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ORIGINAL ARTICLE

Comparative Assessment of Oral Minoxidil and Finasteride in The Treatment of Androgenetic Alopecia: A 6-Month Randomized, Double-Blind Study

Kiran Patil, Balkrishna Nikam, Mohak Arora
Department of dermatology Krishna Institute of Medical Sciences Krishna Vishwa Vidyapeeth Deemed To Be University, Karad, MH

ABSTRACT
This hospital-based, double-blind, randomized study set out to evaluate the efficacy of oral minoxidil and finasteride in treating androgenetic alopecia by comparing their tolerance to each other. The study employed a range of clinical criteria over the course of six months, including as Norwood Hamilton grade, photographic evaluation, physician global assessment, visual analog scale, and trichoscopy. Twenty-eight qualified people in all were enlisted and randomly assigned to either minoxidil or finasteride. Patients received fixed doses of 2.5 mg oral minoxidil and 1 mg oral finasteride. Clinical evaluations and other testing were performed on a monthly basis. The results of the two treatment groups were compared using statistical analysis. Oral minoxidil and finasteride improved Norwood Hamilton grade, hair count, thickness, and subjective ratings. Only 21% of patients in the minoxidil group reported minor side effects, indicating a low level of adverse effects. Finasteride showed better results in terms of more hair and thicker hair, indicating possible synergistic benefits when used in combination treatment. The results of this study indicate that finasteride and oral minoxidil are safe, efficient treatments for androgenetic alopecia. The results highlight the feasibility of both therapies and offer insightful information on their similar safety and effectiveness profiles. It is advised to do larger, longer-term studies to have a more thorough knowledge of their influence.
Keywords: *Androgenetic alopecia, oral minoxidil, finasteride, randomized trial, double-blind, efficacy, tolerability, Norwood Hamilton grade, visual analog scale, trichoscopy.*

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INTRODUCTION

Androgenetic alopecia (AGA) is a common kind of hair loss that is typified by a progressive decline in hair follicle size, which causes terminal hairs to turn into vellus hair [1]. Afflicting nearly half of the population, AGA stands as the leading cause of hair loss. In male pattern hair loss, there is a progressive involvement of the frontal, temporal, mid-scalp, and vertex regions, which, though benign, can significantly impact the psychological and emotional well-being of those affected [2].

Male pattern baldness, as categorized by the Norwood-Hamilton scale, advances through stages characterized by receding hairlines and expanding bald areas. Genetic and hormonal elements, especially the sensitivity to dihydrotestosterone (DHT), contribute to the shrinking of hair follicles. Recognizing these patterns is crucial for accurate diagnosis and personalized treatment. Timely use of medications like minoxidil and finasteride can be beneficial before substantial hair loss occurs [3]. Originally designed as an oral hypertensive, minoxidil has found success in its repurposing for treating androgenetic alopecia (AGA). By activating potassium channels, minoxidil, a prodrug, functions as an arteriolar dilator and increases cutaneous blood flow. It enhances hair diameter, lengthens the anagen phase, and promotes the development of new hair. Finasteride, functioning as a 5α-reductase inhibitor, lowers DHT levels in the scalp. Administered at 1mg/day, it proves effective in AGA treatment, recommended for a duration of 6-12 months [4].

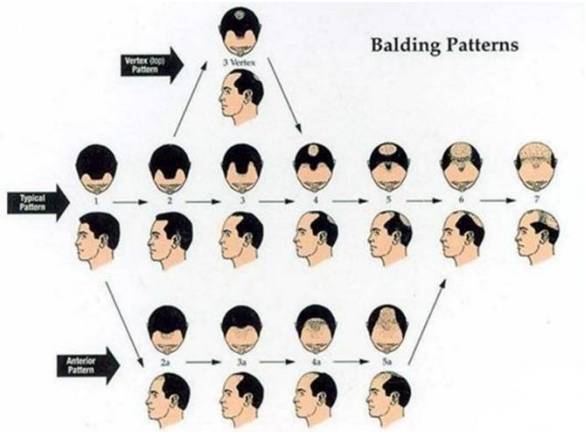

Figure 1 – Balding patterns in men

Oral minoxidil and finasteride target distinct aspects of AGA. Minoxidil enhances blood flow and prolongs the anagen phase, fostering active hair growth. Finasteride, by reducing DHT, prevents the miniaturization of hair follicles [5-6]. Combining these medications may produce a synergistic effect, addressing both blood flow and hormonal factors. Assessing efficacy involves parameters such as increased hair length, diameter, and pigmentation [7]. Safety is monitored by evaluating adverse effects and patient tolerability. A randomized control design will allocate subjects to receive oral minoxidil, finasteride, or a combination, exploring their comparative effectiveness and safety [8].

