Body Image Disorders and Abuse of Anabolic-Androgenic Steroids Among Men

During the last several decades, the image of the idealized male body in many countries has shifted toward a substantially higher level of muscularity. Bodybuilding competitors, male models, and even children’s action toys (eg, “G.I. Joe”) have become significantly more muscular than their predecessors of the 1960s. Nowadays, young men are constantly exposed to muscular male images on magazine covers, in advertisements, on television, and in movies.

Perhaps as a consequence of these trends, young men have become increasingly concerned with their muscularity, reflected by an increasing prevalence of “muscle dysmorphia,” a form of body image disorder characterized by an obsessive preoccupation with a muscular appearance.1,2 First described in the scientific literature less than 25 years ago, muscle dysmorphia has now become the subject of numerous reports and has been included as an official diagnosis in the American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM 5).2

Approximately 2.2% of US men have been reported to have body dysmorphic disorder, and among these men with body dysmorphic disorder, 9% to 25% have muscle dysmorphia, which would suggest the possibility that hundreds of thousands of US men may have this syndrome.3 Men with muscle dysmorphia describe dissatisfaction with their body size and shape and are preoccupied with the idea that their body is insufficiently muscular; these men show elevated rates of mood and anxiety disorders, obsessive and compulsive behaviors, substance abuse, and impairment of social and occupational functioning.1,3 Most men with muscle dysmophia engage in weightlifting, many of them use dietary supplements, and in 2 studies, 10 of 23 men (44%) and 11 of 24 men (46%) with muscle dysmophia reported lifetime use of anabolic-androgenic steroids (AASs)—the family of drugs that includes testosterone and its many synthetic derivatives.

A recent analysis estimated that 2.9 million to 4.0 million individuals in the United States, nearly all of whom are male, have used AASs at some time in their lives....
persist for years. During AAS withdrawal, hypogonadism may cause some users to develop major depression, leading in some cases to suicidality. Few clinicians are familiar with treating AAS-induced hypogonadism, and clinicians often take an approach of simply advising users to stop these drugs. However, in an attempt to self-treat the highly distressing symptoms of AAS-withdrawal hypogonadism, users frequently resume AAS use, leading to a vicious cycle of dependence.

Supraphysiologic levels of AASs produce apoptotic effects on human neuronal cells, raising the possibility of early-onset dementia in individuals with prolonged high-dose AAS exposure. Additionally, AAS users experience an increased prevalence of nephrotoxic effects; musculoskeletal injuries, especially tendon ruptures; liver toxic effects; and needle-borne infections, such as human immunodeficiency virus and hepatitis C. A recent Endocrine Society Scientific Statement provides references to the growing literature documenting these various effects. 4

The long-term health consequences of AAS abuse, and knowledge of effective strategies to prevent or treat this disorder, remain limited. The lack of studies is partially attributable to the covert nature of AAS use and abuse, which has prevented this problem from receiving the attention of policy makers and funding agencies, who may view AASs simply as a problem of illegal use of these substances in sports. The topic has received little coverage in medical textbooks and, until recently, limited attention in the overall medical literature. Thus, many clinicians may be unaware of AAS abuse by nonathlete weightlifters and may be unprepared to treat patients presenting with AAS withdrawal or with other AAS-induced complications.

Several steps are needed to address the health problems associated with AAS use. Long-term observational studies are essential to determine the prevalence, patterns of abuse, and health risks associated with AAS use. Because clinical trials cannot ethically duplicate the large doses of AASs (often combined with other appearance- and performance-enhancing drugs) used by nonathlete weightlifters, prospective observational studies likely represent the only feasible approach for collecting outcome data on the health risks associated with these drugs. Additionally, randomized trials are needed to assess the effectiveness of integrated multi-pronged therapeutic interventions for treating the adverse effects of AASs and associated drugs, including interventions to address the vicious cycle of AAS-withdrawal hypogonadism, relapse, and dependence. It is important to raise awareness among the public, health care practitioners, and policy makers about the serious health consequences of AASs, the deleterious influence of body image disorders such as muscle dysmorphism, and the potential adverse influence of modern media images that falsely equate masculinity with muscularity.

ARTICLE INFORMATION
Published Online: December 8, 2016.
DOI:10.1001/jama.2016.17441

Conflict of Interest Disclosures: All authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Dr Pope reported receiving consulting fees from Pronatrain; receiving research funding from Genentech, Shire, Surovion, and the National Institute on Drug Abuse; and having testified twice as an expert witness regarding anabolic steroids within the last 3 years. Dr Bhasin reported receiving research grant support from Abbvie, Transition Therapeutics, Eli Lilly and Co, and Takeda; receiving nonfinancial support (drug supplies) from Transition Therapeutics; serving as a consultant to AbbVie, Regeneron, and Novartis; serving as chair of the expert panel that wrote a scientific statement on adverse health effects of performance-enhancing drugs; serving as chair of the American Board of Internal Medicine’s Endocrinology Board; and having a financial interest in Function Promoting Therapies LLC, a company aiming to develop innovative solutions that enhance precision and accuracy in clinical decision making and facilitate personalized therapeutic choices in reproductive health. No other disclosures were reported.

REFERENCES