SA-PO161

Vascular Calcification Is Associated With Fetuin-A and Cortical Bone Microarchitecture in CKD Patients

**Background:** Nephrolithiasis is associated with bone loss and cardiovascular disease as well as vascular calcification (VC), reflecting abnormal extracellular calcium deposition. Fetuin-A (Fet-A) acts as a potent inhibitor of ectopic mineralization. The aim of the present study was to evaluate the prevalence of VC in stone formers (SF) compared to non-stone formers (NSF) and to investigate the relationship of Fet-A and bone microarchitecture with VC among SF.

**Methods:** Post-hoc analysis of a cross-sectional trial that evaluated bone microarchitecture parameters by high-resolution peripheral quantitative computed tomography (HR-pQCT) in young SF. Abdominal aortic calcification (AAC) was assessed as a surrogate marker of VC, using computed tomography in SF and in age-, sex- and BMI-matched NSF (potential living kidney donors). The association of AAC with serum Fet-A, measured in SF stored blood samples, and with HR-pQCT parameters and other factors was studied using multivariable logistic regression analysis.

**Results:** A total of 62 SF (age 38.0 [28.0-45.3] years) and 80 NSF (40.0 [37.0-45.8] years) were included. There was no statistically significant difference in AAC scores between SF (5.8 ± 0.8 %) and NSF (5.6 ± 0.7 %, p = 0.27). When dividing SF according to their mean value of AAC score, below <5.8% (n=33) or above 5.8% (n=29), SF with higher AAC had significantly higher BMI and tibial cortical porosity (ClPo) and significantly lower serum HDL, klotho, Fet-A and eGFR. Urinary calcium did not differ between groups but fractional excretion of phosphate was higher in SF with higher AAC. Upon multivariate regression analysis, BMI (β 0.31, p=0.01), serum Fet-A (β -0.29, p=0.02) and tibial ClPo (β 0.26, p=0.03) were independently associated with AAC (Table 1).

**Conclusions:** This study demonstrates associations of reduced circulating Fet-A levels and higher tibial porosity with AAC, supporting Fet-A as a central mediator in the kidney-bone-vascularity axis.

**Table 1. Univariable regression using AAC Score as dependent variable**

| Variable   | Coefficient | p-Value |
|------------|-------------|---------|
| BMI        | 0.31        | <0.01   |
| Serum Fet-A| -0.29       | <0.01   |
| Tibial ClPo| 0.26        | <0.01   |

SA-PO162

Breast Artery Calcification as a Surrogate Marker for Vascular Calcification in CKD

**Background:** Arterial calcification is common in patients with chronic kidney disease and contributes to excess cardiovascular mortality. Breast artery calcification could be a potential marker of medial vascular calcification in CKD but is limited for screening purposes. This study aimed to determine the relationship between BAC and associated factors in CKD patients and investigate the relationship between BAC and associated factors in CKD patients.

**Methods:** A total of 103 women aged 40-80 years with estimated glomerular filtration rate (eGFR) of less than 90 mL/min/1.73 m2 with digital mammography, lumbar spine radiographs, and non-contrast computed tomography was included. BAC score (0-12) was calculated by the number of calcified vessels, the longest length and the density of calcification. Cardiovascular disease risk factors and laboratory profiles were assessed for each patient.

**Results:** BAC was identified in 8 (13.8%) in CKD stage II, 26 (56.5%) in CKD stage III, and 26 (76.5%) in CKD stage IV (P<0.017). Patients with the presence of BAC were significantly older, had lower GFR, higher hemoglobinA1C and increased AAC score compared to those without calcification. Upon multivariate analysis, including the traditional cardiovascular risk factors, the presence of BAC was significantly associated with lower estimated GFR (adjusted HR=5.67, 95%CI 1.78-17.83) and older age (adjusted HR=1.009, 95%CI 1.02-1.17). BAC increased in sensitivity (85.7%) and accuracy (67.6%) in comparison with coronary calcification score (CAC) in patients with GFR less than 30 mL/min/1.73 m2. BAC and AAC scores showed significant implications of CAC score in which area under curve (AUC) were 0.67 (95% CI 0.57-0.78) and 0.84 (95% CI 0.76-0.92), respectively. Remarkably, the combination of AAC and BAC scores showed better CAC score prediction (AUC 0.88, 95% CI 0.81-0.96).

**Conclusions:** The presence and severity of BAC is markedly increased in advanced CKD and it is significantly associated with older age and lower GFR. A combination of BAC and AAC performed good performance in predicting coronary calcification, especially in advanced CKD.

**Table 1. Univariable regression using AAC Score as dependent variable**

| Variable   | Coefficient | p-Value |
|------------|-------------|---------|
| BMI        |             |         |
| Serum Fet-A|             |         |
| Tibial ClPo|             |         |

Key: TH - Thursday; FR - Friday; SA - Saturday; OR - Oral; PO - Poster; PUB - Publication Only

Underline represents presenting author.