Thus, understanding the unique mechanisms of action of oral minoxidil and finasteride provides the foundation for investigating their combined efficacy in treating male AGA. This study aims to provide insights into the comparative effectiveness and safety of these medications, potentially guiding the development of optimized treatment approaches for individuals dealing with androgenetic alopecia.

MATERIAL AND METHODS

Using double-blind testing, this study examines the effectiveness of oral minoxidil vs. oral finasteride in treating androgenetic alopecia in a hospital environment. All eligible individuals meeting the inclusion criteria and expressing a willingness to participate were enrolled. A comprehensive evaluation of the duration of androgenetic alopecia and past treatments was documented through a detailed history-taking process.

Before the commencement of the study, participants received thorough information detailing the procedures and potential side effects associated with both medications. Written informed consent was procured from each participant. An extensive assessment using the Norwood Hamilton scale was conducted as part of the baseline evaluation. Before the start of the treatment, baseline tests were performed.

The study design is characterized by a randomized prospective approach implemented within a hospital setting, comparing the effects of oral finasteride with oral minoxidil on patients with androgenetic alopecia using a double-blind approach. Throughout the study period, patients were closely monitored with monthly follow-ups over a duration of 6 months. The predetermined sample size for this study was set at 28 participants.

Inclusion criteria encompassed individuals experiencing androgenetic alopecia falling within Norwood Hamilton Grade 2-6, with the age group considered ranging from 18 to 50 years. Written consent was mandatory, and participants should not have undergone any treatment for the condition within the two months preceding the initiation of the study. Various exclusion criteria were identified, including individuals with hypotension or hypertension, those with Norwood Hamilton grade 1 or grade 7 alopecia, patients with cardiac or cerebrovascular diseases, individuals with abnormal liver or renal function tests, and those who have a history of finasteride or minoxidil allergies.

Randomization and Double Blinding

The study planned to enlist 28 people in total, with 14 allocated to each group to receive finasteride or minoxidil. The 28 patients were given labels ranging from A to Z and a, b, in order to guarantee randomization. The dispenser then stored the data in a computer, which would be made public at the end of the study. The dispenser had produced and sealed each letter-labelled container containing either finasteride or minoxidil. Patients were randomized by selecting a chit, and the corresponding letter-assigned bottle was provided to the patient. The monthly drug supply was dispensed based on the assigned letter, and patients were given a checklist to ensure compliance.

To assess drug tolerability, the investigator recorded any side effects reported by the patients. Regular follow-ups were conducted for both groups to evaluate safety and efficacy at various time points: baseline (Day 0), 1st visit (Day 30), 2nd visit (Day 60), 3rd visit (Day 90), 4th visit (Day 120), 5th visit (Day 150), and 6th visit (Day 180).

Patients were free to withdraw or drop out at any time without affecting further treatment. Those who discontinued were asked for their reasons and to report any adverse events. Post-study follow-up continued for patients willing to extend treatment, satisfied with results, and experiencing no adverse effects.

