Gynecomastia in two young men with histories of prolonged use of anabolic androgenic steroids

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KEYWORDS

Gynecomastia anabolic steroids;
Ultrasonography.

Abstract The aim of this report is to highlight the risk of anabolic androgenic steroid-induced gynecomastia in young men involved in nonagonistic sports and the role of ultrasonography in its diagnosis. The authors describe two cases of gynecomastia in nonprofessional weight lifters with histories of AAS use. In both cases, the diagnosis was based on patient history and clinical findings, but the sonographic examination confirmed the clinical suspicion and excluded the presence of other types of disease associated with mammary-gland enlargement in men.

Sommario Scopo del lavoro è sottolineare l'insorgenza di ginecomastia in giovani adulti che praticano attività sportiva non agonistica, in seguito ad assunzione di steroidi androgeni anabolizzanti (SAA) e il ruolo dell'ecografia nella diagnosi di questa patologia.

Vengono presentati due casi di ginecomastia in giovani praticanti attività atletica a livello amatoriale, con anamnesi di assunzione di SAA e antiestrogeni, giunti recentemente alla nostra osservazione.

In entrambi i casi la diagnosi di ginecomastia si è basata su anamnesi ed esame clinico, tuttavia, l'ecografia ha consentito di confermare la diagnosi clinica e di effettuare la diagnosi differenziale con le altre patologie che comportano aumento di volume della mammella maschile.

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Introduction

The term *gynecomastia* refers to mammary-gland enlargement in males caused by benign proliferation of the ductal and stromal components; it is the most common cause of mammary-gland tumefaction in males [1,2]. Gynecomastia

can be physiologic or parapsiologic: in the perinatal period [3,4] it can be caused by transplacental passage of maternal estrogens, at puberty by hormonal instability with altered blood estrogen: testosterone ratios, and in elderly men (60–80 years of age), it can be caused by diminished androgen secretion and by the reduced inactivation of estrogens by the liver. It can also be associated with a variety of pathological conditions, including Leydig cell tumors of the testicle, adrenal tumors, ectopic production of human chorionic gonadotropin (by tumors of the lung, liver, or kidney), liver or renal failure, and hyperthyroidism

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Fig. 1 (a) B-mode sonography (a) of the retroareolar region shows a solid, hypoechoic mass with projections that extend into the retroareolar fat, which is consistent with gynecomastia. (b) Power-Doppler reveals moderately increased lesional vascularization.

[2]. Gynecomastia is also an adverse effect of numerous types of drug therapy. These include estrogen-based therapy for prostate cancer; antibiotics (ketoconazole, isoniazid, metronidazole); cardiovascular drugs (amiodarone, captopril, etc.); and psychoactive drugs like diazepam, haloperidol, or tricyclic antidepressants. There have also been various reports of gynecomastia associated with the illicit use of anabolic androgenic steroids (AASs) by amateur athletes, particularly those involved in anaerobic sports like weight-lifting [5].

Case reports

The patients were 2 otherwise healthy young men (26 and 32 years of age) who had been practicing weight-lifting for several years. Both had histories of cyclic therapy with AASs (nandrolone decanoate, methandrosterolone) and estrogen inhibitors (the former patient for a total of 1 year, the latter for 3 years). Both denied the use of other drugs and of alcohol, and neither presented any cardiac or hepatic abnormalities. One of the two had acne involving the back that was resistant to topical therapy.

The 26-year-old was referred to our staff for the evaluation of recent onset, mobile, retroareolar swelling of the left breast, which was painful and had a rubbery consistency. The 32-year-old presented with retroareolar tumefaction on the right, which had been present for more than 6 months. On palpation, the mass was firm, mobile, and slightly tender. The overlying skin did not appear to be involved in either of the men's lesions.

Fig. 2 (a) B-mode sonography of the retroareolar region confirms the clinical suspicion of gynecomastia. The lesions displays moderate hypervascularization with respect to the surrounding tissue on both color (b) and power-Doppler (c).

The involved breasts were examined sonographically (Figs. 1 and 2) with high-frequency, linear transducers and color and/or power Doppler.

B-mode sonography revealed hypoechoic retroareolar masses with a typical nodular appearance. The long axis of the lesions was parallel to the skin plane, and both masses exhibited projections that extended into the normal retroareolar fat (Figs. 1a and 2a). On Color and/or power-Doppler studies, the masses exhibited increased

vascularization with respect to the surrounding tissues (Figs. 1b, 2b and 2c), and both had maximum diameters of over 3 cm. The diagnosis was gynecomastia. The patients were instructed to stop AAS therapy, and follow-up sonograms were scheduled.

Discussion

In its full-blown form, gynecomastia assumes a nodular appearance with clinical features that have to be distinguished from those of the other conditions [1,2,4], including male mammary-gland tumors, pseudogynecomastia, subareolar abscesses, lipomas, and epidermal cysts. Differential diagnosis, which is based on the history and clinical findings, is further complicated by the fact that the risk factors for gynecomastia – in particular, increased estrogen stimulation – are similar to those for malignant mammary-gland tumors (usually ductal adenocarcinomas). Ultrasonography with color and/or power-Doppler studies can be used to exclude these other conditions [2,6], in particular neoplastic disease and pseudogynecomastia, without resorting to mammography or needle biopsy.

The cases reported here confirm the value of ultrasound in the diagnosis of gynecomastia and highlight the

possibility of these lesions in young men involved in non-agonistic sports who take SAAs [5].

Conflict of interest statement

The authors have no conflict of interest.

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