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Clinical pearls addressing hair growth and loss in transgender patients on hormone replacement therapy

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Abstract

Hair is a defining feature of human appearance and plays an essential role in personality and identity development. Currently, about 1.6% of US adults identify as transgender. Within the transgender community, hair serves not only as a means of self-expression but also as a crucial element in affirming gender identity, helping individuals to align their outward appearance with their inner sense of self. However, there are significant disparities in the care provided to transgender patients, particularly those seeking a more masculine or feminine appearance through hormone replacement therapy. Studies on transgender patient satisfaction with current therapies are limited but indicate overall dissatisfaction with the standard of care.

Dermatologists play a pivotal role in advocating and caring for transgender patients regarding their hair and skin needs. A deeper understanding of hormone replacement therapy and hair growth/loss therapy is crucial to prescribing medications aligned with patients' treatment goals. This commentary aims to provide clinical guidance to dermatologists, aiding them in educating transgender patients undergoing hormone replacement therapy about accessible options for hair growth and loss. Treatment algorithms have been proposed based on efficacy, pharmacodynamic interactions with hormone replacement therapy, cost-effectiveness, adverse reactions, and care accessibility tailored specifically for transfeminine and transmasculine patients.

Keywords: androgen, estrogen, gender, hair, hormones, transgender

Introduction

In the context of this commentary, the definitions of transgender and sex adhere to the glossary terms provided by the World Health Organization. Accordingly, transgender encompasses individuals who identify with a gender incongruent with their assigned sex at birth, whereas sex denotes an individual's biological characteristics as male, female, or another identity, established at birth according to physical attributes such as anatomy and chromosomes.

Nearly 1.6% of adults in the United States identify as transgender. Although medical awareness of transgender patients has increased, extensive gaps in their care remain. The focus of this commentary centers around treatment options for transgender patients already on hormone replacement therapy (HRT) who desire further hair growth or hair loss. Although HRT treatments contribute to desired hair growth or loss during transitioning, they often fail to attain outcomes comparable to cisgender individuals. Thus, transgender patients express overall dissatisfaction with the current standard of care, with subsequent body dysmorphia seen more predominantly in transgender women.

For transgender females seeking feminization, estrogen is the mainstay hormonal treatment. However, estrogen has a larger impact on body hair compared to facial hair and does not decrease facial hair growth rate, diameter, or density to amounts seen in cisgender females [1,2]. In addition to estrogen use,

progestogens, spironolactone, and finasteride are also commonly used to achieve antiandrogenic effects and promote the hair regenerative process. Progestogens display antiandrogenic properties through the central blockade of gonadotropin [3]. At the level of the hair follicle, progesterone decreases the conversion of testosterone to dihydrotestosterone. Spironolactone acts through competitive inhibition of androgen receptors, lowering testosterone levels [4]. With its antiandrogenic effect, it helps hair regrowth on the scalp but reduces excess hair growth on the face and body. Lastly, finasteride is a 5-alpha reductase inhibitor that decreases the conversion of testosterone to dihydrotestosterone (DHT), which can help prevent hair loss [5]. Additionally, minoxidil is an oral or topical, adenosine 5′-triphosphate-sensitive potassium channel opener that stimulates improved microcirculation and arteriolar vasodilation around hair follicles, promoting hair growth [6].

Conversely, for transgender males seeking masculinization, testosterone is a proven treatment modality with substantial effects on both facial and body hair owing to its virilization effects. However, as its use significantly affects facial and body hair, hair diameter is the sole aspect reaching values equivalent to cisgender males [2]. Testosterone use also increases the risk of androgenetic alopecia [2].

Given the importance of hair in influencing a patient's gender identity, this review aims to equip dermatologists with clinical pearls and valuable insights to assist in educating transgender patients on available and alternative options beyond the conventional HRT treatments for hair growth and loss.

Historical records indicate that cantharidin has been used in Chinese folk medicine for over 2000 years [2]. It has been used topically for the treatment of several conditions including hemorrhoids, ulcers, furuncles, and tuberculosis scrofuloderma. Cantharidin in its oral formulation was used as an abortifacient and for the treatment of rabies, cancer, edema, and abdominal masses [1-3]. Additionally, aphrodisiac use of cantharidin, or Spanish fly, is reported in several countries throughout history. Oral administration of cantharidin is linked to toxicity and several reports of poisonings [4-6]. Today, cantharidin-containing products that are marketed as aphrodisiacs can be purchased illegally as Spanish fly [1] but are not recommended for medical use.

