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COMPARATIVE STUDY OF ORAL MINOXIDIL AND FINASTERIDE IN THE TREATMENT OF ANDROGENETIC ALOPECIA: A SIX-MONTH DOUBLE-BLINDED STUDY

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ABSRACT –

Background: Androgenetic alopecia (AGA), or male pattern baldness, has a negative impact on people's quality of life. Although considerable study on the efficacy and safety of oral finasteride and oral minoxidil in treating androgenetic alopecia has not been conducted, they are both effective treatments.

Materials and methodology: In a double-blind comparison trial, 28 participants received daily oral doses of minoxidil (2.5 mg) and finasteride (1 mg) for six months. Numerous factors, including the Norwood Hamilton scale, photographic assessments, trichoscopy measurements of hair count and shaft thickness, Patient Global Assessment (PGA), and Visual Analog Scale (VAS), were considered to determine effectiveness. To monitor safety, lab investigations and the documentation of negative events were used.

Results: Both minoxidil and finasteride significantly increased hair growth and thickness. At the frontal and vertex sites, the minoxidil group showed an increase in the average hair count and improved hair shaft thickness. In comparison to minoxidil, the finasteride group demonstrated superior hair growth and greater hair counts. Finasteride had little negative side effects and no reported sexual adverse effects.

Conclusion: Over a six-month period, oral finasteride (1 mg) and oral minoxidil (2.5 mg) both showed equivalent efficacy and tolerability in the treatment of AGA. Finasteride produced superior outcomes in terms of hair growth and thickness, whereas minoxidil was well tolerated and had few side effects. People can securely select either course of treatment, guaranteeing a notable improvement in AGA patients' hair growth.

Keywords: Androgenetic alopecia, male pattern baldness, oral finasteride and minoxidil, comparative study, hair growth, trichoscopy, side effects, and patient satisfaction.

INTRODUCTION -

Male pattern baldness, or androgenetic alopecia, is a common disorder marked by a steady decrease in the size of hair follicles, which causes the terminal hairs to thin down and become vellus hairs. Male pattern hair loss is mostly caused by this condition, which affects a sizeable section of the population. Male pattern baldness, despite being widely seen as a benign disorder, can have serious psychosocial and emotional effects that drastically lower a person's overall quality of life. Dihydrotestosterone (DHT) is a key player in the pathophysiology of this illness, which is regulated by androgens and has a significant hereditary component ***(Randolph & Tosti, 2021)***.

Minoxidil, initially created as an oral drug for hypertension, is one of the available treatments for androgenetic alopecia. Oral minoxidil, however, has demonstrated potential in treating a variety of hair loss conditions, including alopecia areata, traction alopecia, persistent telogen effluvium, and hair loss brought on by chemotherapy. It works by widening arterioles and opening potassium channels in smooth muscle cells of peripheral arteries, which causes cell membrane hyperpolarization and increased blood flow to the ***scalp (Rathnayake & Sinclair, 2010)***. By either lengthening the telogen/kenogen (resting) phase of hair follicles or shortening the anagen (growth) phase, minoxidil stimulates the growth of new hair and increases the diameter of existing hair ***(Hoffmann, 2002).***

Finasteride, on the other hand, treats androgenetic alopecia by selectively blocking the type-2 5'-reductase enzyme and lowering DHT levels in the scalp when given to men at a daily dose of 1mg ***(Stefanato, 2010)***. According to recent research, finasteride should be administered for 6 to 12 months at a time, with the possibility of longer usage if it is well tolerated and shows promising benefits. Hair length, thickness, and coloration often increase as a result of finasteride treatment ***(Jimenez-Cauhe et al., 2019)***.

Our study's main goal is to thoroughly investigate and compare the effectiveness and safety of oral finasteride and oral minoxidil in the treatment of male androgenetic alopecia. We consider that this study will offer important new information to medical experts about the efficacy and safety profiles of these two therapy choices for male androgenetic alopecia. This will enable them to choose the best therapy strategy for their patients based on solid information.

MATERIALS AND METHODOLOGY –

Researchers compared the effectiveness of oral minoxidil and oral finasteride in treating androgenetic alopecia in this hospital-based trial. Patients who met the prerequisites and indicated a desire to participate in the study were included. They kept meticulous records of the length of their androgenetic alopecia and any previous therapies they had received for the problem. Before receiving their signed informed permission, patients were given thorough information regarding the procedures and the negative effects of both drugs.

