Role of NaF-PET/CT in Detecting and Quantifying Subclinical Global Cardiac Atherosclerosis and its Association with Blood Pressure in Non-Dyslipidemic Individuals.

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Background: We used 18F-sodium fluoride (NaF) to assess early atherosclerosis in the global heart in asymptomatic individuals with a coronary calcium score of zero and without a formal diagnosis of hypertension. We hypothesized that these individuals might present with subclinical atherosclerosis that correlates with systolic, diastolic and mean arterial pressure (SBP, DBP, and MAP).

Methods: We identified 20 asymptomatic individuals (41.6 $\pm$ 13.8 years, 8 females) from the CAMONA trial with C-reactive protein $\geq$ 3 mg/L, no smoking history, diabetes (fasting blood glucose <126 mg/dl) and dyslipidemia per the Adult Treatment Panel III Guidelines: untreated LDL <160 mg/dL, total cholesterol <240 mg/dL, HDL >40 mg/dL. All underwent PET/CT imaging 90 minutes after NaF injection (2.2 Mbq/Kg). The global cardiac average SUVmean (aSUVmean) was calculated for each individual. Correlation coefficients and linear regression models were employed for statistical analysis.

Results: Significant positive correlation was revealed between global cardiac NaF uptake and all blood pressures: SBP (r=0.44, P=0.05), DBP (r=0.64, P=0.002), and MAP (r=0.59, P=0.007). After adjusting for age and gender, DBP and MAP were independent predictors of higher global cardiac NaF uptake.

Conclusions: NaF-PET/CT for detecting and quantifying subclinical atherosclerosis in asymptomatic individuals revealed that cardiac NaF uptake correlated independently with DBP and MAP.

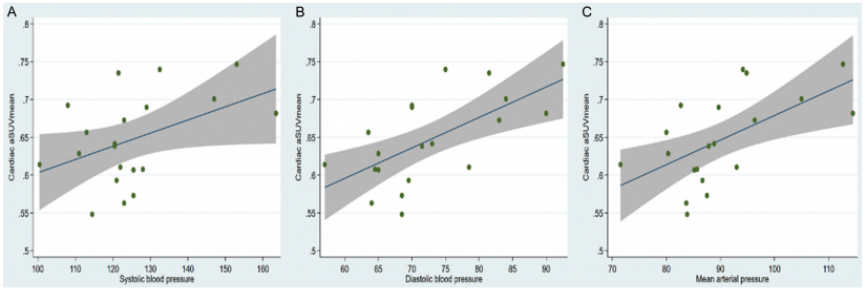

Figure 2. Correlations between cardiac aSUVmean and (A) Systolic, (B) Diastolic, and (C) Mean Arterial Pressure. Significant correlations were present in all three pressures.

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