

## Original Article

# Systemic cyproterone acetate and 5% minoxidil topical in the treatment of female pattern hair loss

Naseema Kapadia, Tasneem Borhany, Gulnaz Khalid, Azmat Fatima

Department of Dermatology, Karachi Medical & Dental College/Abbasi Shaheed Hospital, Karachi

**Abstract** *Objective* To assess the efficacy and safety of systemic cyproterone acetate and 5% topical minoxidil solution in female pattern hair loss (FPHL).

*Patients and methods* This was a six month open trial of 2mg cyproterone acetate and 35µg ethinyl estradiol (Diane35®) for 21 days of each cycle and 50 mg cyproterone acetate for 10 days along with diane35 and 5% topical minoxidil, 1ml twice daily for all days of treatment. Study was conducted on out patients at Abbasi Shaheed Hospital/ Aga Khan Hospital, Karachi. 26 females with FPHL were included in the study.

*Results* At six months, compared with base line there was a statistically significant improvement in hair growth/decrease or no loss of hair reported. Both treatment regimens were well tolerated. There was no progression of FPHL in all patients.

*Conclusion* Systemic cyproterone acetate and 5% topical minoxidil are effective and safe in FPHL.

### *Key words*

Female pattern hair loss, cyproterone acetate, 5% minoxidil.

## Introduction

Androgenetic alopecia is a common condition occurring both in men and women. Genetic predisposition and aging both play their role. Minoxidil topical solution (MTS) in the 1980s was proven mainstay in the treatment of early male pattern hair loss<sup>1,2</sup> and 2% was approved for men and women. The vehicles used were water, alcohol and propylene glycol, the latter increasing the concentration of minoxidil in hair follicles. Since 1997, MTS has been available over the counter and in 48 weeks use

documented 54% to 62% increase in the growth of hair in androgenetic alopecia.<sup>3</sup>

Cyproterone acetate a synthetic steroid, derivative of 17-hydroxy progesterone, blocks the binding of dihydrotestosterone (DHT) to androgen receptor at the androgen target site i.e. hair follicle. It also inhibits gonadotrophins secretion and long-term therapy also reduces cutaneous 5-alpha reductase activity. The antiandrogenetic effect of cyproterone acetate has been reported to be multipronged. It is reported to increase scalp hair growth, mean hair diameter and length.<sup>4</sup>

The present study was undertaken to assess the efficacy and safety of systemic cyproterone acetate and 5% topical minoxidil lotion in female pattern hair loss (FPHL).

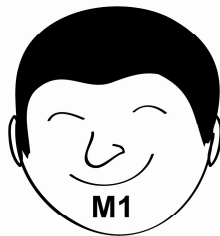
---

### Address for correspondence

Prof. Naseema Kapadia,  
Dermatology Department,  
Karachi Medical & Dental College/  
Abbasi Shaheed Hospital, Karachi  
Ph: 0334 3255166  
E-mail: naseemakapadia@yahoo.com

### M1F1 PATTERN

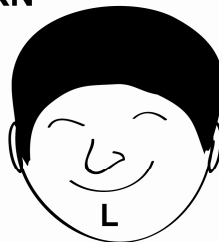
*Recession along anterior border*



### M1F2 PATTERN



### LF2 PATTERN



*No recession along anterior border*

**Figure 1** Basic and specific pattern (BASP) of hair loss devised by Lee *et al.* [5].

### Patients and methods

26 females aged 20-54 years, suffering from androgenetic alopecia were classified according to basic and specific pattern (BASP). In this system devised by Lee *et al.*<sup>5</sup>, hair loss pattern is classified into basic and specific types i.e. L pattern = no recession in anterior hairline; M pattern = where the hairline recedes to form an M; frontotemporal recession, M1, M2, M3 according to recession at or beyond anterior third of a virtual line connecting the original hairline and the top of vertex; C pattern, where recession in the mid anterior hairline is more prominent, C0, C1, C2, C3; U pattern = the anterior hairline recedes posteriorly beyond vertex forming a horse shoe pattern U1, U2, U3. Specific type, F pattern = general decrease in hair density on top of entire scalp, F1, F2, F3; last is the V pattern = hair around vertex is sparse, V1, V2, V3 (**Figure 1**). Females with

history of childbirth, any illness, emotional stress metabolic disease or anticancer treatment within last 6 months were excluded

These females were examined by a dermatologist at the out-patient department at baseline, at 3 months and finally at 6 months. Exclusion criteria were fulfilled by a questionnaire. The type of hair loss was classified and noted.

Females were advised to use pill containing 2mg cyproterone acetate and 35µg ethinyl estradiol (Diane35®) from 5<sup>th</sup> day of menstrual cycle for 21 days. In addition, they also used 50mg cyproterone acetate (Androcur®) for first 10 days and 5% topical minoxidil solution, 1ml twice on the bald area daily.

