European Atherosclerosis Journal
www.eathj.org
EAJ 2026;1:20-25

The XI Spring Meeting of Young Researchers of the Italian Society of Diabetology (SID), the Italian Society of Geriatrics and Gerontology (SIGG), the Italian Society of Arterial Hypertension (SIIA), the Italian Society of Internal Medicine (SIMI), the Italian Society of Cardiovascular Prevention (SIPREC) and the Italian Society for the Study of Atherosclerosis (SISA)

Ultrasound evaluation of carotid perivascular adipose tissue thickness as a potential marker of atherosclerosis and cardiovascular risk

Francesco Giglioni, Vanessa Bianconi, Elena Cosentini, Filippo Figorilli, Cecilia Colangelo, Martina Corba, Giulia Cellini, Massimo Raffaele Mannarino, Matteo Pirro

Unit of Internal Medicine, Department of Medicine and Surgery, University of Perugia
https://doi.org/10.56095/eaj.v5i1.126
Francesco Giglioni: francesco.giglioni@outlook.it

Aim: Perivascular adipose tissue (PVAT) is widely recongnized as a metabolically active organ that possibly play a role in the development of atherosclerotic cardiovascular (CV) disease. Accordingly, PVAT thickness at different arterial districts could serve as a marker of atherosclerosis and CV risk. The aims of our study were 1) to evaluate the feasibility a non-invasive, ultrasound-based approach for measuring carotid PVAT thickness (cPVATt), and 2) to evaluate the association between cPVATt, carotid atherosclerosis burden, and CV risk.

Methods: We conducted an observational, cross-sectional, pilot study. Carotid PVAT was evaluated bilaterally by ultrasonography using a 10-MHz multifrequency linear probe positioned at the base of the neck in contact with clavicle, perpendicular to the skin and in a transverse orientation. The mean distance between the common carotid adventitia and the sternocleidomastoid muscle anteriorly and the longus colli muscle posteriorly, measured on both the right and the left sides, was used as a cumulative measure of cPVATt.

Results: A total of 465 patients were included in the study. The median value of cPVATt was 0.68 (0.58-0.85) cm. Significant direct correlations emerged between cPVATt and body mass index (r=0.170, p<0.001), waist circumference (r=0.224, p<0.001), neck circumference (r=0.269, p<0.001), uric acid (r=0.106, p=0.031), triglycerides (r=0.095, p=0.048), and hs-CRP (r=0.202, p=0.019). A significant inverse correlation was observed between cPVATt and HDL cholesterol (r=-0.152, p=0.001). No correlation was observed between cPVATt and any measure of carotid atherosclerotic burden. There was a significant increase in cPVATt across CV risk categories (p for trend=0.043).

Conclusions: The present study preliminarly demonstrates the feasibility of an ultrasound approach for assessing cPVAT, the reliability of cPVATt as a measure of adiposity and its potential value as a marker of increased CV risk. However, it does not show any significant correlation between cPVATt and carotid atherosclerotic burden.