Abstract: P5302

**Significant correlation of visceral adiposity and adipocytokines with arterial inflammation in genetic dyslipidaemias**

**Authors:**
I Koutagiar¹, K Toutouzas¹, AS Antonopoulos¹, I Skoumas¹, G Benetos¹, A Georgakopoulos², EK Oikonomou³, P Kafouris², N Pianou², A Miliou¹, C Pitsavos¹, D Tousoulis¹, C Antoniades³, CD Anagnostopoulos², ¹Hippokration General Hospital, First Department of Cardiology - Athens - Greece, ²Academy of Athens Biomedical Research Foundation, Experimental Surgery, Clinical and Translational Research Centre - Athens - Greece, ³University of Oxford, Radcliffe Department of Medicine - London - United Kingdom of Great Britain & Northern Ireland.

**Topic(s):**
Prevention – Cardiovascular Risk Assessment: Imaging

**Citation:**
Background:
The adipose tissue is now established as a major regulator of cardiovascular status, mediated by the secretion of several bioactive molecules, including adipocytokines. Individuals with genetic dyslipidaemias of either familial combined hyperlipidemia (FCH) or heterozygous familial hypercholesterolemia (heFH) subtype are characterized by accelerated atherosclerosis. Nonetheless, limited data exists on the relationship between adiposity and arterial inflammation, a marker of cardiovascular risk, in this setting.

**Purpose:**
To investigate the relationship between adiposity indices and arterial inflammation evaluated by 18F fluorodeoxyglucose positron emission tomography (PET/CT) in patients with hereditary lipid metabolism disorders.

**Methods:**
Consecutive patients with either FCH or heFH, free of statin therapy, and normolipidaemic individuals underwent PET/CT imaging. Arterial FDG uptake was estimated as the average value of target-to-background ratio (TBR) within aortic and carotid wall. Volumes of subcutaneous adipose tissue (SAT) and visceral adipose tissue (VAT) were measured from CT images between the proximal (cephalic) end of the L1 and distal (caudal) end of the L3 vertebrae by selecting all voxels with attenuation between -190 and -30 Hounsfield Units (HU). Serum adiponectin and leptin levels were measured with ELISA by available commercial kits. For comparisons with arterial TBR, adiponectin and leptin concentrations above and below the 25th percentile, were stratified as high and low, respectively.

**Results:**
In total, 60 individuals (20 FCH, 20 heFH and 20 controls) were included. A modest but significant correlation between SAT volume and arterial TBR (R=0.386, p=0.004) was detected. This relationship did not remain significant after controlling for VAT volume (p=0.303). A strong correlation between VAT volume and arterial TBR (R=0.621, p=0.001) was observed. This relationship remained significant after controlling for SAT volume (R=0.541, p<0.001). Arterial TBR values were higher in individuals with low plasma adiponectin levels (p=0.010). In addition, patients with higher leptin levels exhibited increased arterial FDG uptake compared to subjects with low serum leptin concentrations (p=0.05).
Conclusions:

Abdominal adipose tissue imaging markers and serum adipocytokines correlate with arterial inflammation as assessed by PET/CT in patients with familial dyslipidaemias highlighting the role of abdominal adipose tissue for atherosclerosis progression in this population.