

A RANDOMIZED CONTROLLED STUDY OF THE EFFECT OF INTRALESIONAL INJECTION OF AUTOLOGOUS PLATELET RICH PLASMA (PRP) COMPARED WITH TOPICAL APPLICATION OF 10% MINOXIDIL IN MALE PATTERN BALDNESS

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Sir,

Human skin contains approximately 50 lacs hair follicles out of which one lac of the scalp including those of the eyelashes and eyebrows are the most visible. AGA is the most common form of non-cicatricial alopecia and has a polygenic inheritance. The hormone specifically involved is the dihydrotestosterone (DHT) which leads to change in local metabolism leading to conversion of susceptible terminal hairs into vellus hairs¹. Minoxidil is a vasodilator which was initially used as an oral drug to treat high blood pressure, however was found to cause hypertrichosis². PRP in medicine was first used in 1987, following an open heart surgery, to avoid excessive transfusion of homologous blood products. But now it has become an exciting non surgical therapeutic option for hair growth and stimulation. The clinical benefit of PRP in hair restoration has been recognized since the early 1990s³. Aim of the present study was to compare the effect of Intralesional Autologous PRP and topical 10% Minoxidil in the patients of Male Pattern Baldness.

A randomized double blinded control trial was conducted which included a total of 105 cases. The cases were divided randomly into 3 groups; Group A (injected with PRP), Group B (applied 10% minoxidil) and Group C was the control group. Each group had 35 patients with similar age and sex profile. Six injections of PRP (0.1ml per cm²) were given in all 35 patients at an interval of 21 days. The patients in group B applied 1ml 10% minoxidil twice daily for 32 weeks, while the patients in group C were told to apply topical rose water for 32 weeks. The patients were evaluated by trichoscan for hair thickness and density. A baseline value was recorded for all patient and then were observed monthly for a period of six months.

PRP was prepared by the use of an automated REMI centrifuge (6×50 ml), just prior to the procedure. Under aseptic precautions, 20 ml of blood was withdrawn from the antecubital vein of the patient lying in the supine position. The blood was immediately transferred to 4 sterile test tubes of 5 ml each containing 0.75 ml anticoagulant, citrate phosphate dextrose A. The test tubes were then subjected to centrifuge at the rate of 1000 rpm for 10 min. Subsequently, the supernatant, which constitutes the platelet rich plasma (PRP), was withdrawn into a new sterile test tube. 0.1ml

Group	N	Mean age	P- Value
A	35	25.80	0.6713
B	35	26.89	
C	35	26.34	
Total	105		

Table 1: Table showing average age of patients (in years)

of 10% calcium chloride was added for each ml of PRP; however this addition was done immediately before injecting in the scalp, so as to avoid crystallization of PRP solution. After applying topical anaesthetic ointment for 45 minutes, PRP was then injected into the scalp intradermally by an insulin syringe. Patients were prescribed tab. amoxicillin + clavulanic acid TDS for 7 days along with analgesics (tab. diclofenac sodium+ paracetamol BD) as and when required and were advised to revisit after 21 days.

In the present study conducted, average age of patients in the group A was 25.8 yrs, group B was 26.8 yrs and the group C was 26.3 yrs (Table 1). Thus, there was no significant difference between the mean age of all the three groups and were comparable. The mean hair thickness of group A at baseline and last visit were 22.8 µm and 25.7 µm, group B were 20.9 µm and 23.5 µm and group C were 25 µm and 25.9 µm respectively (Table 2). The mean hair thickness at last visit did not show a significant difference in any of the groups statistically or clinically. The mean hair thickness increased by 2.9 µm in group A, 2.6 µm in group B and 0.3 µm in group C. Though the increase in thickness was more in PRP group, this was not statistically significant. The mean hair density in the group A at baseline and the last visit were 100.9 and 121.8 follicular units per cm² respectively, group B was 98.4 and 106.4 follicular units per cm²

	Mean Baseline Value	Mean Final Value	P- Value
Group A	22.8	25.7	0.145
Group B	20.9	23.5	0.546
Group C	25	25.3	0.564

Table 2: Table Showing Mean Hair Thickness in 1st visit and last visit (in µm)

	Mean Baseline Value	Mean Final Value	P- Value
Group A	100.9	121.8	0.005
Group B	98.4	106.4	0.132
Group C	104.2	104.97	0.875

Table 3: Table showing Hair Density in 1st visit and last visit (in follicular units per cm²)

and group C was 104.2 and 104.9 follicular units per cm² respectively (Table 3). Patients of group A showed statistically significant increase in their mean hair density. Although the mean hair density increased in group B and C as well, it was not statistically significant. In present study, 62.9% of the patients had a family history of Androgenetic Alopecia.

The growth factors in the PRP when released promote tissue repair, angiogenesis (capillary formation), collagen production and encourages normalization of the hair follicular unit. PRP contains platelets in amount much greater (around 1,000,000 platelets/ul) than normally in blood⁴. As mentioned, AGA is the most common cause of non cicatricial alopecia and the available treatments are sometimes unable to achieve adequate results. Thus PRP has proved to be an important adjunct in treatment options of AGA⁵. However this requires further studies to gain more evidence before it is used more extensively.



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References

1. Kaufman KD, Olsen EA, Whiting D, Savin R, DeVillez R, Bergfeld W. Finasteride in the treatment of men with androgenetic alopecia. *J Am Acad Dermatol* 1998;39:578-89.
2. Rogers NE and Marc RA. Medical treatments for male and female pattern hair loss. *Journal of American Acad of Dermatol* 2008;59:547-66.
3. Hordinski MK, Sundby S. The effect of activated platelet supernatant on synthesis of hair protein and DNA in microdissected human hair follicles. *Ann N Y Acad Sci*. 1991;642:465-7.
4. Katsuoka K, Schell H, Wessel B, Hornstein OP. Effects of epidermal growth factor, fibroblast growth factor, minoxidil and hydrocortisone on growth kinetics in human hair bulb papilla cells and root sheath fibroblasts cultured in vitro. *Arch Dermatol Res*. 1987;279:247-50.
5. Swapna SK, Yuvraj EM, Neeta RG, Chavhan DC, Bendsure N. Platelet-Rich Plasma in Androgenic Alopecia: Myth or an Effective Tool. *J Cutan Aesthet Surg*. 2014;7:107-10.