Discussion

Given the complexity of treatment to enhance hair growth or loss in transgender patients, we propose a series of algorithms based on the available data discussed in our review to improve these characteristics.

For both transgender male and female patients seeking enhanced hair growth, particularly on the scalp, face, or body, it is crucial to tailor treatment approaches to their specific needs. Considering the interactions with HRT, we outline the following treatment algorithms (**Figure 1**).

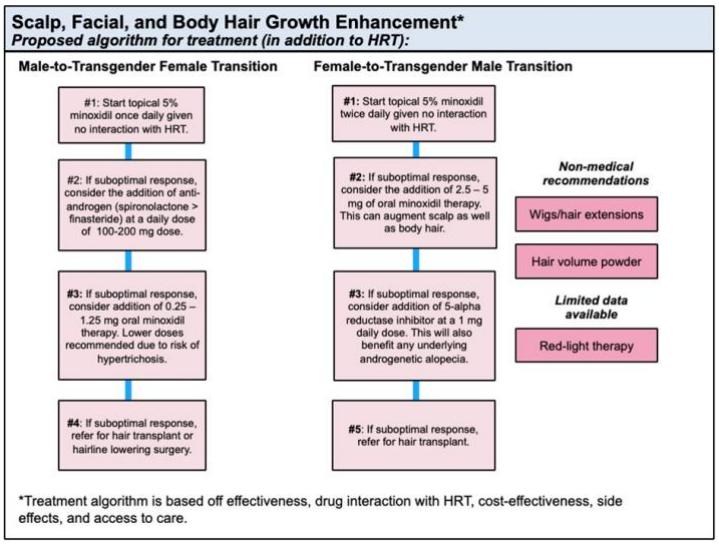

Figure 1. *Treatment algorithm for scalp, facial and body hair growth enhancement.*

Oral minoxidil, a potent vasodilator, was first introduced as a treatment for severe refractory hypertension in the 1970s [6]. However, its clinical utility revealed unwanted side effects, including hair regrowth and hypertrichosis. Consequently, a topical formulation was then introduced to the market in 1986 to address these concerns [6]. Although its

initial approval was for androgenetic alopecia, minoxidil's application has extended beyond this specific condition and has so far been utilized in the form of 2% and 5% topical solutions and later, as a 5% foam, for addressing a broader spectrum of hair loss conditions in both male and female patients.

Because of the lack of interaction between minoxidil and HRT and relative cost-effectiveness, we recommend its use as a first-line treatment, particularly the 5% formulation, as it is likely the safest option to enhance hair growth in transmasculine and transfeminine patients [2]. However, a review of the literature does offer caution when considering doses between patients undergoing feminization versus masculinization. Some authors recommend once daily (versus twice) use of minoxidil, given the risk of facial hypertrichosis if misused [2]. For patients undergoing masculinization who often desire the effect of increased facial hair, the standard twice-daily dosing is reasonable. Of note, for transgender male patients, topical minoxidil works better for facial hair than body hair, and transgender male patients may require further options for increasing body hair growth.

For transfeminine patients who do not have an optimal response to topical 5% minoxidil, the addition of an antiandrogen, if not already taking one, is recommended. Spironolactone (daily dose between 100mg to 200mg) is recommended over finasteride as head-to-head studies have found an inconclusive benefit of finasteride. Spironolactone can also help hirsutism and lead to gynecomastia—side effects often welcomed by these patients [7]. However, it is important to note other side effects of spironolactone, including postural hypotension and hyperkalemia, which would be a contraindication for transgender patients with chronic kidney disease. Severe cardiovascular adverse effects can occur in these patients and are potentially deadly if the patient is not monitored closely [7,8]. Of note, a study in Albany, New York, found that spironolactone decreased 17β estradiol levels in transfeminine patients on oral estradiol, highlighting the need for individualized treatment proposals in the care management for each patient with a suboptimal response [7].

In patients already taking an antiandrogen or who have a suboptimal response, oral minoxidil may be considered. However, it is recommended later in the treatment algorithm as although it can be effective for scalp hair growth, it can have an unwanted effect of generalized hypertrichosis, weight gain, and edema [2]. To help mitigate this, the literature suggests dosing of 0.25mg to1.25mg a day. However, for convenience if there are no contraindications, we suggest using 1.25mg daily. Although we recommend oral minoxidil use in patients with a suboptimal response, it is worth noting that oral minoxidil can result in a reflex response, increasing cardiac output and sodium retention for which reasons patients on other hypotensive agents should be monitored closely **[**9]. Gynecomastia and breast tenderness and soreness have also been noted as possible side effects of oral minoxidil, although these effects may be viewed favorably by transfeminine patients [9].