Efficacy Variables:

a. Photographic Assessment:

The monthly photographic evaluation served as a visual record, capturing the evolution of patients' responses to the treatment. Through a meticulous comparison of baseline images with those taken during the last visit, the study sought to objectively assess changes in hair growth, density, and overall improvement. This method not only recorded tangible transformations but also provided a tangible and visual depiction of the treatment outcomes.

b. Norwood Hamilton Grading:

This played a central role in the standardized assessment of the study. This system offers a methodical approach to categorizing and quantifying the extent of androgenetic alopecia. Types 1 to 7 delineate varying degrees of hairline recession, vertex involvement, and the overall pattern of balding. This scale makes it easier to conduct a methodical assessment of the growth or regression of hair loss during the course of the research, offering insightful information about how the recommended therapies affect the course of androgenetic alopecia over time.

c. Physician Global Assessment Scale:

The physician assessments conducted between the third and sixth visits gave the study a qualitative component. As unbiased observers, doctors evaluated important aspects including hair growth, thickness gain, and general improvement. This all-encompassing method, in addition to the more quantitative measurements, enabled a professional assessment of therapy response. The Physician Global Assessment Scale provides insightful information about the subtle elements of patients' responses to finasteride and minoxidil taken orally.

d. Visual Analog Scale:

During the third and sixth Visual Analog Scale visits offered a way to record patients' subjective perceptions of the effectiveness of their therapy. By allowing patients to rate their experience on a continuum, this measure gave them specific information into their satisfaction levels and perceived efficacy of the prescribed therapies. This subjective metric is essential to understanding the treatment's effects from the patient's point of view since it offers a more comprehensive picture of the entire therapy process.

e. Trichoscopy Assessment:

Trichoscopy, an advanced non-invasive process involving larger examinations of the hair and scalp, has allowed for a thorough knowledge of the structural changes occurring in individual hair follicles. Trichoscopy was used to get additional levels of information on the effects of oral finasteride and minoxidil therapy. It was performed at baseline and the sixth visit. This technique made it easier to examine the scalp more closely and revealed minute data regarding the shape and health of the follicles. The goal of the study was to gain a deeper knowledge of how these therapies affected the minute details of hair follicle health and structure by utilizing trichoscopy. A more thorough assessment of treatment results was made possible by the microscopic viewpoint that the data obtained by trichoscopy brought to the overall assessment.

RESULTS –

The research participants' demographic and clinical features provide important insights into the types of people who struggle with androgenetic alopecia and how responsive they are to finasteride and minoxidil therapies taken orally.

Age Distribution: The mean age was 32.071 ± 8.43 years in the finasteride group and 31.21 ± 9.03 years in the minoxidil group. A well-balanced distribution is suggested by the little difference in mean ages between the two groups, which both lie within a comparable range. This ensures that any observed treatment effects are less likely to be ascribed to age differences, enhancing the comparability of the study groups.

Duration of Androgenetic Alopecia: In the minoxidil group, the mean duration of androgenetic alopecia was 3.03 ± 2.75 years, while in the finasteride group, it was 4.52 ± 2.81 years. Once again, the comparable mean durations in both groups indicate a balance in the chronicity of the condition. This allows for a more

meaningful comparison of treatment outcomes, emphasizing the homogeneity of the study groups concerning the duration of androgenetic alopecia.

Within the minoxidil group, three patients experienced a Grade 1 improvement, and three individuals upgraded from Grade 3 to Grade 2, emphasizing the effectiveness of oral minoxidil in positively impacting hair growth in androgenetic alopecia. Similarly, positive responses were observed in the finasteride group, with five patients demonstrating a Grade 1 improvement and substantial enhancements across different grades. The data indicates that both oral minoxidil and finasteride effectively treat androgenetic alopecia, with minoxidil inducing Grade 1 improvements and finasteride showcasing a versatile impact on various stages of the condition. These results underscore the potential efficacy of both treatments.

Table 1 shows the Norward Hamilton grade for both groups at baseline and the sixth visit.

	Minoxidil group(n=14)	**Finasteride group(n=14)**	**p value**
Norward Hamilton grade at baseline			
Grade 2	3 (21.4%)	5 (35.7%)	0.61
Grade 3	5 (35.7%)	6 (42.9%)	
Grade 4	5 (35.7%)	2 (14.3%)	
Grade 5	1 (7.1%)	1(7.1%)	
Grade 6	0	1(7.1%)	
Norward Hamilton grade at 6th visit			
Grade 2	5 (35.7%)	6 (42.9%)	0.51
Grade 3	3 (21.4%)	5 (35.7%)	
Grade 4	5 (35.7%)	2 (14.3%)	
Grade 5	1 (7.1%)	1(7.1%)	