Using the Norwood Hamilton scale, the severity of androgenetic alopecia was thoroughly evaluated prior to starting the medication. Complete blood counts (CBC), renal function tests (RFT), liver function tests (LFT), and electrocardiograms (ECG) were among the preliminary examinations carried out. For a period of six months, a specialized dispenser gave each patient their specific prescription.

This study compares the effectiveness of oral minoxidil versus oral finasteride in treating androgenetic alopecia using a randomized prospective strategy carried out in a hospital environment. Each patient received monthly follow-up care for a total of six months.

An exclusive group of patient traits judged appropriate for participation made up the inclusion criteria for this investigation. First, people with Norwood Hamilton Grade 2–6 androgenetic alopecia—a defined classification system used to assess the severity of hair loss—were considered eligible participants. The study also concentrated on patients who fell within a specific age range, namely those who were over 18 and under 50. This age range was chosen to ensure that individuals in a particular age range made up the study population. Additionally, those who wanted to take part in the study had to submit a formal consent form indicating that they were willing to do so. Last but not least, participants were only accepted into the trial provided they had not received any treatment for androgenetic alopecia in the two months preceding their enrolment.

In contrast, there were clear exclusion criteria designed to spot those who weren't a good fit for the study. The study did not include patients with hypotension (low blood pressure) or hypertension (high blood pressure). This exclusion criterion was likely implemented to mitigate potential complications or confounding factors associated with blood pressure conditions. Additionally, individuals falling under Norwood Hamilton grade 1 (indicating minimal hairline recession) or grade 7 (indicating the most extensive hair loss) were not considered suitable candidates for this study. This was likely done to ensure that participants fell within a specific range of hair loss severity that could be effectively evaluated within the study's parameters.

Moreover, patients diagnosed with cardiac diseases, which refer to various heart-related conditions, were excluded from participation. Individuals with cerebrovascular diseases, which affect blood vessels supplying the brain, were also excluded. These exclusions may have been in place due to potential risks or contraindications associated with the medications being studied (oral minoxidil and oral finasteride) for participants with pre-existing cardiac or cerebrovascular conditions.

Further exclusions were related to abnormal results in liver or renal function tests, indicating potential liver or kidney dysfunction. Patients with deranged liver or renal function tests were not included in the study, possibly to avoid complications or interactions between the study drugs and underlying liver or kidney issues. Lastly, individuals known to be allergic to either finasteride or minoxidil, the two medications under investigation, were not eligible for participation. This exclusion criterion aimed to prevent adverse reactions in individuals with known allergies to these specific drugs.

Randomization and Double Blinding:

A total of 28 patients were initially planned for enrolment in the study, with 14 individuals designated for each of the two treatment groups, one receiving minoxidil and the other finasteride. To ensure a fair and random allocation of medications, each patient was associated with a unique letter, ranging from A to Z for the first 26 patients and a and b for the remaining two, summing upto 28. This randomization information was securely stored in a computer, to be unveiled only at the conclusion of the study. The medication bottles, corresponding to each letter, were meticulously prepared and sealed with the respective drug

by the designated dispenser. To determine which specific bottle of medication they would receive, patients were instructed to draw lots for randomization. Throughout the study's duration, monthly supplies of medication were dispensed to patients based on the letter they had been assigned by the dispenser. Patients received a checklist for self-monitoring to encourage adherence to the prescription regimen. In addition, the investigator carefully observed and noted any possible drug adverse effects to gauge how well they may be tolerated.

Follow-Up:

In order to thoroughly assess the safety and efficacy of the treatments under consideration, patients from both study groups were instructed to keep their scheduled follow-up appointments. The follow-up schedule had the following crucial time intervals: a baseline assessment on Day 0, a first follow-up visit on Day 30, a second visit on Day 60, a third assessment on Day 90, a follow-up appointment on Day 120, an evaluation on Day 150, and a final follow-up meeting on Day 180. This methodical methodology made it possible to thoroughly track and record each patient's progress during the duration of the research in order to evaluate the overall effect of the therapies.

At any time, patients had the choice to freely stop taking part in the trial; doing so would not have a detrimental impact on their ensuing medical care. The research team recorded the reasons why participants chose to stop participating in the trial, as well as any unpleasant events or side effects they may have encountered. Patients in both study groups were given the option to continue their respective therapies if they indicated a willingness to do so, were happy with the results obtained, and experienced no negative side effects.

