronic kidney disease (CKD) patients. There are few studies on relationship between myostatin levels and vascular calcification (VC), important risk factors for cardiovascular disease in CKD. The aim of this study was to assess the association between serum myostatin levels and VC in patients with dialysis.

Methods: In this cross-sectional study, 71 outpatients undergoing dialysis were included. We checked several plain radiographs (hands and pelvis [HP], feet, and lateral lumbar spine). Serum myostatin levels were determined by commercially available enzyme-linked immunosorbent assay and divided by median for analysis.

Results: Our study included 37 hemodialysis patients and 34 peritoneal dialysis (PD) patients with a median age of 59.0 years and a median myostatin level of 4991.4 pg/mL. Patients with lower myostatin levels were older and had a higher proportion of men and PD than those with higher myostatin levels. The proportions of patients with abdominal aortic calcification (AAC) score ≥5 were significantly higher in patients with lower myostatin levels than those with higher myostatin levels, however, HP score ≥3 and the presence of feet calcification were no significantly different in both groups. The median myostatin level for patients with AAC scores ≥5 was 4073.5 pg/mL, whereas that for AAC scores <5 was 5838.6 pg/mL. Age and AAC scores showed a significantly negative correlation with myostatin levels. Lower myostatin levels were independently associated with higher AAC scores after adjustment for age, gender, DM, dialysis vintage, dialysis modality, and OPG levels.

Conclusions: Lower serum myostatin levels were associated with higher AAC scores in dialysis patients. Further studies are necessary to determine the significance of measuring serum myostatin level in patient with dialysis.