Finasteride in the Treatment of Female Pattern (Androgenic) Alopecia: A Case Report and Review of the Literature

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We describe a case of a 44-year-old woman with biopsy-proven female androgenic alopecia (FAGA), or female pattern alopecia, who was nonresponsive to topical minoxidil. After careful consideration and discussion with the patient, the decision was made to introduce oral finasteride 1.25 mg daily. After only 3.5 months of therapy there was a remarkable reduction in hair shedding and increased hair regrowth without any reported side effects. We also present a comprehensive review of the limited studies and case series that have reported finasteride use for FAGA.

Cutis. 2012;90:73-76.

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.[1]

The pathophysiology of FAGA is somewhat controversial. In the past it was regarded as the female counterpart of male androgenic alopecia (MAGA), or male pattern alopecia, and it was considered to be primarily associated with increased levels of dihydrotestosterone.[2] However, the role of androgens in FAGA is less certain, especially in women who do not present with other symptoms of hyperandrogenemia.[3] Female pattern hair loss is considered a multifactorial genetically determined trait with both androgen-dependent and androgen-independent mechanisms contributing to the phenotype.[4,5]

The lack of consensus among scientists on the pathophysiology of FAGA makes it a challenging condition to treat. Much emphasis has been placed on antiandrogenic agents, such as finasteride, after observation of the success in treating patients with MAGA.[6] Finasteride is a potent type II 5α-reductase inhibitor that acts by decreasing scalp and serum levels of 5α-dihydrotestosterone while increasing scalp levels of testosterone. It was approved in 1997 for the treatment of MAGA after several double-blind, randomized, controlled trials had proven its effectiveness.[6] Finasteride is most beneficial to men with mild to moderate MAGA with an approved dosage of 1 mg daily.[7-9]

Because finasteride is a pregnancy category X drug, practitioners have been hesitant to use it in premenopausal women. However, there has been increasing evidence that finasteride does have some benefits in cases of FAGA. Although the role of antiandrogenic agents in FAGA is unclear, the use of finasteride is increasingly gaining interest.

Case Report

A 44-year-old woman presented to our clinic with a concern of excessive hair shedding and hair thinning for more than 1 year. To her knowledge, she had no family history of hair loss. She had tried minoxidil solution 2% for a few months without relief and subsequently had ceased using it. She denied any remarkable recent changes in weight, illnesses, or surgeries. She also denied the use of new medications or any recent instance of stress. Physical examination revealed notable diffuse thinning on the majority of her scalp hair. A hair pull test was positive

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The authors report no conflict of interest.

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with more than 7 telogen-appearing hairs pulled on 4 attempts. Digital microscopic evaluation revealed approximately 80% miniaturization of hair follicles diffusely, with nearly 100% miniaturization on her frontal scalp. All laboratory tests were within reference range, including her androgen levels.

The differential diagnoses of FAGA included telogen effluvium, diffuse alopecia areata, and diffuse androgenic alopecia. A punch biopsy was performed and found 22 hair follicles: 13 terminal, 8 vellus, and 1 telogen/catagen hair follicle. The terminal to vellus ratio was 1.6 to 1. There was an absence of any peribulbar or peri-infundibular infiltrates. There was no mucin, interface change, or scarring. The dermatopathologist interpreted the findings as diagnostic for FAGA.

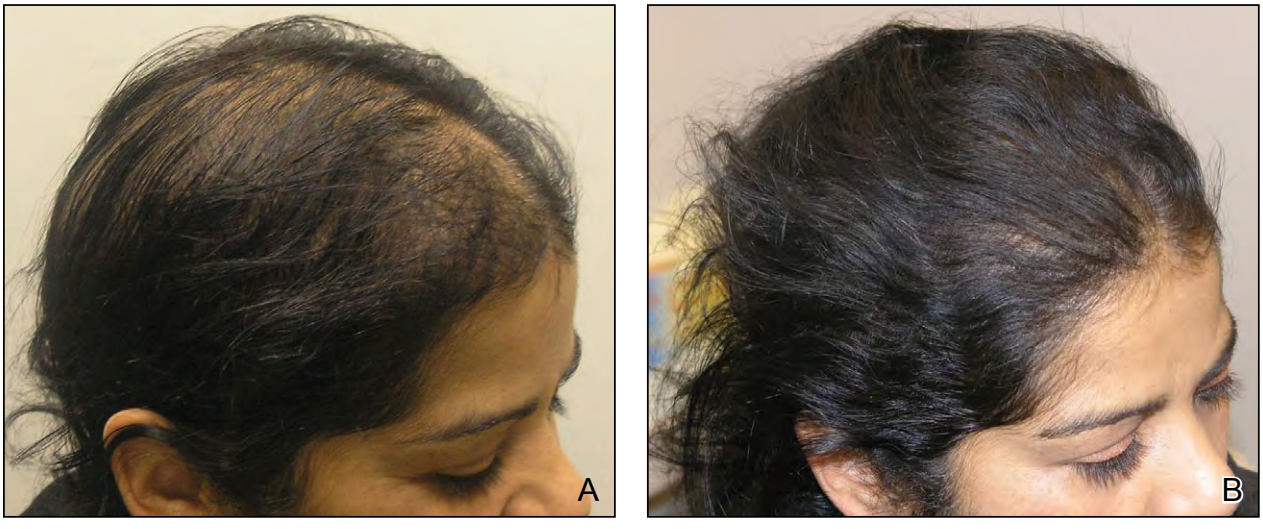
At 1-month follow-up the patient reported continued hair shedding and thinning (Figure, A). The decision was made to initiate therapy with finasteride 1.25 mg daily. Because of a history of a hysterectomy, no oral contraceptive was added.

