EXPLORING THE RELATIONSHIP BETWEEN EPICARDIAL AND INTRA-THORACIC ADIPOSE TISSUE AND VASCULAR CALCIFICATIONS IN TYPE 1 DIABETES: EPIDEMIOLOGY OF DIABETES INTERVENTIONS AND COMPLICATIONS

Poster Contributions
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Background: Patients with type 1 diabetes (T1D) are more likely to develop cardiovascular disease than people without diabetes. Coronary artery calcium (CAC), aortic valve calcification (AVC), and descending aorta calcification (DAC) have been identified as manifestations of clinically important degrees of atherosclerosis in diabetic and non-diabetic individuals. In addition, several studies indicate that cardiac fat - especially epicardial adipose tissue (EAT) - is an independent predictor of severity of coronary atherosclerosis. This study was undertaken to examine whether and to what extent cardiac adipose tissue is related to coronary and non-coronary calcification in patients with long-standing T1D.

Methods: We performed EAT and intra-thoracic adipose tissue (IAT) measurements on 100 T1D subjects who underwent non-enhanced cardiac CT scans. EAT and IAT were measured manually on axial images starting from 10 mm above the left main coronary artery origin to the apex of the heart. Volume analysis software was then used to discern fat using a threshold of -190 to -30 Hounsfield units. Spearman correlations between CAC, AVC, DAC, and EAT were performed. The correlations were adjusted for gender and the relationship between EAT and CAC was adjusted for age.

Results: 78 males and 22 females with T1D who ranged in age from 32-57 yrs were studied. CAC was significantly correlated with age (r = 0.37, p = 0.0001) and EAT (r = 0.24, p = 0.0149), while EAT was not significantly correlated with AVC and DSA. Moreover, IAT was not associated with the extent of any of the calcified vascular lesions. Evaluating association between EAT and IAT with CAC, DAC and AVC only showed the high correlation between age and geometric mean ratio of CAC (scores, 1.40; 95% C.I. 1.16, 1.68; p = 0.0005).

Conclusion: In the patients with T1D, higher EAT directly correlated with higher CAC score, but no correlation between EAT with AVC or DAC exists. IAT did not show any significant correlation with CAC, AVC or DAC.