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Review Article

Finasteride in the Treatment of Female Androgenic Alopecia

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ABSTRACT

Hair loss in women is twice more distressing in women when compared to men. The most common cause of hair loss in women is Female Androgenic Alopecia (FAGA) which shows Ludwig, Christmas tree, Hamilton pattern. Androgenic alopecia is due to the increased activity of 5α-reductase in the hair follicles which results in the gradual transformation of large, terminal follicles to small, miniaturized follicles. Finasteride is a 5α-reductase II enzyme which inhibits the conversion of testosterone to dihydro testosterone and is effectively used in the management of the male pattern androgenic alopecia with a dose of 1mg/day but this article mainly reviews the use of Finasteride in the female androgenic alopecia. Studies so far reported increased scalp hair counts, hair density, hair regrowth both by the patient assessment and photographs by the blinded expert panel. Relevant literatures were chosen to determine the efficacy of Finasteride in the treatment of female Androgenic Alopecia.

Keywords: Androgenic Alopecia, hair follicles, testosterone

BACKGROUND

Hair loss can be distressing for the female patient, with women being twice as likely as men to be very-to-extremely upset and up to 70% of women reporting high levels of distress over their hair loss. [1] Female androgenic alopecia (FAGA), or female pattern alopecia, is the most common form of hair loss in women. The incidence increases with age with 50% to 75% of women older than 65 years with FAGA compared to 6% to 12% of women aged 20 to 30 years.[2]

PATHOPHYSIOLOGY

Androgenic alopecia (AGA) is induced by androgens in genetically susceptible women and men. Hair follicles of women and men with AGA have increased 5α-reductase activity and increased levels of dihydrotestosterone (DHT). DHT, which is formed by the peripheral conversion of testosterone by 5α-reductase, is thought to be responsible for the characteristic miniaturization of scalp hair follicles in AGA. In genetically susceptible hair follicles, DHT binds to the androgen receptor, and the hormone-receptor complex then activates the genes responsible for the gradual transformation of large, terminal follicles to small, miniaturized follicles. Over successive hair cycles in AGA, the duration of anagen shortens and matrix size decreases, resulting in smaller follicles that produce shorter, finer, miniaturized hairs that cover the scalp less and less well. These miniaturized hairs of various lengths and diameters are the hallmark of AGA. The number of follicles per unit area, however, remains the same. [3]

Clinical features:

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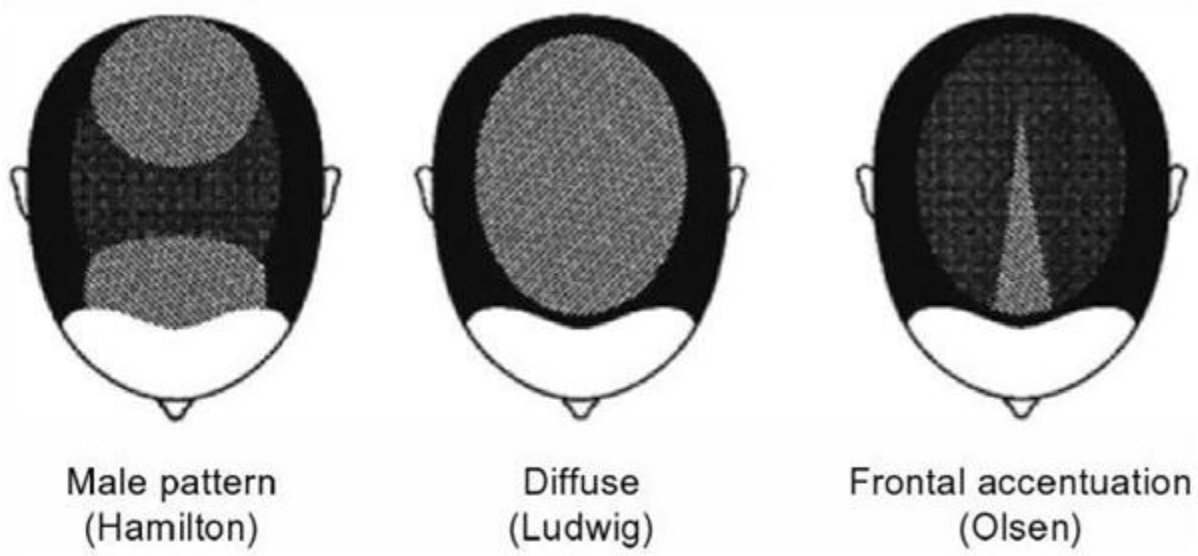
Three different patterns of hair loss can be observed:

