Usefulness of Platelet Rich Plasma in Androgenetic Alopecia

Nadia Iftikhar, Kanza Aftab, Majid Hussain*, Shanza Obaid, Zarnab Zainab, Maimoona Mushtaq

Pak Emirates Military Hospital/National University of Medical Sciences (NUMS) Rawalpindi Pakistan, *Combined Military Hospital Abbottabad/National University of Medical Sciences (NUMS) Pakistan

ABSTRACT

***Objective*:** To study the usefulness of platelet-rich plasma in patients of androgenetic alopecia at the Dermatology Department of Pak Emirates Military Hospital Rawalpindi, Pakistan.

***Study Design*:** Case series.

***Place and Duration of Study*:** Department of Dermatology, Pak Emirates Military Hospital, Rawalpindi Pakistan, from Dec 2018 to Jan 2020.

***Methodology*:** A total of 50 patients with androgenetic alopecia diagnosed by the consultant dermatologist were included in this study. Patients were administered platelet-rich plasma every four weeks for three sessions. Hair pull test and subjective improvement of patients (0-10) were used to see the treatment response.

Results: Out of 50 patients with androgenetic alopecia, 36 (72%) had satisfactory responses while 14 (28%) had not achieved the satisfactory response after the twelve-weeks treatment comprising of three sessions. The absence of comorbid medical illness and less age of the patients had a statistically significant relationship with the presence of satisfactory response in the study population (*p*-value 0.010 and 0.001).

Conclusion: A significant number of patients with androgenetic alopecia responded very well to platelet-rich plasma. Chances of achieving a satisfactory response increase if the patient is not having any comorbid medical illness and is less than the age of 40 years at the time of treatment.

Keywords: Androgenetic alopecia, Platelet rich plasma, Treatment response.

How to Cite This Article: *Iftikhar N, Aftab K, Hussain M, Obaid S, Zainab Z, Mushtaq M. Usefulness of Platelet Rich Plasma in Androgenetic Alopecia. Pak Armed Forces Med J 2022; 72(1): 112-114. Doi: https://doi.org/10.51253/pafmj.v72i1.4337*

INTRODUCTION

General physicians, medics and dermatologists face many patients with problems related to hair fall or hair loss. Regardless of their gender, individuals get worried when their hair get some pathology and approach the doctor with much concern and demand quick and definitive management.[1] A lot of endocrine, autoimmune and infective conditions involve the hair and may cause diffuse or patchy hair loss requiring local or systemic management and in some cases, patients may even go for the hair transplant.[2]

Androgenetic alopecia has been an area of concern for patients around the globe, with a rise in incidence each year.[1] Much work has been done to find the exact cause of this illness causing hair loss in millions of people each year worldwide, but no exact aetiology could be found. With the current evidence, it is believed that endocrine and immune-based aetiologies could be linked with this disease.[2,3]

Minoxidil and 5 alpha-reductase inhibitors have been the mainstay of treatment in the case of androgenetic alopecia.[3,4] Complementary and alternate therapies have also been practiced in routine.[5] In 2019, Stevens *et al*, performed a meta-analysis to look for the role of PRP in the management of androgenetic alopecia. They concluded that the use of platelet-rich plasma to treat androgenetic alopecia is an effective management technique for the patients with androgenic alopecia.[6] It has very few side effects and is a safe management option. Multiple factors may enhance or reduce the efficacy; therefore, suitability should be weighed before deciding this mode of management.[6] Loti *et al*, concluded that there is not enough evidence for the use of PRP procedures in the treatment of androgenetic alopecia.[7] Another systemic review carried out by Mao *et al*, concluded that the use of PRP has been effective in reducing further hair loss and increasing the thickness and density of hairs.[8] Gupta *et al*, evaluated the role of a platelet-rich plasma administration for management of alopecia and they came up with the conclusion that PRP is an effective and safe option.[9] Khatu *et al*, revealed that patient satisfaction was achieved with the administration of platelet-rich plasma for androgenic alopecia and it emerged as an effective and safe management option.[10] Dermatologist usually have to rely on the guidelines and studies done in the West

Correspondence: Dr Kanza Aftab, Department of Dermatology, Pak Emirates Military Hospital, Rawalpindi Pakistan

Received: 19 May 2020; revision received: 25 Jan 2021; accepted: 02 Feb 2021

due to limited local data. Therefore, to bridge this gap, we planned this study to study the usefulness of platelet-rich plasma in androgenetic alopecia patients at the Department of Dermatology, Pak Emirates Military Hospital Rawalpindi.

METHODOLOGY

This case series was conducted at the Department of Dermatology Pak Emirates Military Hospital Rawalpindi from December 2018 to January 2020. Non-probability Consecutive sampling technique was used to gather the sample for this case series.