The patient was seen at follow-up at 3.5 months after the initiation of finasteride therapy and reported remarkably decreased shedding and hair regrowth (Figure, B). She was pleased with the results and continued to use finasteride.

Comment

There is a dearth of reports in the literature reporting the use of finasteride for the treatment of FAGA. According to a PubMed search for articles indexed for MEDLINE using the terms *finasteride and female pattern hair loss*, in addition to our own report we found 1 double-blind, randomized, placebo-controlled trial; 4 case series; and 1 case report that documented the efficacy of finasteride for the treatment of FAGA (Table).[10-15] The double-blind, randomized, placebo-controlled trial consisted of 137 postmenopausal women with androgen levels within reference range who received finasteride 1 mg daily or placebo for 1 year. The results showed no improvement in slowing of hair thinning, increasing hair growth, or improving the appearance of hair in the finasteride-treated group.[10]

The other studies showed some improvement using finasteride for the treatment of FAGA. Camacho[11] used finasteride 2.5 mg daily for 2 years to treat 41 women with SAHA (seborrhea, acne, hirsutism, and alopecia), and noted improvement in hair regrowth. Shum et al[12] used finasteride 1.25 mg daily for up to 2.5 years to treat 4 postmenopausal women with hyperandrogenism and observed improvements in hair loss as well as increased hair growth. Trüeb; Swiss Trichology Study Group[13] reported 5 postmenopausal women with androgen levels within reference range. Four women were treated with finasteride 2.5 mg daily and 1 woman was treated with finasteride 5 mg daily for 1 year. All 5 women improved 6 months following the initiation of treatment.[13] Iorizzo et al[14] reported 37 premenopausal women without hyperandrogenism who were treated with finasteride 2.5 mg daily plus an oral contraceptive (drospirenone 3 mg and ethinyl estradiol 30 μg) for 12 months. Improvement was observed in 23 patients, no improvement was observed in 13 patients, and 1 patient worsened despite treatment.[14] Hong et al[15] reported a postmenopausal woman following total hysterectomy with bilateral salpingo-oophorectomy who was treated with finasteride 2.5 mg daily. After the first 6 months her hair loss stabilized, and by



Patient before (A) and after 3.5 months of treatment with finasteride (B).

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Reference (Year)	Study Type	No. of Women	Androgen Levels	Menopausal State	Treatment Dose	Length of Treatment	Primary Findings
Price et al[10] (2000)	Double-blind, randomized, placebo-controlled trial	137 (67 in the treatment group; 70 in the placebo group)	Within reference range	Postmenopausal	1 mg/d	1 y	No difference between finasteride group and placebo group
Camacho[11] (2001)	Case series	41	Increased (due to SAHA)	Premenopausal	2.5 mg/d	2 y	Improvement in all 41 women with SAHA
Shum et al[12] (2002)	Case series	4	Increased	Postmenopausal	1.25 mg/d	Up to 2.5 y	Improvement in all women for both hair loss and hair growth
Trüeb; Swiss Trichology Study Group[13] (2004)	Case series	5	Within reference range	Postmenopausal	2.5 or 5 mg/d[a]	1 y	Improved in all women 6 mo after initiation of treatment
Iorizzo et al[14] (2006)	Case series	37	Increased	Premenopausal	2.5 mg/d + oral contraceptive (drospirenone 3 mg and ethinyl estradiol 30 μg)	12 mo	Improvement in 23 women; no improvement in 13 women; and 1 patient worsened despite treatment
Hong et al[15] (2007)	Case report	1	Increased	Postmenopausal	2.5 mg/d	10 mo	Hair loss stabilization after 6 mo; hair regrowth after 10 mo
Current report	Case report	1	Within reference range	Premenopausal	1.25 mg/d	3.5 mo	Hair loss stabilization and remarkable regrowth

Abbreviation: SAHA, seborrhea, acne, hirsutism, and alopecia.
[a]Four women were treated with finasteride 2.5 mg daily and 1 was treated with 5 mg daily.