Efficacy Variables:

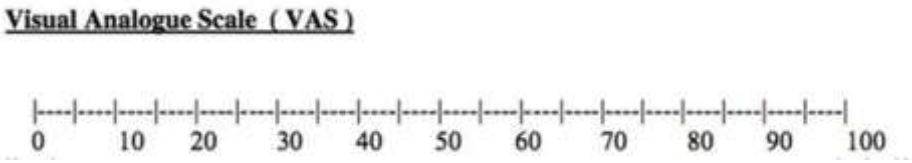
The efficacy of the treatments was assessed through various measures, including photographic evaluation, baseline and sixth-visit Norwood Hamilton Grading to determine the extent of hair loss, Physician Global assessment scale at the third and sixth visits to gauge overall progress, the Visual Analog Scale during the third and sixth visits to allow patients to rate their improvement on a scale from 0 to 100, and Trichoscopy Assessment at both the baseline and sixth visits, specifically focusing on the frontal and vertex areas of the scalp to measure hair density and hair shaft thickness using fotofinder software. These variables collectively provided a comprehensive assessment of treatment effectiveness.

a. **Photographic Assessment:** Photography was conducted during each monthly visit of the patient, with a particular focus on comparing the initial and final visit photographs to assess progress.
b. **Norwood Hamilton Grading:** The Norwood Hamilton Grading system was used to categorize the severity of hair loss into distinct types. Type 1 represented minimal hairline recession along the fronto-temporal region's anterior border, while Type 2 involved triangular recessions in this region, typically symmetrical. Type 3 was characterized by deep fronto-temporal hair recession, often leading to either baldness or sparse hair coverage. Type 4 indicated more severe frontal and fronto-temporal recession than Type 3, with areas of baldness or sparse hair in the vertex region, separated by a band of moderately dense hair. Type 5 signified even more extensive hair loss over the vertex and fronto-temporal areas, with a narrower and sparser hair band between them. Type 6

denoted confluent hair loss over the fronto-temporal and vertex regions, with the absence of a hair bridge crossing the crown. Lastly, Type 7 described a narrow horseshoe-shaped band of hair that commenced laterally, just anterior to the ear, and extended posteriorly along the sides.

c. **Physician Global Assessment (PGA):** The Physician Global assessment scale was employed as a means of evaluating the treatment's impact. It entailed a graded assessment system, with Grade 0 signifying no discernible change, Grade 1 indicating a slight improvement ranging from 0-25%, Grade 2 denoting a moderate improvement of 26-50%, Grade 3 representing a substantial improvement of 51-75%, and Grade 4 indicating a significant improvement of 76-100%. This scale enabled healthcare professionals to deliver a thorough review of the level of progress seen in patients receiving therapy, providing a nuanced assessment of treatment efficacy.

d. **Visual Analog Scale:** During their third and sixth sessions, patients evaluated their level of progress on a scale from 0 (no change) to 100 (great improvement). Each patient completed a questionnaire between the third and sixth sessions to assess their perceptions of their progress. On a scale of 0 to 100, with 100 denoting a notable and significant improvement and 0 denoting no change, patients were asked to rate their development. This method attempted to compile patients' subjective evaluations of the worth of their care and the degree of progress they thought they had attained.



A visual analog scale may be shown in Figure 1.

e. **Trichoscopy Assessment:**

Trichoscopy assessments were performed during the baseline and sixth visits of the experiment. These examinations focused on the frontal and vertex areas of the head. In order to calculate the density of the hair and the thickness of the hair shaft, fotofinder software was utilized during the evaluation procedure. This comprehensive trichoscopy examination allowed for the measurement of the treatment's impact on the thickness and density of the hair shafts.

Safety Variables: Numerous safety markers, such as haemoglobin (Hb), total leukocyte count (TLC), platelet count, renal function tests (RFT), liver function tests (LFT), lipid profile, ECG, and blood pressure, were tracked during the course of the experiment.

The goal of this study is to offer a thorough assessment of the effectiveness and safety of oral finasteride and minoxidil in treating androgenetic alopecia. It adheres to a strict process to guarantee objective results and seeks to provide insightful information on how to treat this prevalent hair loss disease.

RESULTS -

Patients in the minoxidil group had a mean age of 31.21 9.03 years, whereas those in the finasteride group had a similar mean age of 32.071 8.43 years. The average time that androgenetic alopecia persisted in the minoxidil and finasteride groups was similar at 3.03 and 2.75 years and 4.52 and 2.81 years, respectively. According to table 1, three patients in

the minoxidil group showed improvement at the Grade 1 level, and three others saw improvements from Grade 3 to Grade 2. Five patients in the finasteride group underwent Grade 1 alterations, including one who improved from Grade 6 to Grade 5, two who improved from Grade 4 to 3, and two who improved from Grade 3 to 2.

