CASE REPORT

Gynaecomastia and the plant product "Tribulis terrestris"

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Received 15 September 2003; accepted 27 October 2003

Summary Gynaecomastia is the commonest benign breast condition seen in men. It is well recognised that certain drugs that alter the normal sex hormonal profile in the body can induce gynaecomastia. Recently, an increasing use of androgenic-anabolic steroids among young men especially body-builders has increased the incidence of gynaecomastia. We report a case of a young weight-trainer who developed gynaecomastia due to oral intake of a herbal tablet which he used as a steroid alternative for body-building.

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Introduction

Gynaecomastia is the commonest condition affecting the male breast. It can occur at any age and is due to proliferation of glandular component of the breast tissue secondary to an imbalance in the sex hormones. It is entirely benign and various conditions that affect the normal sex hormonal profile in the body such as hypogonadism, testicular neoplasms, liver failure, thyrotoxicosis and intake of certain drugs can cause gynaecomastia, although in majority of young men the exact aetiology is unknown. Here we describe a case of a unique plant derivative which had induced gynaecomastia in an apparently healthy individual.

Case report

A 21-year-old gentleman who works as an aircraft fitter and is also a keen weight-trainer was referred by his general practitioner to the breast clinic with a 5 month history of a lump in his left breast which was occasionally painful. Seven years previously, he reported a similar swelling on the right side that had settled spontaneously. He was otherwise fit and well. He smoked 2 cigarettes a day and drank about 10 units of alcohol a week. On examination there was a well-defined nodule in the sub-areolar region consistent with gynaecomastia. This was causing him considerable discomfort especially while playing sports and he requested surgical removal. In view of the patient’s symptoms and wishes, this was excised using a minimally invasive technique (mammotome probe and liposuction).

Two weeks later at clinic follow-up, his wound had completely healed and he was very pleased with the cosmetic result. The histology was reported as atypical ductal hyperplasia (ADH), therefore he was not discharged but kept under observation.

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surveillance. When reviewed in the clinic 3 months later, he presented with another nodule again in the left sub-areolar region. On clinical evaluation and ultrasound imaging this nodule appeared benign. Core-biopsy was reported as normal breast tissue with a possibility of gynaecomastia difficult to exclude. A complete sex hormonal profile was requested. This revealed a markedly decreased follicle-stimulating hormone (FSH), leutinising hormone (LH) and testosterone. FSH 0.59 IU/l (normal: 1.0–7.0), LH 0.26 IU/l (normal: 1.0–8.0), testosterone 1.3 nmol/l (normal: 10–50). Prolactin, oestradiol and progesterone were within normal limits.

On closer questioning at this stage, the patient said that he had been taking a non-hormonal preparation derived from a plant called *Tribulis terrestris*, in the form of tablets as a steroid alternative to supplement his weight-training. On the assumption that this substance had caused the hormonal imbalance and hence gynaecomastia, he was advised to discontinue taking them. Two months later his sex-hormones were re-checked and they had improved, FSH 11 IU/l, LH 6.1 IU/l, testosterone 15 nmol/l. The swelling in his left breast had also completely resolved.

**Discussion**

Gynaecomastia usually presents as a unilateral tender enlargement of the sub-areolar breast tissue. It can be physiological as in neonatal, pubertal and senescent hypertrophy. It can also be associated with specific diseases and intake of certain drugs.

In any case, the hormonal change that mediates the condition is a decrease in androgens that can be due to either reduced production or androgen resistance. Increased circulating oestrogens that can be due to increased peripheral aromatisation may also decrease androgen expression.

Androgenic-anabolic steroids (AAS) are the most widely misused group of drugs in competitive sport. They increase strength, lean body mass improving the athlete's appearance and performance. AAS have many side-effects of which acne, striae and gynaecomastia were the most commonly reported in one study on 100 athletes. Hence, an increasing number of young men have turned towards steroid alternatives which could provide the benefits of AAS with minimal side-effects.

One such is the tablet taken by our patient, the active components of which are steroidal saponins of furostanol type isolated from "above the ground" part of the plant "*T. terrestris L. bulgaricum". It is regarded as a natural herbal alternative to AAS. Its mechanism of action is not fully clear. It is believed to have a central effect and increase secretion of LH and therefore increase testosterone levels. Alternatively, it may exert its effect by being metabolised into androgen-like products or stimulating the physiological transformation of testosterone into more active dihydrotestosterone. In our patient both gonadotropins and testosterone were markedly reduced after taking this preparation in contrast to experimental studies on this product which showed enhancement of LH and testosteron. In the absence of signs or symptoms of pituitary insufficiency, in an otherwise healthy individual, we believe that this could either be due to the shut-down of the pituitary gonadal axis in the presence of exogenous substances or due to increased aromatisation and peripheral conversion into estrogens, both of which could contribute to development of gynaecomastia. Furthermore the histology of the excised tissue revealed ADH. Although the pathologic interpretation is subject to interobserver variability, it is well recognised that ADH falls on a pathologic continuum between benign hyperplasia and ductal carcinoma and it is associated with a 4-fold to 5-fold increased risk of breast carcinoma. In our patient the abnormal tissue was completely excised and a subsequent core-biopsy did not show any ductal hyperplasia or atypia, however the development of ADH, a precancerous condition raises concern on the safety of this plant preparation.

In summary, this preparation which is believed to be a natural product with minimal side-effects should be regarded as a possible gynaecomastia inducing agent through its effect on sex hormonal levels in the body. Its link in the development of ADH may also suggest a possible carcinogenic effect on the breast tissue, although more definite evidence on these aspects needs to be established. It is important for clinicians to keep an open mind while eliciting drug history and not discard the natural products which many patients take but fail to disclose, as this could play a major part in the pathogenesis and with appropriate timely intervention cure of the disease.

**References**


11. Tribestan® (Tribulis terrestris). documentation for registration, Sopharma, Bulgaria.