10 months she had observed a noticeable increase in hair growth.[15]

Finasteride appears to be an effective treatment of FAGA in certain women, particularly those with early-onset alopecia and those with increased levels of androgens. It has been successfully used in both premenopausal and postmenopausal women; however, premenopausal women must use appropriate birth-control methods because of the risk for feminization of a male fetus. Finasteride should be given at a higher dose in women than men, with a minimum dosage of 1.25 mg daily to achieve favorable results.

Although sexual dysfunction, such as decreased libido, erectile dysfunction, or ejaculatory disorder, has been reported in a small percentage of male patients,[6] there have been virtually no adverse effects reported in the use of finasteride treatment in females. Finasteride was well-tolerated in our patient and the majority of prior reports (Table).[10-15] Finasteride has not been approved by the US Food and Drug Administration for use in women, and it is possible that there may be unforeseen side effects reported in future cases if there is an increased use of finasteride for the treatment of FAGA.

In addition, finasteride is a pregnancy category X drug primarily because it can cause feminization of a male fetus. Therefore, appropriate oral contraceptives must be implemented in women of childbearing potential if finasteride use is considered as a treatment option.

Conclusion

Our case and comprehensive review of the literature demonstrated that finasteride may have a beneficial role in the treatment of FAGA. Although the teratogenic effects of finasteride and its unknown long-term side effects must not be overlooked, it does appear to be effective in some women with FAGA. Further studies with varying doses and populations are needed to accurately determine the efficacy and safety of finasteride in the treatment of FAGA.

REFERENCES

1. Birch MP, Messenger JF, Messenger AG. Hair density, hair diameter and the prevalence of female pattern hair loss. *Br J Dermatol*. 2001;144:297-304.
2. Kaufman KD. Androgens and alopecia. *Mol Cell Endocrinol*. 2002;198:89-95.
3. Futterweit W, Dunaif A, Yeh HC, et al. The prevalence of hyperandrogenism in 109 consecutive female patients with diffuse alopecia. *J Am Acad Dermatol*. 1988;19 (5, pt 1):831-836.
4. Sinclair R, Chapman A, Magee J. The lack of significant changes in scalp hair follicle density with advancing age. *Br J Dermatol*. 2005;152:646-649.
5. Scheinfeld N. A review of hormonal therapy for female pattern (androgenic) alopecia. *Dermatol Online J*. 2008;14:1.
6. Rogers NE, Avram MR. Medical treatments for male and female pattern hair loss. *J Am Acad Dermatol*. 2008;59:547-566, quiz 567-568.
7. Kaufman KD, Olsen EA, Whiting D, et al. Finasteride in the treatment of men with androgenetic alopecia. finasteride male pattern baldness group. *J Am Acad Dermatol*. 1998;39(4, pt 1):578-589.
8. Leyden J, Dunlap F, Miller B, et al. Finasteride in the treatment of men with frontal male pattern hair loss. *J Am Acad Dermatol*. 1999;40(6, pt 1):930-937.
9. Roberts JL, Fiedler V, Imperato-McGinley J, et al. Clinical dose ranging studies with finasteride, a type 2 5α-reductase inhibitor, in men with male pattern hair loss. *J Am Acad Dermatol*. 1999;41:555-563.
10. Price VH, Roberts JL, Hordinsky M, et al. Lack of efficacy of finasteride in postmenopausal women with androgenetic alopecia. *J Am Acad Dermatol*. 2000;43(5, pt 1): 768-776.
11. Camacho F. Hirsutismo. enfoque clinico terapéutico. *Act Terap Dermatol*. 2001;24:190-206.
12. Shum KW, Cullen DR, Messenger AG. Hair loss in women with hyperandrogenism: four cases responding to finasteride. *J Am Acad Dermatol*. 2002;47:733-739.
13. Trüeb RM; Swiss Trichology Study Group. Finasteride treatment of patterned hair loss in normoandrogenic postmenopausal women. *Dermatology*. 2004;209: 202-207.
14. Iorizzo M, Vincenzi C, Voudouris S, et al. Finasteride treatment of female pattern hair loss. *Arch Dermatol*. 2006;142:298-302.
15. Hong JB, Chiu HC, Chan JY, et al. A woman with iatrogenic alopecia responding to finasteride [published online ahead of print January 30, 2007]. *Br J Dermatol*. 2007;156:754-755.