### Efficacy evaluation

The subject assessment of improvement was

**Table 1** Patients' assessment at 6<sup>th</sup> months (n=22)

<i>Grade of alopecia</i>	<i>Significantly worsened</i>	<i>Moderately worsened</i>	<i>Minimally worsened</i>	<i>No change</i>	<i>Moderate change</i>	<i>Significant change</i>
MI F1 = 10					3	7
M1 F2 = 6					2	4
LF2 = 6					4	2

**Table 2** Evaluation of efficacy by dermatologist at 6<sup>th</sup> month in frontal region (n=22)

<i>Grade of alopecia</i>	-	0	+
MI F1 (n=10)		6	4
M1 F2 (n=6)		0	6
LF2 (n=6)		0	6

+ = clearly improved; 0 = no discernible difference; - = clearly decreased density

**Table 3** Evaluation of efficacy by dermatologist at 6<sup>th</sup> month in vertex region (n=22)

<i>Grade of alopecia</i>	-	0	+
MI F2 (n=10)		6	4
M1 F2 (n=6)		2	4
LF2 (n=6)		3	3

+ = clearly improved; 0 = no discernible difference; - = clearly decreased density

rated at completion of treatment by a questionnaire to be filled by the patient. They rated the perception of their hair loss condition compared to baseline using a 7-point scale where -3 significant response, -2 moderate response, -1 minimal response, 0 no change, +1 minimal improved, +2 moderately improved and +3 significantly improved

### Expert assessment

Clinical examination at baseline, at third and sixth month was done by the dermatologists and results were noted as clearly improved [+], no discernible difference [0], clearly decreased density [-]. These results were compared with photographic review done by 2 other doctors.

### Safety evaluation

Patients were advised to report any side effects due to systemic or topical drugs. At each visit, patients were assessed for erythema, dryness,

scaling or folliculitis and rated as mild moderate and severe.

### Results

We enrolled 26 patients, age 20-54 years for the study, four left because of drug-related adverse effects i.e. nausea and irregular spotting and 22 patients were evaluable. Out of 22 females, 10 had M1F1 pattern, 6 had M1F2 pattern, and LF2 pattern was seen in 6 patients (**Table 1**).

Twenty two females who completed the study for six months were followed up at 3<sup>rd</sup> month and at end of treatment. Results were satisfactory and are shown in **Tables 2** and **3**. Global photographic assessment showed frontal and vertex hair growth or loss and was evaluated by 2 dermatologists. All baseline and follow up photos were evaluated and good concordance (83%) was achieved.

The safety of topical 5% minoxidil was good as none complained of erythema or folliculitis. Four patients noticed increased dryness and scaling of their previous seborrhea and were given zinc pyrethione shampoo.

### Discussion

The androgen-dependent nature of the genetic basis of FPHL has been clearly established.<sup>6</sup> After exclusion of thyroid disease, iron deficiency anemia, chronic telogen effluvium, metabolic syndrome, we selected FPHL because of androgenetic alopecia. Cyproterone acetate decreases hair shedding<sup>7</sup> with visually

significant regrowth.<sup>7,8</sup> In our study it increased the density of hair with a significant decrease in hair shedding.

22 patients, who completed the study period, 16 (72%) in frontal area, and 11 (50%) in vertex area had significant regrowth. Six (27%) patients in frontal area and 11 (50%) in vertex had no clear difference after treatment. Sinclair *et al.* reported 88% response as compared to us in which 61% had significant improvement in hair regrowth and reduction in hair fall. Some studies done using trichrogram showed conflicting results.<sup>6</sup>

Hyperandrogenism was not evident clinically in our patients except FPHL, still systemic antiandrogens decreased hair fall and increased density, which supports the role of androgens in the pathogenesis of FPHL.

One still feels the need to evaluate genetic polymorphism in FPHL in Asian females as reported in the western population.<sup>9</sup>

In conclusion, antiandrogens do help in arresting the progression of female pattern hair loss, and improving the density of hair in the bald area.

## References

1. Oslen EA, Weiners MS, Delong ER, Pinnel SR. Topical minoxidil in early male pattern baldness. *J Am Accad Dermatol* 1985; **13**: 185-92.
2. Devillez RL, Jaccob JP, Szpunam CA, Warner ML. Androgenetic alopecia in females: treatment with 2% minoxidil solution. *Arch Dermatol* 1994; **130**: 303-7.
3. Oslen EA, Duntap FE, Fumicella T *et al.* A randomized clinical trial of 5% topical minoxidil vs 2% topical minoxidil and placebo in the treatment of androgenetic alopecia in men. *J Am Accad Dermatol* 2002; **47**: 377-85.
4. Scheinfeld N. A review of hormonal therapy for female pattern (androgenic) alopecia. *Dermatol Online J* 2008; **14**: 1.
5. Lee WS, Ro BI, Hong SP *et al.* A new classification of pattern of hair loss that is universal for men and women: Basic and Specific classification. *J Am Accad Dermatol* 2007; **57**: 37-46.
6. Sinclair R, Wewerike M, Jolley D. Treatment of female pattern hair loss with oral antiandrogens. *Br J Dermatol* 2005; **152**: 466-73.
7. Peereboom-Wynia JD, van der Willigen AH, van Joost T, Stolz E. The effect of cyproterone acetate on hair roots and hair shaft diameter in androgenetic alopecia in females. *Acta Derm Venereol* 1989; **69**: 395-8.
8. Ellis JA, Stebbing M, Harrap SB. Polymorphism of the androgen receptor is associated with male pattern baldness. *J Invest Dermatol* 2001; **116**: 452-5.
9. Harrison S, Ellis J, Sinclair R, Harrap S. The genetics of female androgenetic alopecia. *Australas J Dermatol* 2003; **44**: A11.