Table 1 compares the Norward Hamilton scores of the two groups at the baseline and sixth visit.

	Minoxidil group (n=14)	**Finasteride group (n=14)**
Norward Hamilton grade at baseline		
Grade 2	2 (14.3%)	4 (28.6%)
Grade 3	6 (42.9%)	6 (42.9%)
Grade 4	4 (28.6%)	2 (14.3%)
Grade 5	2 (14.3%)	1(7.1%)
Grade 6	0	1(7.1%)
Norward Hamilton grade at 6th visit		
Grade 2	4 (28.6%)	5 (35.7%)
Grade 3	4 (28.6%)	6 (42.9%)
Grade 4	4 (28.6%)	1(7.1%)
Grade 5	2 (14.3%)	2 (14.3%)

The baseline, three-month, and six-month laboratory analyses of the trial did not reveal any appreciable variations in any of the parameters between the minoxidil and finasteride groups. Haemoglobin (Hb) levels remained consistent between the groups throughout the study. Total Leukocyte Count (TLC) exhibited slight variations, but these differences were not statistically significant. Platelet counts were comparable in both groups. Urea and creatinine levels indicated no significant impact on renal function in either group. While liver function tests (LFT) showed minor variations, particularly in SGPT levels in the finasteride group at 6 months, these changes were not statistically significant. Additionally, the lipid profile, including total cholesterol, triglycerides (TG), and LDL cholesterol, did not exhibit significant differences between the two groups at any time point. In summary, the laboratory investigations suggest that neither minoxidil nor finasteride had a substantial adverse impact on these parameters over the course of the study as depicted in table 2.

Table 2: Investigations in both groups at baseline, 3rd and 6th visit

Investigations	**Minoxidil group (n=14)**			**Finasteride group (n=14)**		
	Baseline	3 months	6 months	Baseline	3 months	6 months
Haemoglobin	13.481 ±1.01	12.65 ±0.72	12.64 ±0.84	13.11 ±1.17	12.41 ±1.14	12.71 ±1.13
Total Leucocyte Count	8428.57 ±1779.12	7778.57 ±1392.38	7600.0 ±1237.4	7271.43 ±1230.02	6921.43 ±974.42	6971.43 ±1135.73
Platelet	3.31 ±0.53	3.30 ±0.54	3.28 ±0.60	3.61 ±0.86	3.57 ±0.88	3.61 ±0.76
Urea	22.64 ±5.65	22.79 ±5.28	22.64 ±5.65	21.14 ±4.22	22.93 ±3.89	21.14 ±4.22

Creatinine	0.80 ±0.17	0.80 ±0.16	0.80 ±0.19	0.77 ±0.13	0.73 ±0.12	0.75 ±0.12
SGOT	25.21 ±4.06	25.21 ±4.06	25.21 ±4.06	27.50 ±4.36	27.50 ±4.36	27.50 ±4.36
SGPT	33.71 ±3.64	33.71 ±3.64	33.36 ±3.85	36.14 ±3.15	36.14 ±3.15	36.0 ±3.06
Total cholesterol	148.86 ±23.40	148.86 ±23.40	141.86 ±18.48	154.29 ±21.55	154.29 ±21.55	145.86 ±19.49
Triglycerides	79.64 ±21.36	79.64 ±21.36	79.36 ±20.74	75.14 ±21.07	75.14 ±21.07	74.14 ±20.94
LDL cholesterol	94.36 ±20.23	94.36 ±20.23	94.07 ±20.15	88.64 ±15.52	88.64 ±15.52	88.29 ±14.91

The average number of hairs at the frontal site increased significantly in both the minoxidil and finasteride groups at the sixth month, with the finasteride group showing significantly higher hair counts (p value <0.01). The average number of hairs increased significantly in both groups at the vertex location as well, with the finasteride group having significantly more hair counts at the sixth month (p value 0.001), as shown in table 3.

Table 3: Comparing the average number of hair in both groups at baseline and after six months

Average no of hair	**Minoxidil group (n=14)**	**Finasteride group (n=14)**
Frontal		
At baseline	156.21±20.16	148.07±12.40
At 6 m	182.79±15.72	197.29±9.20
P value between baseline & 6 months	**<0.001**	**<0.001**
Vertex		
At baseline	147.14±9.78	146.57±8.28
At 6 m	173.43±9.59	190.21±7.06
P value between baseline & 6 months	**<0.001**	**<0.001**

At the frontal and vertex sites, hair shaft thickness rose significantly in both groups, with the finasteride group showing noticeably higher increases (p value 0.001) as shown in table 4.

