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Original Article

Comparing the Efficacy of Platelet Rich Plasma (PRP) vs. Topical Minoxidil (5%) as Synergistic Treatment in Patients Receiving Oral Finasteride for Androgenic Alopecia

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Abstract

Objective: To compare the efficacy of platelet rich plasma (PRP) vs. topical Minoxidil (5%) as synergistic treatments in patients receiving oral Finasteride for androgenic alopecia.
Study type, settings & duration: A comparative cross sectional study was conducted at Department of Dermatology, Sheikh Zayed Hospital, Rahim Yar Khan from July 2019 to June 2020.
Methodology: One hundred male cases of androgenic alopecia with age more than 20 years were included. The cases were divided into two equal groups A and B. The cases in group A were treated by monthly injections of PRP for 6 months while Group B was given treatment with topical Minoxidil therapy with a dose of 1 ml twice daily for 6 months. Both groups were given Finasteride in a dose of 1 mg per day. All cases were assessed for efficacy on the basis of standardized seven-point scale for hair growth. A reduction of 2 or more grades was labelled as efficacious.
Results: The 100 male cases of androgenic alopecia were equally divided in two groups A and B . The mean age of cases in group A and B was 29.06±7.18y and 32.10±6.64 respectively with a *p* value of 0.45. Mean duration of alopecia was 9.64±3.04 and 10.12±3.13 months with *p* =0.65. In group A the treatment efficacy was observed in 39 (78%) cases and in group B efficacy was observed in 20 (40%) cases with *p* value of 0.0001.
Conclusion: Platelet rich plasma in combination with Finasteride is significantly better therapy than Minoxidil with Finasteride for the treatment of androgenic alopecia.
Key words: PRP, finasteride, minoxidil, androgenic alopecia.

Introduction

Hair loss is one of the very concerning entities of the modern times and add to great social and psychological impact. There are different patterns and types of it and generally hair loss is defined as alopecia and it covers a lot of underlying primary and secondary disorders and one of the important genetically associated disorder is Androgenetic alopecia (AGA).[1] It is seen in good number of cases in dermatology clinics and is named due to its nature of being androgen dependent. It has classic pattern of hair loss along with miniaturization of scalp hair. It alters the regular dynamic hair cycles and lead to vellus transformation in terminal hair follicles. Its prevalence is variable and usually involved around 50% of the men aged more than forty years and 13% of the women suffering from this. It leads to a great degree of emotional disturbances warranting treatment and for this, definitive management plan is still lacking and there is no consensus across the globe.[2,3]

The diagnosis is usually made clinically; however, needs few laboratory evidence i.e. dehydroepiandrosterone (DHEA)-sulfate and testosterone when signs of virilisation are seen. The other associated labs needed are serum iron level. Biopsy is rarely needed and has characteristic pattern of non scarring alopecia. There are different

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MMH conceptualized the project. NH did the data collection. TH did the literature search and performed the statistical analysis. Drafting, revision & writing of manuscript were done by RT.

criteria for its diagnosis as well as for categorization of the severity of the disease.

In the past, number of medical therapies have been tried with different degree of success and failure rates and each carries its own benefits and side effect profiles in terms of efficacy, cost, availability and adverse reactions etc. The major concern is the efficacy and the length of the treatments.[4,5] The most commonly practiced drugs those are approved by FDA are topical minoxidil and oral Finasteride and few are undergoing various stages of clinical trials.[3,4] Slow onset of action and longer duration of the treatment are the major points of concern with these two modalities that are commonly practiced and hence focus is greatly swayed towards the development of newer drugs and especially the latest modality i.e. platelet-rich plasma (PRP) therapy is being extensively studied and has satisfactory results.[6-8]

PRP is being used for number of other therapeutic models in medical management and it has more than twenty growth factors and the salient ones are vascular endothelial GF, platelet-derived GF and insulin-like GF-1.[9,10] The basic underlying mechanism of PRP in cases suffering from AGA is differentiation of stem cells, prolongation of dermal papillary cell age, prolonging anagen phase of hair cycle, and increases perifollicular vascular plexus.[11,12] AGA is affecting a number of cases in Pakistan as well and the data regarding PRP use for this was lacking and conventional treatment was resulting in compliance failures.[13,14] That's why we planned to compare the utility of conventional (minoxidil) vs newer (PRP) technique to compare their efficacy.

Methodology

This comparative cross sectional study carried out at Department of Dermatology, Sheikh Zayed Hospital, Rahim Yar Khan from July 2019 to June 2020. Only male cases with age more than 20 years and androgenic alopecia were included. The cases with other causes of hair loss like telogen effluvium, on chemotherapy or with associated connective tissue disorder or vasculitis were excluded from the study. The calculated sample size was 100 by using (online) calculator and by keeping the confidence interval as 97%, power 90% and efficacy in terms of hair pull test in minoxidil group as 42.8% and in PRP group as 75%.[15] The cases were subdivided into two equal groups by random number allocation method. Those cases that were allocated in group A were offered PRP injection which was given on monthly basis for a period of 6 months while those in Group B were offered topical Minoxidil therapy. Minoxidil is available in liquid form and one millilitre was applied two times daily for consecutive 6 months. Both groups were given Finasteride in a dose of 1 mg per day. Then these cases were assessed on standardized seven-point scale of hair growth compared with baseline. The standardized color photographs taken at baseline and at the end of treatment.

The photographs were captures in similar standard resolution and angles and also covered all the zones of vertex. Hamilton-Norwood scale for male pattern hair loss was used according to its pattern of hair loss which were divided in seven different stage, and subsequent improvement in the grading was noted and a change of 2 or more grades from baseline was labelled as efficacious. On each session subjects were counselled regarding the compliance of treatment and regular follow up and to report any degree of serious side effect which though was not part of this study.