As described in Table 2, in both the minoxidil and finasteride groups, there were no statistically significant alterations observed in Complete Blood Count (CBC), Liver Function Tests (LFT), Renal Function Tests (RFT), and lipid profiles at baseline, 3rd, and 6th visits. Additionally, no changes were identified in the electrocardiogram (ECG) readings. The absence of statistically significant changes in these evaluated parameters implies that oral minoxidil and finasteride did not induce adverse effects on CBC, LFT, RFT, and lipid profiles over the duration of the study. Furthermore, the lack of discernible ECG changes suggests that these treatments did not negatively impact cardiac function. In order to determine the safety profile of oral minoxidil and finasteride in the context of treating androgenetic alopecia, this consistency in the evaluated parameters is essential. These findings significantly contribute to the comprehensive understanding of the safety and tolerability of these treatments within the studied population.

Table 2: Baseline, third, and sixth visit investigations in both groups

Investigations	Minoxidil group (n=14)			Finasteride group (n=14)		
	Baseline	3 months	6 months	Baseline	3 months	6 months
Haemoglobin	14.48±1.0	13.65±0.7	13.64±0.8	14.11±1.2	12.41±1.1	13.71±1.2
TLC	8435.57± 1779.1	7878.57± 1392.4	7500.0± 1237.4	7371.43± 1230.0	6921.43± 974.4	6871.43± 1235.7
Platelet	3.43±0.53	3.40±0.54	3.58±0.60	3.71±0.86	3.57±0.88	3.71±0.76
Urea	22.73±5.7	23.79±5.3	23.64±5.7	21.24±4.2	22.93±3.9	23.93±3.9
Creatinine	0.90±0.2	0.90±0.2	0.90±0.2	0.78±0.1	0.73±0.1	0.85±0.1
SGOT	25.45±4.1	26.21±4.1	24.21±4.1	27.60±4.4	27.50±4.4	25.50±4.4
SGPT	33.82±3.6	34.71±3.6	34.36±3.9	36.24±3.2	36.14±3.2	37.0±3.1
Total cholesterol	148.90± 23.4	149.86± 23.4	151.86±18.4	154.39±21.5	154.29±21.5	146.86±19.5
TG	79.45± 21.4	78.64± 21.4	78.36±20.7	75.24±21.1	75.14±21.1	75.14±20.9
LDL cholesterol	*94.63± 20.*	*95.36±20.2*	*93.07±20.2*	*88.64±15.5*	*89.64±15.6*	*89.39±14.8*

The study found that there were no statistically significant changes in the systolic and diastolic blood pressure across the 6-month duration in either the finasteride or minoxidil groups. The p-value surpassing 0.05 suggests that neither medication had a notable impact on blood pressure, affirming the safety of these treatments for androgenetic alopecia.

In terms of hair-related parameters, minoxidil led to an increase in frontal hair count from 156.21 ± 20.16 to 182.79 ± 15.72 at the 6-month mark, while finasteride demonstrated a more substantial increase from

148.07 ± 12.40 to 197.29 ± 9.20. At 6 months, finasteride exhibited a significantly higher frontal hair count compared to minoxidil (p-value < 0.01). Both treatments effectively boosted frontal hair count, yet finasteride displayed superior efficacy, suggesting its potential for enhanced hair growth in androgenetic alopecia. These findings provide valuable guidance for individuals seeking interventions, underscoring the safety of both medications and the heightened effectiveness of finasteride.

Table 3: Baseline and 6-month average hair counts comparison of the two groups

Average no of hair	Minoxidil group (n=14)	Finasteride group (n=14)	p value
Frontal			
At baseline	157.21±20.26	148.07±12.50	0.20
At 6 months	183.79±15.62	197.29±9.30	<0.01
Vertex			
At baseline	148.14±9.75	146.57±8.48	0.86
At 6 months	172.43±9.58	190.21±7.16	<0.001

The evaluation of hair-related parameters as revealed in Table 4, substantial distinctions between the minoxidil and finasteride groups. With a p-value less than 0.001, the finasteride group showed a substantially higher increase in average hair number at both frontal and vertex locations than the minoxidil group. This demonstrates how much more finasteride can do to encourage a rise in the average number of hairs at both locations. Additionally, compared to minoxidil, finasteride demonstrated a substantially higher increase in average hair shaft thickness at the frontal and vertex sites (p-value less than 0.001). This implies that beyond contributing to a higher quantity of hairs, finasteride also led to a more substantial enhancement in the thickness of individual hair shafts.

