Short- and Long-Term Clinical Skin Effects of Testosterone Treatment in Trans Men

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ABSTRACT

Introduction. Our knowledge concerning the effects of testosterone (T) therapy on the skin of trans men (female-to-male transsexuals) is scarce.

Aim. The aim of this study was to evaluate the short- and long-term clinical effects of T treatment on the skin of trans men.

Methods. We conducted a prospective intervention study in 20 hormone naive trans men and a cross-sectional study in 50 trans men with an average of 10 years on T therapy.

Main Outcome Measures. Acne lesions were assessed using the Gradual Acne Grading Scale, hair patterns using the Ferriman and Gallwey classification (F&G), and androgenetic alopecia using the Norwood Hamilton Scale.

Results. T treatment increased facial and body hair growth. The F&G score increased progressively from a median value of 0.5 at baseline to a value of 12 after 12 months of T administration. After long-term T treatment, all but one trans man achieved an F&G score indicative of hirsutism in women, with a median value of 24. Only one trans man acquired mild frontotemporal hair loss during the first year of T treatment, whereas 32.7% of trans men had mild frontotemporal hair loss and 31% had moderate to severe androgenetic alopecia after long-term T therapy. The presence and severity of acne increased during the first year of T therapy, and peaked at 6 months. After long-term T treatment, most participants had no or mild acne lesions (93.9%). Dermatological outcome was not demonstrably related to individual serum T or dihydrotestosterone levels.

Conclusions. T treatment increased facial and body hair in a time-dependent manner. The prevalence and severity of acne in the majority of trans men peaked 6 months after beginning T therapy. Severe skin problems were absent after short- and long-term T treatment. **Wierckx K, Van de Peer F, Verhaeghe E, Dedecker D, Van Caenegem, E, Toye K, Kaufman JM, and T'Sjoen G. Short- and long-term clinical skin effects of testosterone treatment in trans men. J Sex Med 2014;11:222–229.**

Key Words. Testosterone; Gender Identity Disorder; Skin; Transsexualism; Gender Dysphoria; Female-to-Male Transsexual

Introduction

Androgens and estrogens are known to affect the skin pilosebaceous unit (PSU), and both androgen and estrogen receptors are expressed in the sebocytes and hair follicle dermal papilla [1,2]. The biological action of testosterone (T) on peripheral tissues, such as the scalp, is, in part, affected by its local conversion to dihydrotestosterone (DHT) by 5α-reductase (type 1 and 2). T can also be converted to estradiol (E2) by the aromatase enzyme, which is also prominently present in the PSU [3].

Androgens are required for sexual hair and sebaceous gland development and play a central role in stimulation of sebaceous gland growth and

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differentiation [4,5]. In addition, androgens have been shown to increase the size of the hair follicle, the diameter of the hair, and the proportion of time that terminal hairs spend in the anagen phase [4–6]. The effects of E2 on the PSU unit are less understood but estrogens are known to play an important role in human hair growth control [7]. Furthermore, given that T is aromatized into E2 in many tissues, it may be possible that some effects of T on the PSU unit are mediated by E2. Alternatively, the local balance between E2 and androgens may determine local E2 and androgen action [7,8].

Androgen excess in women is associated with important dermatological effects, such as acne vulgaris, hirsutism, and androgenetic alopecia [9–11], with potentially important psychological disturbing effects [12]. However, androgens are not the sole contributors to the pathogenesis of these disorders [4,13], and wide interindividual variability in androgen effects has been described. Susceptible persons may experience these pathologies with normal female androgen levels, whereas others experience no skin problems with markedly elevated androgen levels [4,13,14].

Female-to-male transsexual persons (herein referred to as trans men) receive T treatment to induce virilization and suppress menstruation [15]. Given the important effects of sex steroids on sebum production and distribution as well as on the growth of body and scalp hair, dermatological changes during cross-sex hormone treatment are important to address. However, to our knowledge, only one study has previously investigated the effects of T treatment on the skin in trans men. Giltay and Gooren [16] examined the changes of hair growth and sebum production during the first year of cross-sex hormone therapy in 17 trans men, all treated with intramuscular T esters every 14 days. However, the short-term dermatological effects of T undecanoate, a long-acting depot preparation administered every 3 months, have not been previously addressed in trans men. In addition, long-term dermatological outcomes of T treatment have not yet been described in this patient population.

Aim

The aim of the current study is to investigate the short- and long-term dermatological effects of T treatment in a relatively large group of trans men.

Methods

Study Population and Study Procedures

All trans participants were diagnosed with gender identity disorder (Diagnostic and Statistical Manual of Mental Disorders-III-R and DSM-IV, 302.85) and were treated at the center for Sexology and Gender Problems at the Ghent University Hospital (Ghent, Belgium). Two different studies were performed.

Prospective Intervention Study

Twenty Caucasian trans men before start of cross-sex hormone therapy and sex reassignment surgery (SRS) were included in this study. All men received intramuscular T undecanoate (1,000 mg) (Nebido) every 3 months. Patients were followed and monitored every 3 months during the first treatment year (Clinical trial number: NCT01072825).

Cross-Sectional Study

This study included 50 trans men who underwent SRS, including hystero-oophorectomy and mastectomy. On average, participants were 8.7 years after SRS (range 9 months–22 years). All started hormonal therapy at least 2 years before SRS. The majority of participants were Belgians (n = 48), with one Dutch subject and one Iranian subject. Detailed descriptions of this study population can be found elsewhere [17,18].

Trans men had been using T treatment for an average of 9.9 years, (range 3.2–27.5 years). Current cross-sex hormonal therapy consisted of intramuscular T treatment with either a mixture of T esters (T decanoate 100 mg, T isocaproate 60 mg, T fenylpropionate 60 mg, and T propionate 30 mg/mL) every 2 or 3 weeks (n = 35), T undecanoate (1,000 mg) every 12 weeks (n = 7), or transdermal T (50 mg) daily (n = 8). One participant used both oral T undecanoate (40 mg, once daily) and T gel (50 mg per 5 g, 50 mg daily). All trans men had physiological male T levels.

Exclusion criteria for both studies included treatments or disorders affecting sex hormone status: untreated hypo- or hyperthyroidism, Cushing syndrome, alcohol abuse, mucoviscidosis, malabsorption, cirrhosis, chronic kidney failure, or current (<2 years) or prolonged use of corticosteroids, anabolic steroids, and antiandrogens. Both studies complied with the recommendations of the Declaration of Helsinki and were approved by the Ethics Committee of the Ghent University Hospital. All participants gave their written informed consent.