Table 4: Comparison of the two groups' average hair shaft thicknesses at baseline and after six months

Average hair shaft thickness	Minoxidil group (n=14)	Finasteride group (n=14)
Frontal		
At baseline	54.50±7.03	52.57±6.66
At 6 m	67.0±7.35	71.0±4.07
P value between baseline & 6 months	**<0.001**	**<0.001**
Vertex		
At baseline	55.93±4.51	54.21±4.64
At 6 m	67.79±4.66	70.21±2.86
P value between baseline & 6 months	**<0.001**	**<0.001**

Table 5: Comparison of baseline and 6-month changes in the average number of hairs and the average hair shaft thickness between the two groups

	Minoxidil group (n=14)	Finasteride group (n=14)
Average no of hair		
Frontal	26.57±7.69	49.21±6.91
Vertex	26.29±2.46	43.64±6.04
Average hair shaft thickness		
Frontal	12.50±3.13	18.43±4.68
Vertex	11.86±1.87	16.0±3.30

Seven participants in the minoxidil and finasteride groups both noticed a significant improvement from grade 1. With a p-value of less than 0.001, which denotes statistical significance, the minoxidil group specifically experienced a significant improvement in their Vas score, which went from an initial measurement of 27.147.26 at 3 months to 46.4312.77 at 6 months. Finasteride users also made significant progress, with their Vas score rising from 32.148.92 at three months to 52.1414.76 at six months. The p-value for this improvement was less than 0.001, making it statistically significant as well. These data highlight how both minoxidil and finasteride can improve the disease, offering strong support for their therapeutic usage.

DISCUSSION

The effectiveness and tolerability of oral finasteride and minoxidil in the treatment of androgenic alopecia were thoroughly evaluated in this study. 30 participants received fixed doses of 2.5 mg minoxidil and 1 mg finasteride during the course of a six-month double-blind study. Improvements to the Norwood Hamilton scale, photographic evaluations, trichoscopy measurements of average hair count and shaft thickness, the Patient Global Assessment (PGA), and the Visual Analog Scale (VAS) were all evaluated as reliable measures. Of the 30 volunteers, 28 finished the trial; two dropped out because they moved away, and no negative impacts were noted. In order to ensure demographic consistency, the mean participant ages for both groups—31.21 9.03 for minoxidil and 32.071 8.43 for finasteride—aligned with

those from other trials. The comparative effectiveness and safety of these therapies for androgenic alopecia are thoroughly analysed in this study.

Effectiveness of Minoxidil

In our investigation, oral minoxidil at a fixed dose of 2.5 mg per day was given for six months. Photographic evaluations and the Norwood Hamilton grade both showed clinical improvement. There was an increase in average hair count at frontal and vertex sites, along with enhanced hair shaft thickness. In contrast, a 2019 study by Jimenez-cauhe et al. involved 41 male patients, with varying doses of 2.5 mg and 5 mg oral minoxidil given over six months ***(Jimenez-Cauhe et al., 2019)***. Although 90.2% showed improvement, specifics on hair count and shaft thickness were not assessed. Panchaprateep et al. (2020) used a 5 mg dose on 30 men for six months, displaying significant hair count increase at both frontal and vertex sites, similar to our results with 2.5 mg dosage but over a shorter duration (12 weeks) ***(Panchaprateep & Lueangarun, 2020)***. Another study by Pimez et al. (2019) utilized 0.25 mg oral minoxidil in 25 men, with improvements in hair density and new hair, although exact details were lacking *(Pirmez & Salas-Callo, 2020)*. Jha et al. (2020) used 1.25 mg for six months, showing marked improvement in hair density and shaft diameter, indicating higher efficacy than the 0.25 mg dose ***(Jha et al., 2020)***. In our study, three patients demonstrated Norwood Hamilton grade improvement, seven patients showed PGA improvement, and VAS scores increased from 27.14±7.26 to 46.43±12.77 at the sixth month.