These findings collectively underscore the superior efficacy of finasteride over minoxidil in terms of both hair quantity and quality. The observed statistically significant differences accentuate the potential of finasteride to generate more robust and noticeable enhancements in various hair-related parameters among individuals with androgenetic alopecia. These outcomes hold significant implications for clinicians and individuals, serving as crucial considerations when making well-informed decisions regarding the preferred treatment for this condition.

Table 4 compares the average hair number and average hair shaft thickness between the two groups at baseline and after six months.

	Minoxidil group (n=14)	Finasteride group (n=14)	p value
Average no of hair			
Frontal	25.57±7.59	49.21±6.81	<0.001
Vertex	26.39±2.66	44.64±6.14	<0.001
Average hair shaft thickness			
Frontal	12.60±3.23	19.43±4.58	0.001
Vertex	11.96±1.67	17.0±3.40	0.001

The assessment of treatment results in the groups receiving finasteride and minoxidil demonstrated considerable advancements in addressing androgenetic alopecia, emphasizing the efficacy of these therapeutic interventions. In the minoxidil cohort, 7 patients exhibited an enhancement of Grade 1, signifying positive responses to the treatment. Similarly, in the finasteride group, an equivalent number of 7 patients manifested an improvement of Grade 1. This underscores the success of both minoxidil and finasteride in instigating favorable alterations in the severity of androgenetic alopecia, as evidenced by the amelioration in the grading system.

Moreover, the Visual Analog Scale (VAS) scores, offering a subjective gauge of patients' perceptions regarding treatment efficacy, demonstrated substantial improvement in both groups. The Visual Analog Scale (VAS) score increased from the 3-month to the 6-month point in the minoxidil group. Similarly, throughout the same time period, the VAS scores of the finasteride group also showed improvement. These improvements held statistical significance, with p-values less than 0.001 in both groups. The upturn in VAS scores implies a positive correlation between patients' subjective perceptions and objective assessments, such as the Norwood Hamilton grading system. This alignment between patient-reported outcomes and standardized grading systems reinforces the credibility of the noted improvements.

The similar proportion of patients in both groups who saw Grade 1 improvement highlights how well finasteride and minoxidil work to treat androgenetic alopecia. Nevertheless, the variances in VAS scores suggest potential differences in how patients perceive the outcomes, with the finasteride group showing a slightly greater improvement in subjective assessments. The enhancement in VAS scores can be ascribed to several factors, encompassing increased hair growth, improved hair thickness, and an overall betterment in the appearance of affected areas. These subjective metrics offer valuable insights into the comprehensive impact of treatment on patients' lives, extending beyond quantifiable changes in grading systems.

Additionally, the statistically significant improvement in VAS scores in both groups implies a heightened level of patient satisfaction with the treatment outcomes. The psychological and emotional ramifications of androgenetic alopecia often transcend mere physical manifestations, and the positive subjective assessments underscore the potential positive influence of these treatments on the overall well-being of patients.

DISCUSSION

In order to treat androgenetic alopecia, this study compared the safety and efficacy of oral finasteride with oral minoxidil. Over a 6-month period, 30 participants were enrolled, aligning with the common duration employed in similar investigations within this field. Notably, the study's distinctive feature was its double-blind design, distinguishing it from other open-labelled studies. The adoption of a double-blind approach helps minimize bias by withholding treatment information from both participants and researchers until the study's conclusion, thereby enhancing result reliability and validity.

Following randomization, fixed dosages of 1 mg of finasteride and 2.5 mg of oral minoxidil were given, a departure from studies using variable doses ranging from 0.25 mg to 5 mg for oral minoxidil. This fixed-dose strategy contributes to the standardization of the treatment protocol, facilitating a clearer evaluation of the comparative efficacy of oral minoxidil and finasteride. Two patients withdrew from the trial because to relocation, leaving 28 of the original 30 patients who were enrolled and followed up on. This dropout rate is in line with similar studies conducted by Primez et al., Jha et al., and Panchaprateep et al., which included 25, 30, and 32 patients, respectively [2, 6, 7, 12]. Variations in sample sizes may be attributed to differing inclusion criteria or study designs. Importantly, the reasons for dropout in this study were unrelated to adverse effects, with both patients lost to follow-up due to relocation.