1. Diffuse thinning of the crown region with preservation of the frontal hairline (Ludwig's type). The severity of this pattern can be evaluated using the 3-point Ludwig scale or the 5-point Sinclair scale.
2. Frontal midline recession/breach with thinning and widening of the central part of the scalp without diffuse hair loss, best known as "Christmas tree pattern" as described by Olsen. This pattern also involves the superior part of the scalp but the thinning is wider in the frontal scalp giving the alopecic area a triangular shaped figure resembling a Christmas tree.
3. Thinning associated with bitemporal recession (Hamilton type). This presentation has the same classical distribution of male pattern baldness: thinning evident in the lateral-frontal part of the superior scalp and vertex.[4]



Source: Medscape. Available at http://www.medscape.com/viewarticle/735007_7

Finasteride with antiandrogenic effect:

Finasteride works by inhibiting 5α-reductase II enzyme, which is responsible for catalyzing the conversion of testosterone to the much more active chemical 5 Dihydrotestosterone. Thus, finasteride suppresses overall androgen activity by restricting total circulating androgen activity.[5] Finasteride reduces hair loss and stimulates hair regrowth by increasing hair counts in men taking 1 mg daily. [6]

Finasteride in the female hair loss

The effectiveness of the Finasteride in the male androgenic alopecia is well documented but to study the effectiveness of the Finasteride in the female androgenic alopecia is evaluated in this earlier study. This study was a double-blind, placebo-controlled, randomized, multicenter trial which included 137 members between the age 41-60 years. Selected patients were randomized into Finasteride and placebo group where they receive Finasteride 1 mg/day or placebo for 1 year. The therapeutic endpoint of the study was to evaluate scalp hair counts, patient and investigator assessments, assessment of global photographs by a blinded expert panel, and histological analysis of scalp biopsy specimens.

The results of the study after 12 months were that Finasteride group did not show any

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difference from the placebo group despite of the reduced serum dihydrotestosterone.[7]

Later many evidences reported in the improvement of hair growth after long term use and high doses of Finasteride. In a case series 41 postmenopausal women with increased androgen levels and SAHA (seborrhea, acne, hirsutism, and alopecia) were given 2.5 mg/d for 2 years and noted hair regrowth in all 41 women. [8]

Finasteride 1.25mg/d was given in 4 postmenopausal women with hyperandrogenism having hair loss with characteristics of both male and female patterns. And was reported improvement in hair loss and hair growth after 6 month-2.5 years.[9]

Finasteride 5mg/week was given in 67 year old women with normoandrogenic levels for 12 months and patient reported increased hair density. [10]

Finasteride 2.5-5 mg/day is given to 5 postmenopausal women with normal androgen levels for 1 year and the outcome measures evaluated were patient and investigator assessments, and review of photographs taken at baseline and at months 6, 12 and 18. The results of the study were that patients reported decreased hair loss, increased hair growth and improved appearance of hair which was confirmed by investigator assessments and photographs.[11]

Valsecchi et al., reported a case of 51 year old patient who was normoandrogenic and not responsive to minoxidil therapy and was started on Finasteride 1mg/d showed a hair regrowth after 12-13 months of therapy.[12]

Iorizzo et al conducted a study to determine the efficacy of Finasteride in the premenopausal women using oral contraceptives by giving a oral dose of Finasteride 2.5mg/d for 12 months and the efficacy of the treatment is measured by self administered questionnaire to patients, global photography and the hair density score from videodermoscopy and the results showed improvement in 23 patients, no improvement in 13 patients and 1 showed worsening of the condition. [13]

