EXCESS EPICARDIAL ADIPOSE TISSUE IS ASSOCIATED WITH HIGH-RISK CORONARY PLAQUE ON CCTA INDEPENDENT OF RISK FACTORS, CORONARY CALCIUM SCORE AND STENOSIS: RESULTS FROM THE ROMICAT II TRIAL

Poster Contributions
Poster Hall B1
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Session Title: Non Invasive Imaging: CT/Multimodality, Angiography, and Non-CT Angiography
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Background: Epicardial adipose tissue (EAT) is an immunologically and metabolically active fat depot implicated in coronary atherogenesis. The objective was to determine whether EAT volume is associated with high-risk coronary plaque (HRP) features assessed by coronary CT angiography (CCTA) independent of traditional risk factors, coronary artery calcium score (CACS) and coronary artery stenosis.

Methods: We included subjects randomized to the CCTA arm of the Rule Out Myocardial Infarction/Ischemia Using Computer Assisted Tomography (ROMICAT II) trial. On noncontrast CACS CT, two independent readers assessed EAT volume. On the accompanying CCTA, three additional readers assessed for HRP [napkin-ring sign, positive remodeling, low Hounsfield Unit plaque, spotty calcium] as well as stenosis. ROC analysis was employed to find an optimal threshold for EAT volume to predict HRP. In stepwise logistic regression analysis, we determined the association of EAT volume with the presence of HRP and whether this was independent of clinical risk assessment (age, gender, body mass index (BMI), cardiovascular risk factors), CACS and coronary artery stenosis.

Results: Of 467 subjects (mean age 54 ± 8 yrs, 53% male) who underwent CACS and CCTA, 167 (36%) had at least one HRP feature. Coronary artery disease was present in 260 (56%), with stenosis < 50% in 216 (46%) and significant stenosis ≥ 50% in 44 (9.4%) subjects. Coronary artery calcium was present in 217 (47%). EAT volume was significantly higher in those with HRP than in those without HRP (median 123 cm³ vs. 98 cm³, p < 0.001). EAT ≥ 117 cm³ was significantly associated with HRP [univariate odds ratio (OR): 2.86 (CI 1.93 - 4.22), p < 0.001]. This association remained significant [OR 1.71 (CI 1.02 - 2.86), p = 0.042] after adjustment for clinical risk assessment (age, gender, BMI, cardiovascular risk factors), CACS [OR 1.69 (CI 1.49 - 1.91), p < 0.001] and significant stenosis [OR 5.52 (CI 1.71 - 17.9), p = 0.004].

Conclusion: Greater volumes of EAT are associated with HRP independent of traditional risk factors, CACS and stenosis. This observation supports the possible local influence of EAT on coronary atherogenesis.