The Use of Androgens for Doping in Bodybuilding, and Ocular Side Effects: A Case Report

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ABSTRACT

Purpose: The androgenic steroids drostanolone, boldenone, and stanozolol are used off-label by athletes for doping. This is the second case reported in the literature who used these steroids as doping for bodybuilding and developed central serous chorioretinopathy (CSC)

Cased presentation: A man aged 37 years presented with symptoms of unilateral metamorphopsia, slight central scotoma, and vision loss. The anamnesis revealed that the patient used steroids (drostanolone enanthate, boldenone undecylenate and stanozolol) for body building. He was diagnosed as having bilateral CSC. The symptoms were relieved in 2 months with of topical nepafenac treatment. Although the patient discontinued androgen steroids, recurrence of CSC observed 6 months later.

Conclusions: This case is important in that it not only contributes to the ongoing debate in the literature that androgen steroids may be a risk factor for CSC formation, but also draws attention to the fact that in addition to known side effects drugs used for doping may have side effects that have not yet been reported.

Keywords: Androgenic steroids, central serous chorioretinopathy, doping, optical coherence tomography.

INTRODUCTION

The abuse of drugs with doping effect in various sports and bodybuilding is known. The most abused substances are anabolic androgenic steroids and many systemic side effects of these substances, especially cardiogenic, hematological and mental health, have been reported[1]. Central serous chorioretinopathy (CSC) is a retinal disorder characterized by serous detachment of the neurosensory retina in the posterior pole, and focal detachment of retinal pigment epithelium may accompany.[2] Although serous detachment develops idiopathically with the accumulation of focal leakage from choroidal veins in the subretinal region, the pathogenesis of CSC has not yet been clarified.[2]

Although various risk factors have been reported about CSC in the literature, there is a strong association between young males, type A personality, psychologic stress, and corticosteroid use[3]. Researchers in a small number of studies recently emphasized that androgen steroids might have a role in the etiology of CSC. In the present study, we report bilateral CSC in a young man who used additional oral androgen steroids for body building. To our knowledge, this is the second reported case that developed CSC after androgenic steroid use as doping for bodybuilding.

CASE REPORT

A man aged 37 years presented with symptoms of metamorphopsia, slight central scotoma, and impaired vision in the right eye. The patient reported no previous eye problems. Consent was obtained from the patient. This study was approved by the decision of the ethics committee.

Visual acuity was measured using Snellen chart and best corrected visual acuity was 20/40 in the right eye, and 20/20 in the left in the eye. The anterior segment examination and intraocular pressure were normal. Optical coherence tomography (OCT) showed bilateral serous detachment of the neurosensory retina (Figure 1 a, b) and in fundus fluorescein angiography (FFA) a smokestack pattern of leakage was present in the right eye and expanding dot shaped hyperfluorescent leak was present in the left eye

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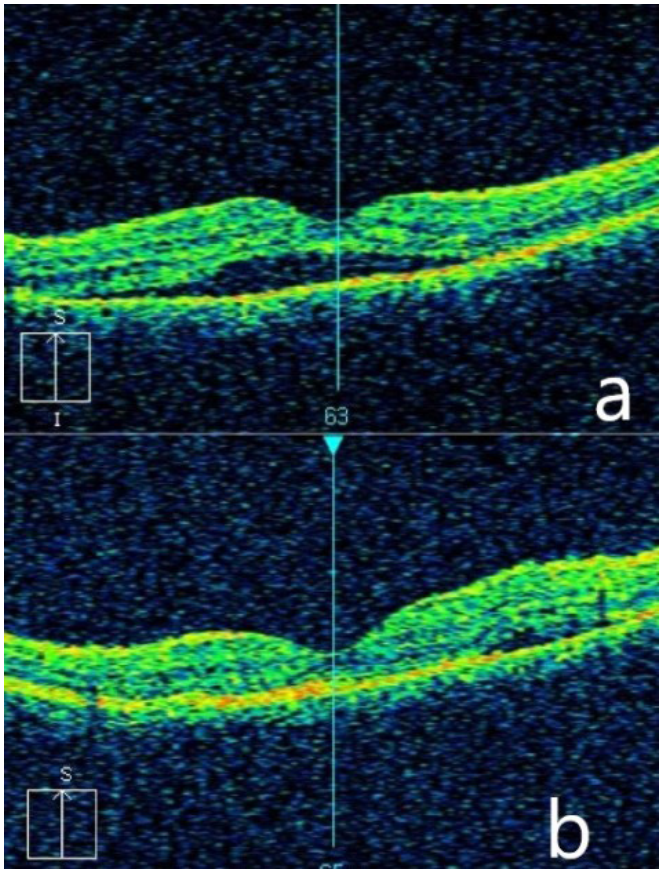

Figure 1 a,b: *Right and left eye macula OCT images of the patient at first visit.*

