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Short Communication

Evolving Cardiovascular Threats: The Impact of Androgenic Anabolic Steroids on Recreational Athletes

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ABSTRACT

The use of Androgenic Anabolic Steroids (AAS) has expanded beyond elite athletes, becoming popular among recreational athletes of various ages and both genders. This widespread use raises significant concerns due to the substantial cardiovascular risks associated with these drugs. This commentary explores the adverse cardiovascular outcomes of AAS use, including direct cardiotoxicity, dyslipidemia, hypertension, and their link to long-term cardiovascular pathology such as coronary artery calcification and left ventricular hypertrophy. It emphasizes the need for increased awareness, targeted research, and public health interventions to mitigate these risks.

Keywords: Androgenic anabolic steroids; Cardiovascular risk; Recreational athletes; Cardiotoxicity; Public health; Dyslipidemia; Hypertension

DESCRIPTION

The profile of Androgenic Anabolic Steroids (AAS) users has evolved, with an increasing number of recreational athletes from diverse backgrounds engaging in the non-prescribed use of these substances. Initially confined to professional sports for performance enhancement, the use of AAS has now permeated a broader demographic, escalating the urgency to address associated health risks, especially cardiovascular complications [1,2].

Mechanisms of cardiovascular risk

AAS are synthetic variations of testosterone, designed to enhance anabolic effects such as muscle growth while minimizing the androgenic effects associated with male sexual characteristics. However, the administration of AAS disrupts the hormonal balance, leading to several adverse cardiovascular effects:

Direct cardiotoxicity: AAS use has been linked to hypertrophy of the left ventricle, which can degrade cardiac function and lead to heart failure [3].

Dyslipidemia: Users often exhibit a detrimental lipid profile, characterized by reduced levels of High-Density Lipoprotein (HDL) and elevated levels of Low-Density Lipoprotein (LDL), fostering the development of atherosclerosis [4].

Hypertension: The prevalence of high blood pressure among AAS users contributes significantly to their increased risk of developing cardiovascular diseases [5].

Recent findings

Emerging research has consistently highlighted the severe cardiovascular risks associated with AAS use. Longitudinal and cross-sectional studies have documented strong associations between chronic AAS use and increased markers of cardiovascular disease, such as elevated Coronary Artery Calcium (CAC) scores [3], which are indicative of atherosclerotic disease. Additionally, structural cardiac changes, including left ventricular hypertrophy and functional impairment, have been observed in AAS users compared to non-users [6,7]. These findings are consistent across different demographics, suggesting that the cardiovascular risks of AAS use are widespread and not confined to traditional populations of bodybuilders and professional athletes.

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Gaps in current knowledge

Despite accumulating evidence of the cardiovascular risks posed by AAS, significant gaps remain in our understanding. Most existing studies focus primarily on male users, with relatively scant data concerning female recreational athletes. Additionally, the long-term cardiovascular outcomes following the discontinuation of AAS use are poorly understood, and there is lack of longitudinal studies tracking these effects over time.

CONCLUSION

The illicit use of AAS presents significant cardiovascular dangers, necessitating increased public health attention and stricter regulatory measures. Healthcare providers should be aware of these risks and consider routine cardiovascular screening for individuals known to use or have used AAS. There is a pressing need for comprehensive research to explore the long-term effects of AAS on cardiovascular health, particularly across genders and following cessation. The growing popularity of AAS among recreational athletes, coupled with their significant health risks, underscores the need for an integrated approach that includes research, clinical management, and public health policy to effectively address and mitigate these emerging challenges.

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