Tolerability with Minoxidil

In our study, 21% of patients experienced side effects with oral minoxidil, including headaches and dizziness in 14% and body hair hypertrichosis in 7%. Notably, no patients had pedal edema, weight gain, or ECG changes. A study by Panchaprateep et al. (2020) using a 5mg dose reported higher adverse effects, such as abnormal ECG findings in 20% of patients, pedal edema in 10%, and hypertrichosis in 93% of patients at 24 weeks ***(Panchaprateep & Lueangarun, 2020)***. Jimenez-cauhe et al. (2019) observed 20% of patients with slight hypertrichosis and 10% with shedding on a 2.5mg dose, while 25% had hypertrichosis and 6% experienced limb edema on a 5mg dose ***(Jimenez-Cauhe et al., 2019)***. Pimez et al. (2019) reported pedal edema in 4% of patients, hair shedding in 16%, and body hypertrichosis in 20% with a 0.25 mg dose ***(Pirmez & Salas-Callo, 2020)***. A study by Jha et al. (2020) using 1.25mg of oral minoxidil showed no adverse effects. These findings indicate that both the effects and side effects of oral minoxidil are dose-dependent. The 2.5 mg dose yielded the desired effects with minimal side effects ***(Jha et al., 2020).***

Efficacy with Finasteride

In the finasteride group of our study, clinical improvement was observed through photographic assessment, with an average increase of 49.21±6.91 hairs at the frontal site and 43.64±6.04 hairs at the vertex site. Hair shaft thickness also increased significantly. Additionally, 5 patients showed improvement by 1 grade in Norwood Hamilton scale, 7 patients demonstrated PGA improvement by Grade 1, and VAS score increased from 32.14±8.92 at 3rd month to 52.14±14.76 at 6th month. In a similar study by Kaufman et al., finasteride-treated patients exhibited an increase of 86±3.4 hairs on trichoscopy at 12 months, with 65% rated as improved on global photographic assessment, indicating the efficacy of finasteride in treating androgenic alopecia (Kaufman et al., 2008). In our finasteride study, no

patients experienced sexual side effects such as loss of libido, erectile dysfunction, or ejaculation disorders. Similarly, Kaufmann et al.'s study on 1553 patients reported these side effects occurred in less than 2% of men.

Comparison between Minoxidil and Finasteride

In our study, both minoxidil and finasteride demonstrated improvement in Norwood Hamilton grade after 6 months, with 3 patients in the minoxidil group and 5 patients in the finasteride group improving by Grade 1. On photographic assessment, finasteride showed better hair growth than oral minoxidil, but both groups had similar improvements in PGA. Finasteride exhibited significantly higher increases in hair count and hair shaft thickness compared to minoxidil at both frontal and vertex sites. The increased efficacy of finasteride can be attributed to its mechanism of action, reducing scalp DHT by inhibiting type-2 5α reductase, which is responsible for hair follicle miniaturization in androgenetic alopecia. Minoxidil, on the other hand, acts as an arteriolar dilator, increasing cutaneous blood flow. Combining these drugs might yield synergistic results in the future.

Both drugs were comparable in increasing hair count and hair shaft thickness. Some patients experienced reduced hair shedding and enhanced hair growth with oral finasteride earlier than oral minoxidil. No sexual side effects were reported with finasteride, but more patients expressed concerns about finasteride-related side effects. In cases where patients declined finasteride, oral minoxidil proved to be a viable alternative. Using a 2.5 mg dose of oral minoxidil resulted in the desired outcomes with minimal side effects, as observed in only 3 patients.

This study presents the first-ever comparison of the efficacy and tolerability of oral finasteride versus oral minoxidil in androgenetic alopecia. The unique combination of photographic assessment, trichoscopic evaluation, and subjective measures like PGA and VAS scoring adds depth and comprehensiveness to the study, providing a multifaceted view of the treatments' effectiveness. However, the study's limitations include its relatively short duration of 6 months, considering the time needed for substantial hair growth in androgenetic alopecia patients. To draw more conclusive results, future studies with longer durations are imperative. Additionally, the pilot nature of this comparative study resulted in a small sample size, impacting the generalizability of the findings. A potential enhancement could be the inclusion of a third arm studying the combination of both drugs, offering a more comprehensive understanding of their synergistic effects.

CONCLUSION

To conclude in this study, oral minoxidil and oral finasteride, administered at fixed doses of 2.5 mg and 1 mg once daily respectively over six months, demonstrated significant efficacy in improving hair growth and thickness for androgenic alopecia patients. Minoxidil was well-tolerated, with mild adverse effects, while finasteride showed no sexual side effects. The study established their comparable efficacy and tolerability, empowering individuals to confidently choose either treatment, ensuring substantial hair growth improvement and overall enhancement for those dealing with androgenic alopecia.

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