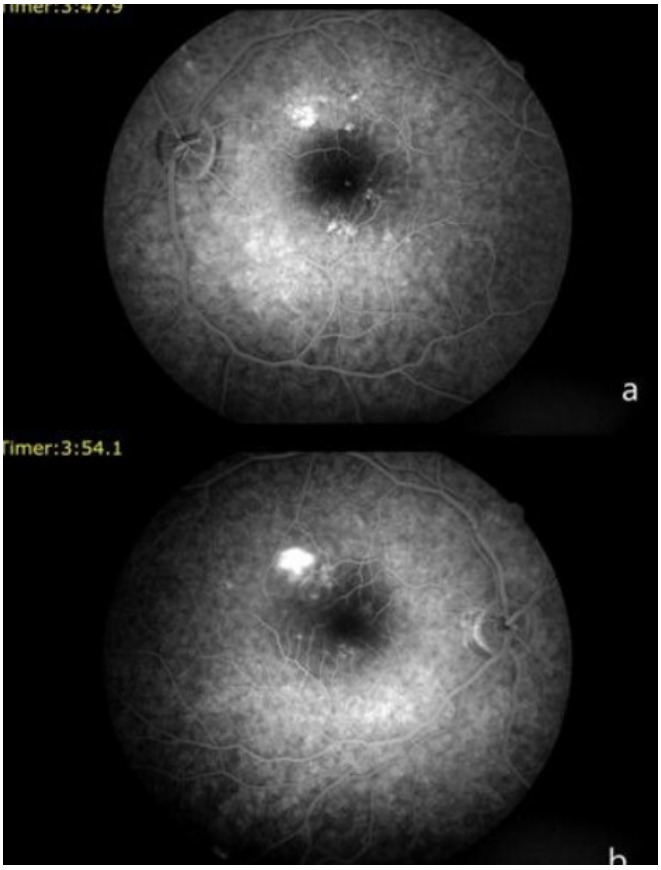

Figure 2 a,b: *Right and left eye fluorescein angiography images of the patient at first visit.*

(Figure 2 a, b). Central scotoma and metamorphopsia were confirmed using Amsler grid test. Type A personality and emotional status were questioned by a psychiatrist and no symptoms were detected. He had no history of hypertension, cigarette or alcohol use. Questioning about the use of medicine revealed that the patient was interested in body building, and used drostanolone enanthate (Drostex®) 250 mg 3 times a week intramuscular (im), boldenone undecylenate (Boldebolin®) 250 mg 3 times a week (im) and stanozolol (Strombafort®) 100 mg per week (im) for 4 months in addition to protein and amino acid reinforcement.

Androgen steroids were discontinued. Nepafenac drops were prescribed for treatment, and he was followed up. The patient continued body building and taking protein and amino acid reinforcements. His vision was approximately 20/20 In the 2nd month check, and OCT and FFA findings were normal. Although the patient discontinued androgen steroids, we saw recurrence of similar symptoms and findings 6 months later. During this attack both eyes developed CSC. The patient's vision in the right eye was 20/25; however, it was 20/20 in the left during recurrence. With the medical treatment, visual acuity and OCT findings improved after 2 months. CSC was not detected at subsequent one-year follow-up.

DISCUSSION

To our knowledge, this is the second case in which androgen steroids used for doping have caused CSC. Except for anabolic steroid use, none of the other known risk factors for CSC development such as type A personality, catabolic steroid use, smoking and alcohol use were present. In our case, CSC was bilateral. Most of the cases reported in the literature related to the use of corticosteroids were bilateral, and it was reported that CSC occur bilaterally especially with long-term corticosteroids use[4]. In our case, despite the discontinuation of androgenic steroids, recurrence was observed. We attributed this to the ability of anabolic steroids to remain in body fluids for up to 12 months after cessation, as reported by Maruer et al.[5]

Many risk factors for CSC whose pathogenesis have not been clarified have been defined in the literature. Patients are mostly aged between 30 and 40 years.[2] Researchers in the literature mainly emphasize higher serum glucocorticosteroid levels due to endogenous hypercorticolism or exogenous glucocorticosteroid

intake.[6,7] Many studies in the literature emphasize the association between local corticosteroid use and CSC development. Researchers reported CSC after administration of inhaled, intranasal, periocular, dermal, and intra-articular corticosteroids.[7,8] Although CSC was associated with low-dose non-ocular corticosteroid treatments, no increase was detected in the incidence of CSC with higher dose corticosteroid regimens. Thus, ocular pathophysiology associated with steroids is not completely understood.[2] Studies on the development of CSC after intraocular steroid treatments are limited.[8]

The number of studies in recent years suggesting that testosterone and similar androgen steroids might be associated with CSC have been increasing in the literature. Conway et al. reported 3 women who developed treatment-resistant CSC and libido loss while using exogenous testosterone for postmenopausal syndrome.[9] Nudleman et al. reported CSC in 9 patients aged over 43 years (mean: 51 years) who received exogenous testosterone.[10]

Islam et al. detected high serum cortisol in 3 patients, and high serum testosterone levels in 2 of 42 patients with CSC.[6] Although Haimovici et al. detected the 24-hour urine cortisol level higher in 50% of patients with CSC, serum testosterone levels were found within normal ranges in all patients. One other thing they emphasized in their study was that endogenous mineralocorticoid dysfunction was frequently detected in patients with CSC.[11] Tufan et al. found serum cortisol and testosterone as normal in all patients with CSC.[12]

Androgens and testosterone have never been blamed directly in CSC pathogenesis. However, the frequent detection of CSC in young men might indicate an association of CSC with testosterone and androgens because researchers reported that testosterone levels were decreased in men of older age.[13] In addition, type A personality and emotional stress might be related with testosterone and other androgens.[14,15]

The androgenic steroids drostanolone, boldenone, and stanozolol that our patient reported using in the first presentation are used off-label by athletes for doping.[5,16,17] This is the second case reported in the literature who used these steroids as doping for bodybuilding that developed CSC. This case highlights the toxic effects of a drug used as doping on the retina and choroid. This case report is important in that it not only contributes to the ongoing debate in the literature that androgen steroids may be a risk factor for CSC formation, but also draws attention to the fact that in addition to known side effects drugs used for doping may have side effects that have not yet been reported.

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