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EFFICACY OF PRP INJECTION IN TREATING ANDROGENIC ALOPECIA IN FEMALE

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ABSTRACT

Background: Androgenetic alopecia (AA) is characterized by the gradual replacement of thick terminal hairs with miniaturized, vellus hairs, typically following distinct patterns. Treatment options for AA include various modalities, but their efficacy remains variable. Platelet-rich plasma (PRP) therapy has emerged as a promising intervention for hair loss, hypothesized to stimulate follicular stem cells and neovascularization. **Objective:** This study aimed to evaluate the clinical efficacy and safety of PRP therapy specifically in women with AA, drawing from a single-center experience. **Methods:** A retrospective observational study was conducted at the Department of Dermatology of Tertiary Hospital, enrolling women aged over 18 years diagnosed with AA who showed minimal improvement following topical minoxidil treatment. PRP therapy, administered in six sessions at 4-week intervals, involved the injection of PRP into selected scalp areas. Efficacy was assessed using the severity of alopecia tool (SALT) scoring system, and adverse effects were monitored post-treatment. Statistical analysis utilized paired t-tests and effect size calculations. **Results:** A total of 20 women (mean age: 42.38 years) were included. Post-PRP treatment, there was a significant reduction in the total SALT score from 27.5 ± 6.35 to 9.41 ± 3.71 ($P \leq 0.05$), corresponding to a 33.94% change. The effect size was 3.52. Specific scalp area analysis revealed the vertex to exhibit the largest effect size, with similar effects in other regions. No serious adverse effects were observed. **Conclusion:** PRP therapy demonstrated efficacy and safety in treating AA in women, presenting a viable alternative to conventional treatments. However, further research with standardized protocols and comparative studies is needed to confirm its superiority and establish it as the preferred option for AA management.

KEYWORDS: Androgenetic alopecia (AA), Platelet-rich plasma (PRP) therapy, hair loss.

INTRODUCTION

Androgenetic alopecia (AA) manifests as a gradual transition from thick terminal hairs to miniaturized, vellus hairs, typically following well-established patterns. These patterns differ between men and women, though some characteristics overlap. In men, hair loss commonly initiates above the temples and at the vertex of the scalp, while women typically experience diffuse thinning without significant hairline recession, seldom progressing to complete baldness.[1-3]

Various treatments for AA have been explored, including topical applications, oral supplements, low-level laser therapy, and hair transplantation. However, the efficacy of these treatments is variable and often lacks robust scientific scrutiny.[4] Recently, there has been increasing interest in platelet-rich plasma (PRP) as a potential solution for hair loss. PRP, also known as autologous platelet gel or plasma rich in growth factors, involves enriching autologous platelets in a small plasma volume through centrifugation. It is hypothesized that the growth factors released by platelets could stimulate stem cells in the follicle's bulge area, promoting the development of new follicles and facilitating neovascularization.[5]

OBJECTIVE

The aim of this study was to provide insight into the utilization of platelet-rich plasma (PRP) therapy in the treatment of androgenetic alopecia (AA) specifically in women, drawing from a single-center experience. The study sought to assess the clinical efficacy and safety profile of PRP as a therapeutic intervention for AA in this population.

METHODOLOGY

The study population comprised women presenting at the Department of Dermatology of Tertiary Hospital, who met specific inclusion criteria: (1) aged over 18 years and in good general health; (2) diagnosed with androgenetic alopecia (AA) by a dermatologist; (3) showing minimal or no improvement following treatment with topical minoxidil for at least 6 months. Exclusion criteria

encompassed diagnoses of hematological disorders, thyroid dysfunction, malnutrition, or other dermatological disorders contributing to hair loss. A total of 20 patients, with a mean age of 41.2 years (range 21–65 years), were enrolled between April 2022 and January 2023.

The study intervention involved the extraction of approximately 18 mL of whole blood from a peripheral vein, which was then introduced into a commercially available PRP kit (Dr. PRP Kit). The plasma and red blood cells were separated via centrifugation, with a second centrifugation aimed at enriching the concentrated platelet solution. PRP (0.1 mL/cm2) was then injected into selected areas of the scalp in each patient. Six treatment sessions were administered at 4-week intervals.

Efficacy assessment employed the severity of alopecia tool (SALT) scoring system, comparing pre- and post-intervention SALT scores to evaluate treatment effectiveness. Adverse effects were monitored post-treatment, with patients instructed to report any adverse reactions between sessions. All adverse events were meticulously recorded.

Statistical analysis involved reporting data as mean ± standard deviation for continuous variables. A paired t-test was utilized to ascertain significance levels, with differences deemed statistically significant at an α level of 0.05. Percentage changes in mean values were calculated for the total SALT score and individual scalp areas, while effect sizes were determined using Cohen d. Analysis was conducted using the Statistical Package for the Social Sciences software package (version 22).

RESULTS

The mean age of the patients was 42.38 years. Additionally, the majority of patients resided in urban areas (70%) compared to rural areas (30%).

Table No 1: Baseline details of all the patients.