For transmasculine patients who either do not have an optimal response to topical 5% minoxidil or who desire more body hair growth, oral minoxidil is recommended. Although its use has not been studied in transmasculine patients, it has shown clinical improvement in hair growth in cisgender patients [2]. Additionally, the effects of generalized hypertrichosis are often desired in this patient population. Therefore, the literature recommends daily dosing of 2.5mg to 5mg, as compared to the lower dose recommended in transgender female patients.

In transmasculine patients with a suboptimal response to oral minoxidil, the use of 5-alpha reductase inhibitors has demonstrated clinical improvement in hair growth, including underlying androgenetic alopecia, and may be considered. One study of 7 transmasculine patients found clinical improvement after 5 months of oral finasteride 1mg

daily [7]. Additionally, dutasteride, 0.5mg daily, has shown clinical improvements in cisgendered patients and may be considered if finasteride is ineffective [7]. It is important to note that antiandrogens, such as spironolactone, are generally avoided in transmasculine patients, given the consequential decrease in total testosterone in the body [7].

Finally, in both transgender male and female patients, if medical therapy has failed to achieve desired clinical outcomes, it is appropriate to discuss referral for hair transplant or hairline lowering surgeries. It is also essential to review nonmedical and nonsurgical options, including wigs, extensions, and hair powder; these may be more cost-effective options for some. Additionally, whereas some literature suggests the use of red-light therapy or platelet-rich plasma therapy, these options are costly and there is limited data to support their use at this time.

Although both transgender women and men may desire increased hair growth, whether it be on their head or body, studies show that 85% of transgender women express a desire for facial and body hair removal compared to 8% of transmasculine men [10]. We therefore suggest the following treatment options to review with transgender female patients desiring body and facial hair removal (**Figure 2**).

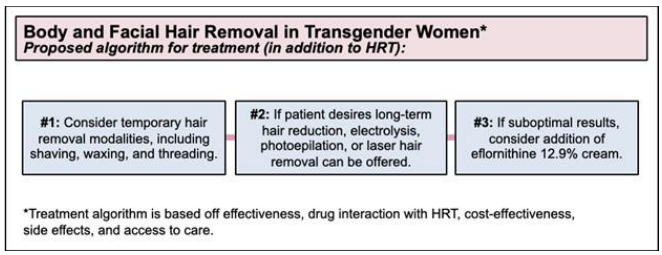

Figure 2. *Treatment algorithm for body and facial hair removal in transgender women.*

Given greater accessibility and cost-effectiveness, we suggest using temporary hair removal techniques such as shaving, waxing, or threading. Although these modalities are typically cheaper, they require repeated sessions as they do not offer permanent hair removal, potentially costing patients more time and money in the long run. For those patients desiring more permanent results, we suggest offering electrolysis, photoepilation, or laser hair removal. Electrolysis is FDA-approved for permanent hair reduction, but it is mainly operator-dependent and requires multiple hours of treatment weekly for one year [2]. Laser hair removal is less painful and requires fewer sessions. However, both procedures are costly and often must be covered by insurance. There is also no clear evidence in literature as to the superiority of one over the other. Eflornithine topical cream can be used as an adjunct for patients without optimal results with conservative hair removal techniques or electrolysis/laser hair removal [2]. However, it is expensive and requires twice daily use [2]. Additionally, the initial brand-name formulation was discontinued in 2023 because of patient perception of inadequate effect but has been replaced by another formulation. Compounding pharmacies may also provide the product but may increase the cost making it harder for patients to get.

When counseling transgender patients on these treatment options, it is essential to keep in mind both the current gaps in our understanding of the pharmacogenomic interactions and the many barriers to care this patient population may experience [10]. There is a general lack of trust in the medical community and patients often face financial obstacles to desired and medically indicated treatments. The literature documents a lack of insurance coverage for medical procedures within the category of gender-affirming care [11]. Additionally, multiple states have banned or restricted gender-affirming healthcare options, some of which include HRT [11].

Potential conflicts of interest

The authors declare no conflicts of interest.

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