The data was assessed by using SPSS version 24. Chi square test was used for categorical data and independent sample t test for numerical data and p <0.05 was taken as significant.

The Ethical approval was obtained from Institutional Review Board of Sheikh Zayed Medical College/Hospital, Rahim Yar Khan.

Results

In this study there were 100 cases, 50 in each group. The mean age in group A was 29.06±7.18y while in group B was 32.10±6.64 years with p =0.45. Mean duration of alopecia in group A cases was 9.64±3.04 months while in group B it was 10.12±3.13 months with p =0.65 (Table-1).

Table 1. Study variables of alopecia cases enrolled in both group A and B. (n=50)

Study Variables	*Group A*	*Group B*	*p*
Age (years)	29.06±7.18	32.10±6.64	0.45
Weight (kg)	66.02±8.83	64.08±10.14	0.29
Duration of alopecia (months)	9.64±3.04	10.12±3.13	0.65

Table 2: Comparison of the treatment efficacy among both groups.

Efficacy	*Group A*	*Group B*	*p*
Yes	39 (78%)	20 (40%)	
No	11 (22%)	30 (60%)	0.0001
Total	50	50	

Efficacy was observed in 39 (78%) cases in group A and 20 (40%) in group B with p =0.0001 as

shown in Table-2. Images from few of the cases are shown in Figure.

Figure: Images from few of the cases.

Discussion

Androgenic alopecia is a common entity requiring intervention in the dermatological consult and their reported number is increasing due to increase seeking of the therapy. There are not many options available and those what are available, lack the consistency in the efficacies and have longer duration of treatment regimens where compliance is another issue.[16] That's why there was always a need for a regimen that has good efficacy, lack of compliance failure, cost effective and minimal to no side effects. Topical minoxidil is most commonly practiced till date and the PRP therapy is emerging one with promising results especially in combination with Finasteride.[17,18] Both of the agents have been tried in the recent past either alone or in combination therapy and results seemed promising.

In the present study, PRP was made by using 25 to 35 ml venous blood. Different amounts of plasma were used in various studies. The plasma used in this study was slightly higher in contrast to previous studies where they used either 20 ml or lesser than this to prepare PRP, which was slightly higher as compared to studies by Betsi et al, Khatu et al, and Gkini et al who used 16 ml, 20 ml, and 16 ml of blood, respectively.[19-21] This was done keeping in mind to increase the volume for proper injection and also to avoid wastage.

In our study efficacy was observed in 39 (78%) cases in group A managed with PRP along with Finasteride and 20 (40%) in group B managed with Minoxidil plus Finasteride with p =0.0001 which had high degree of statistical significance. These results were comparable to the findings of the various previous studies.[6] The evaluation was done by using similar protocols. This group also used hair pull test and patient satisfaction score. They found that after the PRP therapy all of their cases reported good efficacy and there was 100% negative hair pull test after 3rd injective therapy and no major side effect was reported.[19]

In another study done by Khatu et al using PRP where they also found a high degree of efficacy of 81.81% after 3 months of the treatment.[20] Further in another study done by Gkini MA et al they followed these cases for one year after PRP and found very good efficacy.[21] This further strengthened the belief in newer entity i.e. PRP.

The data regarding the use of topical minoxidil in androgenic alopecia was also promising and many RCTs and single limb studies have shown good efficacy in prevention of hair loss.[22,23] Minoxidil was also used regularly in previous and current studies to see its role in alopecia. The data regarding one to one comparison was lacking and in

individual studies both revealed good degree of efficacy in various strengths. According to a study done by Olsen et al they compared 5% vs 2% topical Minoxidil for AGA and treated for 1 year and found that 5% was significantly better than 2% in terms of change from baseline in non-vellus hair count (18.6±25.4 in 5% minoxidil vs. 12.7±20.7 in 2% minoxidil vs. 3.9±21.7 in placebo group).[24]

Tsuboi et al, also compared various strengths of Minoxidil and they found that with 5% Minoxidil solution, mean change in hair count was 22.3 and with 1% Minoxidil it was 17.2 in with a significant difference with p =0.009.[25] There was direct dose dependent benefit in this study.

In another randomized controlled trial comparing PRP and Minoxidil carried out by Navarro et al, on retrospective basis, it was seen that anagen hair were much increased with PRP therapy as compared to minoxidil treated cases (6.9%±0.4% and 4.6%±0.5%, respectively) (p <0.05). Telogen hair decrease was also higher in PRGF group (5.7%±0.3% and 2.6%±0.5%, respectively) (p <0.05).[26]

According to a study done in Pakistan regarding PRP therapy it was seen that there was significant improvement in increasing mean hair thickness after 6 months of therapy changing from 34.18±14.36/cm2 to 50.20±15.91/cm2 with p =< 0.05 and also significant improvement was noted in terms of negative hair pull test (p <0.05).[27] In another study done by Verma et al they compared minoxidil and PRP without concomitant Finasteride and it was noted that PRP was significantly better than minoxidil in increasing hair thickness and improvement in hair pull test with p =< 0.05.[15] Addition of Finasteride in our study seem to be even more efficacious with PRP rather than alone as was studies in above mentioned study. In other studies PRP has also shown high degree of efficacy and Finasteride is still most practiced drug which might be due to presence of this drug for a longer period of time as compared to PRP which is relatively a recent entitiy.[28-30]

Platelet rich plasma in combination with Finasteride is significantly better therapy than Minoxidil with Finasteride for the treatment of androgenic alopecia.

Conflict of interest: None declared.

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