Finasteride 2.5mg/d in postmenopausal women of age 47 years showed hair loss stabilization at 6 months and hair regrowth at 10 months who had hair loss due to treatment with estrogen and testosterone after the hysterectomy and bilateral salpingo-oophorectomy. [14]

Finasteride 5mg/d was given in 12 normoandrogenic patients in which 9 showed improvement from the treatment and the other 3 did not show improvement due to the other reasons of alopecia.[15] A 44 year old premenopausal women with normal androgen levels was given 2.5 mg/d of Finasteride for 3.5 months and showed decreased hair loss and hair regrowth. [2]

Finasteride 5mg/d was administered in 40 normoandrogenic postmenopausal women with androgenic alopecia for 18 months and the outcome measures were patient's satisfaction and global photograph assessment. The results of the study were that on patient satisfaction 22 showed improvement, 12 showed moderate improvement and 6 showed no improvement. On global photo assessment, 8 patients showed no improvement, 16 showed moderate improvement and 16 showed significant improvements at the 6th month and a slight improvement was observed in 12 and 18th month. Four patients reported reduced libido and one patient showed elevated liver enzymes. [16]

In contrast, 48 hyperandrogenic women with alopecia were randomized into three groups in which cyproterone acetate (50 mg), flutamide (250 mg) and finasteride (5 mg) daily were given and the efficacy of the treatment was checked after 1 year and was found that flutamide showed reduction in 21% of Ludwig scores whereas treatment with finasteride did not show hair growth. [17]

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Treatment of female androgenic alopecia with oral Finasteride :

Reference, year	Study type	Number of women	Androgen levels	Menopausal state	Treatment dose	Length of treatment	Primary findings
Price et al (2000)[7]	Double blind, randomized, placebo-controlled trial	137(67 in the treatment group; 70 in the placebo group	Normal	Post menopausal	1 mg/day	1 yr	No difference between Finasteride group and placebo group
Camacho (2001) [8]	Case series	41	Increased (due to SAHA)	Post menopausal	2.5 mg/d	2 yr	Improvement in all 41 women with SAHA
Shum et al (2002) [9]	Case series	4	increased	Post menopausal	1.25 mg/d	Upto 2.5yr	Improvement in all women
Thai et al., 2002 [10]	Case report	1	Normal	Post menopausal	5 mg/week	12 months	Hair regrowth
Carmina et al., 2003 [17]	Randomized study	48	increased	Pre menopausal	5mg/ daily	1 yr	No improvement
Trüeb; Swiss Trichology Study Group (2004)[11]	Case series	5	Normal	Post menopausal	Four women were treated with 2.5 mg/d and 1 women treated with 5mg/day	1 yr	Improved in all women after 6 months of initiation of treatment
Valsecchi et al., (2004) [12]	Case report	1	normal	Post menopausal	1 mg/d	13 months	Hair regrowth
Iorizzo et al (2006) [13]	Case series	37	increased	Pre menopausal	2.5 mg/d and oral contraceptives	12 months	23 were improved. No improvement in 13 patients. 1 patient worsening of the condition.

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Hong et al (2007) [14]	Case report	1	increased	Post menopausal	2.5 mg/d	10 months	Hair regrowth
Kohler et al., 2007 [15]	Retrospective study	12	Normal	Pre menopausal	5 mg/d		9 improved, 3 no improvement
Olga Boychenko et al., 2012 [2]	Case report	1	Normal	Pre menopausal	1.25 mg/d	3.5 months	Hair regrowth
Oliveira et al., 2013 [16]		40	Normal	Post menopausal	5mg/d	18 months	22 patients significant improvement, 12 patients moderate improvement, 6 patients no improvement.

CONCLUSION

Finasteride is potential in treating the androgenic alopecia of postmenopausal and premenopausal women but however not effective in all patients. As Finasteride belongs to the pregnancy category X its use in premenopausal patients should not be overlooked. Further evaluations can be done to know the safety and efficacy of Finasteride in different doses and populations.

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