Regarding adverse effects, three patients in the minoxidil group reported mild side effects, while no side effects were observed in the finasteride group. The consideration of adverse effects is vital in treatment decisions, and the low incidence of side effects in this study aligns with the generally favourable safety profiles reported in the literature for both oral minoxidil and finasteride. The mean age of participants in the minoxidil group was 31.21±9.03, and in the finasteride group, it was 32.071±8.43. This similarity in mean age between the two groups enhances the comparability of the study populations. Comparable mean age groups were observed in other studies, such as Jimenez-cauhe et al (mean age 33.3 years) and Pirmez et al [7] (mean age 36.7 years).

Efficacy with Minoxidil

Over the course of six months, a fixed dosage of 2.5 mg of minoxidil was given once daily in our trial. This is noteworthy in contrast to previous research that used various dosages ranging from 0.25 mg to 5 mg. Photographic evaluation and Norwood Hamilton grade improvement showed clinical improvement in the minoxidil group. In particular, there was a noticeable increase in the average number of hairs at the frontal location (26.57±7.69) and the vertex site (26.29±2.46). Additionally, an increase in hair shaft thickness with oral minoxidil was observed at the frontal site (12.50±3.13) and the vertex site (11.86±1.87) after 6 months of treatment.

Jimenez-Cauhe et al. [3] carried out a retrospective analysis on 41 male patients who received oral minoxidil treatment. The patients were given daily dosages of 2.5 mg for 10 patients and 5 mg for 31 patients during a 6-month period. Based on a 4-point assessment, 90.2% of them showed clinical improvement, with considerable improvement seen in 26.8% of cases. They used a varied dosing technique, in contrast to our trial, and did not measure gains in the visual analog scale, PGA, hair count, or hair shaft thickness. Our study showed a better effectiveness, using a fixed dosage of 2.5 mg in all 14 patients in the minoxidil group.

In 2020, Panchaprateep et al. gave 30 males a 5-milligram oral minoxidil dosage spread out over 6 months. At 12 and 24 weeks, they reported a substantial rise in total hair count, which is consistent with the results of our trial using a 2.5 mg dosage. Their research supported the notion that effectiveness is dose-dependent, meaning that larger dosages yield superior results [6]. In a different investigation conducted in 2019 by Primez et al., [7] 25 males received oral minoxidil at a modest dosage of 0.25 mg for

six months. They reported improvements in frontal and vertex areas, but details on the number and average thickness of hairs were not provided [9]. Notably, in our study, almost all patients showed results, whereas in their study, only 50-60% experienced improvements.

In 2020, Jha et al used a 1.25 mg dose for 32 men over 6 months and observed marked and mild improvement in 43.8% and 40.6%, respectively. Their study indicated that 1.25 mg was more efficacious than 0.25 mg but less so than 2.5 mg (Jha et al., 2020). In our study, we also observed improvement in Norwood Hamilton grade, PGA, and VAS scores, further supporting the efficacy of oral minoxidil.

Tolerance of Minoxidil

In our study, 21% of individuals administered oral minoxidil reported adverse effects, with 14% encountering symptoms like headaches and dizziness, and 7% describing body hair hypertrichosis. Remarkably, none of the participants displayed pedal edema, weight gain, or any ECG alterations. This stands in stark contrast to a 2020 study by Panchaprateep et al, where the use of a 5mg oral minoxidil dose resulted in a heightened occurrence of adverse effects. Specifically, 20% of participants exhibited abnormal ECG findings, 10% reported pedal edema, and a substantial 93% experienced hypertrichosis at the 24-week mark, highlighting a trade-off between positive outcomes and increased side effects.

