Coronary inflammation by computed tomography pericoronary fat attenuation in young male anabolic androgenic steroid users

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Background: The illicit use of anabolic androgenic steroids (AAS) has been associated with diminished cholesterol efflux mediated by HDL, remarkable decrease in high-density lipoprotein (HDL) plasma concentration and subclinical coronary artery disease (CAD). Inflammation is the key to the atherogenic process associated with atherosclerotic plaque vulnerability. The pericoronary mean fat attenuation (pFAM) has emerged as a marker of coronary inflammation and can predict future cardiovascular events, which is measurable from standard coronary computed tomography angiography (CCTA). However, whether AAS abuse has a role in pFAM in young male AAS users is unknown.

Purpose: The aim of this study was to evaluate whether AAS abuse could lead to higher pFAM and premature coronary inflammation in young male AAS users.

Methods: Twenty strength-trained AAS users (AASU) age 29±5 yr, 20 age-matched strength-trained AAS nonusers (AASNU), and 10 sedentary controls (SC) were enrolled in this study. Coronary inflammation was assessed by pFAM-CCTA in the right coronary artery (RCA), left anterior descending artery (LAD) and left circumflex coronary artery (Cx).

Results: pFAM in the RCA was significantly higher in AASU compared with AASNU and SC (−64.59±9.45 vs. −79.21±6.67 vs. −80.97±7.91 Hounsfield Units (HU), respectively, p<0.001). Also, the pFAM in the LAD was higher in AASU compared with AASNU and SC (−72.83±7.21 vs. −79.41±6.72 vs. −80.97±7.72 HU, p=0.006). However, no difference to pFAM in the Cx between AASU, AASNU and SC (−74.30±5.85 vs. −79.77±7.13 vs. −78.19±5.82 HU, respectively, p=0.069) was found.

Conclusion: This study indicates that AAS abuse may be associated with higher pFAM and premature coronary inflammation in the RCA and LAD. The higher pFAM may be linked to early development of CAD in young AAS users.