Association between mortality and abdominal aortic calcification and their progression in hemodialysis patients

To the Editor:

Recent reports suggest that cardiovascular (CV) events are associated with vascular calcification (VC) on plain radiographs. Kidney Disease Improving Global Outcomes (KDIGO) recommends that lateral abdominal radiography can be used to detect the presence or absence of VC [1]. A previous report showed that an abdominal aortic calcification (AAC) score of ≥ 7 on lateral abdominal radiography was well correlated with a coronary artery calcium score of ≥ 100 on electron beam computed tomography [2]. Another report showed that the middle to highest tertile AAC score of ≥ 5 was associated with a 50% increase of CV events compared with the lowest tertile AAC score of < 5 in dialysis patients [3]. Recently, Kwon et al [4] showed that an AAC score of > 8 predicted higher mortality and CV events in hemodialysis patients. I fully understand the authors’ opinion to determine a cut-off value of 8 based on the data of mortality. However, optimal AAC score cutoff values for CV events should be slightly lower than cutoff values for mortality because CV events frequently occur and are an important issue related to morbidity, such as intradialytic hypotension in hemodialysis patients.

The authors reported that AAC progression was found in 68% of patients with a follow-up duration of 3 years. VC on plain radiographs definitely progresses, and the progression of aortic calcification on plain radiographs is also related to an increased risk of mortality in dialysis patients. Approximately one-third of dialysis patients show VC progression on plain chest X-rays within 1–2 years compared to baseline [5]. To acquire more information regarding the harmful impact of AAC progression, I would like to suggest that the authors should precisely define AAC progression such as increases of AAC score and evaluate the risk of CV events or mortality according to AAC progression. Additionally, the authors proved that corrected serum calcium concentration was partially related to AAC progression. As the authors mentioned [4], evaluations of total calcium load and total dose of active vitamin D supplementation resolve the questions about the effect of calcium on AAC progression and help clinical practice. Nevertheless, this study supports that monitoring of VC progression by following plain radiography is a cost-effective tool for quality care of dialysis patients.

Conflict of interest

The author declares no conflict of interest.

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In Reply:

We appreciate your interest in our article entitled “The association between mortality and abdominal aortic calcification (AAC) and relation between its progression and serum calcium concentration in chronic hemodialysis patients” [1]. Vascular calcification, including aortic calcification, is highly prevalent in dialysis patients [2], and hyperphosphatemia should be a major stimulus for vascular calcification [3]. However, several other clinical factors such as hypercalcemia and elevated calcium x phosphate product are also known to be associated with progression of arterial calcification in dialysis patients [4].

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We agree with your opinion regarding our report on the association of AAC and the mortality and its progression with serum calcium concentration [1]. What we established was the optimal AAC cutoff score for predicting mortality, not cardiovascular events. Thus, it cannot be used for predicting the cardiovascular events. What was not clearly defined in our study was the progression of AAC. This issue might have been resolved by comparing the plain radiographs of multiple sites including chest, abdomen, pelvis, hand, and lower extremities, as in another study [5].

**Conflict of interest**

None.

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