Inclusion Criteria: Patients of either gender, between the age of 18 and 50 years with androgenetic alopecia diagnosed by the consultant dermatologists were included in the study.

Exclusion Criteria: Patients with haematological disorders, thyroid dysfunction, malnutrition and other dermatological disorders contributing to hair loss were excluded from the study. Pregnant and lactating women and patients who gave a history of allergic reactions to PRP treatment were also not included in our study.

All the ethical aspects, including the written informed consent and getting IREB approval (via letter-number A/28/64/20), were taken before the start of study. REMI centrifuge was used for the preparation of PRP. 20 cc syringe was used to draw 18 mL of whole blood mixed with 2mL of ACD-A solution divided equally into six vials and centrifuged for 15 minutes at 3500 rpm (revolutions per minute) and then for 10 minutes at 2500 rpm.[11] A total of 5-6 mL of the buffy coat and PRP were harvested and injected as per requirement. It gave 5–7 times the concentration of the baseline platelet count.[12] This procedure was repeated after four weeks three times. Pull test was performed before and after the procedure as per protocol.[13] Only pull test positive patients were included in the study. The patients' satisfactory response was a subjective assessment score of 7 and a negative pull test.[14] Those who scored less than seven on subjective assessment score and had positive pull tests even after the three sessions were classed as having unsatisfactory responses.

The demographic features of the study participants and patients' satisfactory responses to the treatment were described using descriptive statistics. Chi-square was applied to look for the association of age, gender, duration of alopecia and presence of comorbidities with the satisfactory response. Statistical analysis was performed using Statistics Package for Social Sciences version 24 (SPSS-24.0). Differences between groups were considered significant if *p*-values were less than or equal to 0.05.

RESULTS

A total of 50 patients were included in the study. The androgenetic alopecia patients reporting in the Dermatology Outpatient Department were included. Out of these 50 patients, 31 (62%) were male, while 19 (38%) patients were female. Table showed that out of 50 patients with androgenetic alopecia included in the study, 36 (72%) had a satisfactory response to the treatment while 14 (28%) had not shown a satisfactory response even after the three sessions of PRP. The presence of comorbid medical illness and advancing age of the patients had a statistically significant relationship with unsatisfactory response to the treatment in the study population (Table).

Table-I: Factors relating to the presence of satisfactory response in androgenic alopecia after the treatment of four sessions of platelet rich plasma.

Factors	Positive response	No positive response	*p*-value
Age			
<40 years	32 (88.9%)	03 (21.4%)	<0.001
>40 years	04 (11.1%)	11 (78.6%)	
Gender			
Female	15 (41.7%)	04 (28.6%)	0.386
Male	21 (58.3%)	10 (71.4%)	
Duration of Androgenic Alopecia			
<2 years	19 (52.7%)	10 (71.4%)	0.223
>2 years	17 (47.3%)	04 (28.6%)	
Presence of Comorbid Illness			
No	33 (91.7%)	07 (50%)	0.002
Yes	03 (8.3%)	07 (50%)	

DISCUSSION

Clinicians and researchers have been trying to find the best treatment for this medical condition which manifests as hair loss and contributes a lot to cosmetic concerns of patients of both genders.[4,15] A recent study conducted in Pakistan to assess the efficacy of PRP in the management of androgenic alopecia came up with very promising results that it is not only efficacious but safe option as well.[16] As in the case of many dermatological conditions, androgenetic alopecia may benefit both from topical or systemic therapies or sometimes a combination of both.[4,15] Still, there is no consensus on which treatment modality is best for patients of our part of the world.

Gupta *et al*, performed a systematic review. They came up with the conclusion that the overall SMD in hair density was 0.58 (95% confidence interval [CI]:

0.35-0.80) and 0.51 (95% CI: 0.23-0.80, p<0.004) in favour of PRP treatment when compared with baseline and placebo treatment, respectively.[9] Our study also revealed that PRP was an effective mode of treatment for androgenetic alopecia.

Khatu *et al*, conducted a study having the target population from our neighbouring country India to assess the safety, efficacy and feasibility of PRP injections in treating androgenetic alopecia. They concluded that hair loss reduced to a significant extent between the sessions of PRP. An increase in hair count was significant, linked to patient satisfaction with the treatment. The pull test was negative in almost all the patients after the last session.[10] Pull test was negative in 72% of our study patients, endorsing the findings of a similar study from a neighbouring country.

Gender was not statistically significantly related to the treatment response in our study (p-value >0.05). Sharma *et al*,[17] concluded that treatment with PRP has been effective for most of the patients. However, females responded less than males, but it was not statistically significant. The results from their study and our study highlighted the fact that gender has no established role in predicting the response to PRP in androgenetic alopecia and this treatment could be offered to both the genders.