The study by Jimenez-Cauhe et al in 2019, employing two oral minoxidil doses, disclosed that 20% of individuals receiving a 2.5mg dose experienced slight hypertrichosis, with 10% reporting shedding. For those receiving a 5mg dose, 25% exhibited hypertrichosis, and 6% reported limb edema [3]. Similarly, Primez et al in 2019, utilizing a 0.25mg oral minoxidil dose, reported that 4% of participants had pedal edema, 16% experienced hair shedding, and 20% had body hypertrichosis. On the other hand, no negative effects were reported in a 2020 trial by Jha et al. that used an oral minoxidil dosage of 1.25 mg.

Effectiveness of Finasteride

Positive clinical benefits in the finasteride group of this trial were determined by photographic evaluation, which revealed that the average number of hairs at both the frontal (49.21±6.91) and vertex (43.64±6.04) sites after 6 months of treatment. Concurrently, there were significant increases in hair shaft thickness at the frontal site (18.43±4.68) and the vertex site (16.0±3.30). Additionally, improvements were observed in Norwood Hamilton grade, with 5 patients achieving a one-grade advancement, and Patient Global Assessment (PGA), where 7 patients showed improvement by Grade 1. Between the third and sixth months, there was an improvement in the Visual Analog Scale (VAS) score.

Similar results were obtained by Kaufman et al. using a similar set of effectiveness characteristics in a single-blind placebo study. Finasteride or a placebo was administered to research participants at random. Around 65% of patients treated with finasteride were assessed as better, and the results showed a considerable rise in hair counts on trichoscopy at 12 months [11]. Furthermore, 48% of finasteride-treated individuals exhibited improvement on a global photographic evaluation, with 30% expressing mild improvement and 18% reporting moderate to considerable improvement.

Tolerability with Finasteride

Finasteride users in the trial did not report any negative sexual side effects, including decreased libido, erectile dysfunction, or difficulties ejaculating. Similarly, in study by Kaufmann et al. that included 1553 patients taking finasteride, less than 2% of men had sexual side effects such as decreased libido, erectile dysfunction, and ejaculatory difficulties. [11].

Comparison between Minoxidil and Finasteride

Studies directly comparing finasteride and minoxidil for the treatment of androgenetic alopecia are currently lacking. Both minoxidil and finasteride improved Norwood Hamilton grade in a 6-month trial of participants with comparable mean age and duration of androgenetic alopecia. While photographic assessment indicated superior hair growth with finasteride, Patient Global Assessment (PGA) improvement was observed in 7 patients in each group. Visual Analog Scale (VAS) score improvement was more pronounced with finasteride than oral minoxidil.

Trichoscopic analysis, which compares finasteride to minoxidil, revealed a significantly greater increase in the average number of hairs and hair shaft thickness at the frontal and vertex sites in the finasteride group, indicating the medication's superior effectiveness. Finasteride's mechanism of action is responsible for this distinction, since it specifically inhibits type-2 5α reductase, hence reducing the amount of dihydrotestosterone (DHT) that is responsible for the shrinking of hair follicles. On the other hand, cutaneous blood flow is increased by the arteriolar dilator minoxidil.

The study suggests that a combination of both drugs may act synergistically in the future, potentially yielding improved results. Both medications increased the amount and thickness of hair in a comparable way; some individuals saw less hair loss and faster hair growth while using oral finasteride. Compared to minoxidil, worries regarding possible adverse effects were more prevalent with finasteride, even though no patients reported any sexual side effects. If individuals refuse finasteride, oral minoxidil is still a

possibility. The study suggests using a 2.5 mg dosage since a tiny percentage of patients experienced very few side effects.
This study offers valuable insights into oral minoxidil and finasteride for androgenetic alopecia, but it has certain limitations. A small sample size (28 participants), a 6-month duration, no placebo group, fixed doses, and a lack of investigation into psychological impacts and quality of life highlight the necessity for larger, more extended studies to achieve a thorough understanding.

CONCLUSION –

The study concludes that both oral Minoxidil and Finasteride exhibit effectiveness and tolerance in addressing androgenic alopecia. It also indicates that the efficacy and tolerability of oral Minoxidil are on par with those of Finasteride. These findings offer valuable guidance for individuals and healthcare providers navigating treatment decisions for androgenic alopecia, presenting two viable and well-tolerated therapeutic options.

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