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# Analysis of Associations between Vascular Calcification of Vascular Access, Coronary artery calcium score and Access Survival Using Non-contrast arm CT scan

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**Objectives:** Vascular calcification is the major contributor of mortality and morbidity in end-stage renal disease (ESRD) patients. In this study, we investigated whether there is a correlation between Coronary artery calcium score (CACS) and quantified vascular calcification (VC) of the arm including vascular access and whether VC increases the frequency of intervention.

**Methods:** ECG gated, non-contrast arm CT scan including vascular access and the coronary vessel was taken. Later, CACS and VC were measured by using Aquarius Ver. 4.4.12 simulating the Agatston Method. We examined if the subjects with CACS>400 was higher in the group of VC>500, a cutoff of the highest tertile of VC. Survival analysis according to VC groups was also performed.

**Results:** In the total 77 patients, there were 44 males (57.1%), and the mean age was 63.9 11.0 years. The median vintage of hemodialysis was 49.4 [31.5, 99.2] months. When dividing the patients into two groups based on VC 500 (lower VC vs. higher VC), there were no differences between the 2 groups in sex, age, ESRD etiology, and type of vascular access. However, the vintage was significantly older in higher VC group. Median VC and CACS were higher in the higher VC group (VC, 173[75,283] vs. 1392 [791, 3368], P<0.001; CACS, 355 [0, 339] vs. 451 [76, 2430], P=0.003), and the ratio of the subjects with CACS>400 was higher (22% vs. 51.9% P=0.008). Meanwhile, the intervention and survival analysis were not significant in 2 groups.

**Conclusions:** We quantified the VC using CT and found for the first time that it is associated with CACS. Considering that CACS is closely related to the cardiovascular outcome, VC may also be suggested as a new biomarker to predict the outcome of ESRD patients.