Ferrando *et al*, conducted a study with 78 patients. Most of them were female patients. They did initially three sessions monthly and then the next three on a bi-monthly basis to look for the efficacy of PRP among the patients with androgenic alopecia. They wanted to establish the role of this modality in patients who did not respond to pharmacological therapy and their results supported their objective strongly as PRP emerged as an effective option.[18]

More studies with better methodology and comparison with placebo or other agents may yield better results which could help clinicians develop local guidelines for the management of androgenetic alopecia.

LIMITATIONS OF STUDY

This study has a few limitations. Biopsy was not used to diagnose the clinical condition. It was not a randomized control trial, so results could not be generalized or compared with other standard treatments.

CONCLUSION

A significant number of patients with androgenetic alopecia responded very well to platelet-rich plasma. Chances of achieving a satisfactory response increase if the patient is not having any comorbid medical illness and is less than the age of 40 years at the time of treatment.

Conflict of Interest: None.

Authors' Contribution

NI: Conception design, KA: Analysis writ up, MH: Interpretation, SO: Data collection, ZZ: Design, MM: Data collection.

REFERENCES

1. Avital YS, Morvay M, Gaaland M, Kemény L. Study of the international epidemiology of androgenetic alopecia in young caucasian men using photographs from the internet. Ind J Dermatol 2015; 60(4): 419.
2. Ustuner ET. Cause of androgenic alopecia: crux of the matter. Plast Reconstr Surg Glob Open 2013; 1(7): e64.
3. Mysore V, Parthasaradhi A, Kharkar RD, Ghoshal AK, Ganjoo A, Ravichandran G, et al. Expert consensus on the management of Androgenetic Alopecia in India. Int J Trichol 2019; 11(3): 101-106.
4. Tosti A, Camacho-Martinez F, Dawber R. Management of androgenetic alopecia. J Eur Acad Dermatol Venereol 1999; 12(3): 205-214.
5. Hosking AM, Juhasz M, Mesinkovska AN. Complementary and alternative treatments for alopecia: a comprehensive review. Skin Appendage Disord 2019; 5(2): 72-89.
6. Stevens J, Khetarpal S. Platelet-rich plasma for androgenetic alopecia: a review of the literature and proposed treatment protocol. Int J Womens Dermatol 2018; 5(1): 46–51.
7. Lotti T, Goren A, Verner I, D'Alessio PA, Franca K. Platelet rich plasma in androgenetic alopecia: A systematic review. Dermatol Ther 2019; 32(3): e12837.
8. Mao G, Zhang G, Fan W. Platelet-rich plasma for treating androgenic alopecia: a systematic review. Aesthetic Plast Surg 2019; 43(5): 1326-1336.
9. Gupta AK, Cole J, Deutsch DP, Everts PA, Niedbalski RP, Panchaprateep Ret al. Platelet-rich plasma as a treatment for androgenetic alopecia. Dermatol Surg 2019; 45(10): 1262-1273.
10. Khatu SS, More YE, Gokhale NR, Chavhan DC, Bendsure N. Platelet-rich plasma in androgenic alopecia: myth or an effective tool. J Cutan Aesthet Surg 2014; 7(2): 107–110.
11. Wolff H, Fischer TW, Blume-Peytavi U. The diagnosis and treatment of hair and scalp diseases. Dtsch Arztebl Int 2016; 113(21): 377–386.
12. Garg S, Manchanda S. Platelet-rich plasma-an 'Elixir' for treatment of alopecia: personal experience on 117 patients with review of literature. Stem Cell Invest 2017; 4(1): 64.
13. McDonald KA, Shelley AJ, Colantonio S, Beecker J. Hair pull test: Evidence-based update and revision of guidelines. J Am Acad Dermatol 2017; 76(3): 472-477.
14. Faghihi G, Iraji F, Harandi MR, Nilforoushzadeh MA, Askari G. Comparison of the efficacy of topical minoxidil 5% and adenosine 0.75% solutions on male androgenetic alopecia and measuring patient satisfaction rate. Acta Dermatovenerol Croat 2013; 21(3): 155-159.
15. Adil A, Godwin M. The effectiveness of treatments for androgenetic alopecia: A systematic review and meta-analysis. J Am Acad Dermatol 2017; 77(1): 136-141.
16. Butt G, Hussain I, Ahmed FJ, Choudhery MS. Efficacy of platelet-rich plasma in androgenetic alopecia patients. J Cosmet Dermatol 2019; 18(4): 996-1001.
17. Sharma VK, Bhari N, Patra S. Platelet-rich plasma therapy for androgenetic alopecia. Ind J Dermatol 2019; 64(5): 417-419.
18. Ferrando J, García-García SC, González-de-Cossío AC. A proposal of an effective platelet-rich plasma protocol for the treatment of androgenetic alopecia. Int J Trichol 2017; 9(4): 165-170.