Abstract: P2545

Long-term use of anabolic-androgenic steroids in male weightlifters is associated with left ventricular systolic dysfunction

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Topic(s):
Substance Abuse and Cardiovascular Disease

Citation:
Background: Illicit use of anabolic-androgenic steroids (AAS) is widespread and has adverse psychological and cardiovascular effects. Few well-powered studies have explored the effect of long-term AAS-use on left ventricular systolic function.

Purpose: To explore the relationship between long-term use of AAS and left ventricular mass and systolic function.

Methods: We included male weightlifters with a history of >1 year of cumulative AAS-use and male weightlifters unexposed to AAS. We performed echocardiography in all and assessed left ventricular mass using 2D echocardiographic linear measurements and Cube formula, left ventricular ejection fraction (EF) ad modum Simpson, and left ventricular global longitudinal strain (GLS) by speckle-tracking echocardiography.

Results: We recruited 100 male weightlifters, 58 of whom were previous or current AAS-users with mean±SD AAS-use of 10.4±7.0 years, and 42 unexposed weightlifters. There were no difference in age (35.5±9.2 vs. 35.3±7.5 years, p=0.8) nor body mass index (BMI) (BMI 31.4±5.0 vs.30.1±3.5, p=0.6) between AAS-exposed and unexposed weightlifters. Compared with unexposed weightlifters, AAS-exposed weightlifters demonstrated thicker interventricular septum (11.2±2.4 vs. 9.2±1.3 mm, p<0.001), thicker left ventricular posterior wall dimension (10.1±2.1 vs. 8.9±1.3 mm, p<0.001), and higher left ventricular mass index (99.7±25.4 vs. 78.4±12.1 g/m2, p<0.001). Both left ventricular EF and left ventricular GLS were decreased in AAS-exposed weightlifters compared with unexposed weightlifters (49±9 vs. 53±6%, p=0.02, and -15.6±2.6 vs. -18.3±2.1%, p<0.001) (Figure).

Conclusion: AAS use in male weightlifters was associated with increased left ventricular mass and impaired left ventricular systolic function. Our results suggest considerable adverse cardiac effects of AAS use, but the results need confirmation in prospective observational trials.
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