Characteristics	Mean
Mean age	42.38±1.52
Residence	%
Urban	70%
Rural	30%

The average pre-intervention total SALT score was 27.5 ± 6.35, while post-intervention, it significantly decreased to 9.41 ± 3.71 ($P \leq 0.05$). This resulted in a notable post-treatment difference in the total mean SALT score of 18.33 ± 1.64, representing a substantial 33.94% change in the mean SALT score. Furthermore, the effect size was calculated to be 3.52.

Table 2: Comparison of pre- and post-intervention severity of alopecia tool (SALT) scores for scalp area, mean ± SD.

			Observed difference			(Cohen d)	
Area of scalp	**Pre-intervention score**	**Post-intervention score**	**% change in mean score**	**Post minus pre intervention score**	***P*-value**	**Effect Size**	**95% confidence Interval**
Vertex	15.40 ± 4.90	5.32 ± 2.75	34.69	10.08 ± 1.25	≤0.05	2.53	1.36–3.71
Right profile	4.32 ± 1.79	1.62 ± 0.85	37.50	2.7 ± 0.44	≤0.05	1.92	0.86–2.98
Left profile	4.41 ± 1.79	1.53 ± 0.77	34.55	2.88 ± 0.43	≤0.05	2.09	1.00–3.18
Posterior aspect	3.48 ± 1.64	0.95 ± 0.9	27.31	2.53 ± 0.42	≤0.05	1.91	0.85–2.97

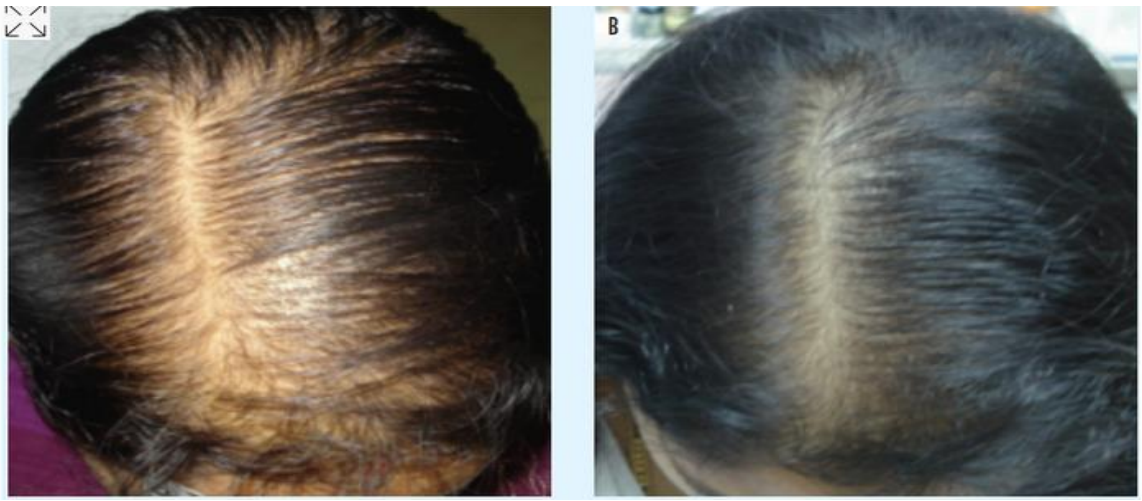

Figure-1 a and 1b: A 42 years women before and receiving PRP.

DISCUSSION

The study results affirm the efficacy of PRP treatment in women undergoing six sessions spaced 4–6 weeks apart. Following PRP therapy, there was a significant reduction in the total SALT score by 18.33 ± 1.64. Previous investigations utilizing SALT scores to gauge PRP efficacy have reported varying decreases, such as 18.12 (from 38.9 to 20.78) with four PRP sessions and 10.82 (from 36.41 ± 16.41 to 25.59 ± 20.54, $P < 0.001$) with 1–5 PRP sessions, suggesting potential influence of session count on PRP effectiveness across studies.

This study uniquely assesses the efficacy of PRP treatment across distinct scalp areas, revealing the vertex to exhibit the largest effect size, with similar effect sizes observed in other regions. Notably, no prior study has provided such specific scalp area findings, although some have indicated PRP outperforming minoxidil therapy.[5-7]

Recent investigations and systematic reviews underline PRP's efficacy in AA treatment, although some studies reported no improvement post-PRP. These discrepancies may stem from the lack of standardized treatment protocols and evaluation methods in PRP studies.[8-11]

No serious adverse effects were observed in this study, with only mild and transient adverse effects noted, consistent with prior research. This favorable safety profile underscores PRP's advantage as a treatment modality.

While the study benefits from utilizing a standard PRP kit, employing a validated assessment tool, and reporting results by scalp area, limitations include a small sample size and short follow-up period. Given the slow pace of hair growth, a longer follow-up duration would better ascertain the intervention's long-term efficacy, especially post-treatment cessation.

CONCLUSION

The current study underscores the effectiveness and safety of PRP injections as a treatment for AA in women, offering a promising alternative to established treatment modalities. However, to solidify these findings, further research conducted with robust methodologies, including standardized treatment protocols and evaluation measures, is imperative. Comparative studies contrasting PRP therapy with conventional treatments are warranted to ascertain its superiority and potential as the preferred option for AA management.

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