Reviewer’s report

Title: Vascular calcification on plain radiographs is associated with carotid intima media thickness, malnutrition and cardiovascular events in dialysis patients: a prospective observational study

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Reviewer: Teresa Adragao

Reviewer’s report:

My main comments to this article are:

In this study the authors compare three different plain X-ray methods to evaluate vascular calcifications in dialysis patients: the abdominal aortic calcification score, the simple vascular calcification score in pelvis and hands and feet vascular calcification. The authors conclude that significant VC on plain radiograph was associated with CIMT, malnutrition, inflammation, and CV events in dialysis patients. They also have verified in this population an association between low Hb levels and progression of vascular calcification.

1. The authors state that this is the first study to show an association between vascular calcification evaluated by plain X-ray and markers of atherosclerosis. I think that this is true. The concept that calcification may be a marker of atherosclerosis in CKD patients however is, however, not new. There is, at least, another study that has shown an association between valvular calcification with inflammation, carotid atherosclerosis and arterial calcification in ESRD. This study, in my opinion should be added to the references: Wang AY, Ho SS, Wang M et al. Cardiac valvular calcification as a marker of atherosclerosis and arterial calcification in end-stage renal disease. Arch Intern Med. 2005 14;165(3):327-32.

2. The evaluation of calcification progression using a plain X-Ray method is, in my opinion difficult because the method employed is semi-quantitative and strongly dependent of the observer. To my knowledge there is only one published study that has evaluated progression calcification in dialysis patients: vascular calcification was evaluated in aortic arch and progression was associated with higher risk of mortality. (Noordzij M, Cranenburg EM, Engelsman et al. Progression of aortic calcification is associated with disorders of mineral metabolism and mortality in chronic dialysis patients. Nephrol Dial Transplant. 2011;26(5):1662-9). This study deserves to be referred.

3. Probably it would be interesting to show in a table (similar to table 1) the univariate analysis comparing the factors associated with progression of vascular calcification.

4. In multivariate analysis the unique factor associated with progression of VC is low Hb levels. This should be discussed more profoundly. Low Hb levels may be a marker of inflammation, malnutrition, Epo resistance, etc and I am not sure that the correction of Hb should decrease VC progression.
5. Have you analysed the effect of progression of VC in survival?

6. In multivariate analysis besides Hb and age, probably you should also include albumin or CRP and diabetes. I think that you should only include one Hb level and not 3 Hb levels. The multivariate analysis should also be presented in a table.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests