

THE EFFECT OF PLATELET RICH PLASMA (PRP), GROWTH FACTORS, AND HUMAN FOLLICLE STEM CELLS IN HAIR LOSS

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Introduction: Platelet-rich plasma (PRP) has emerged as a new treatment modality in regenerative plastic surgery, and preliminary evidence suggesting that it might have a beneficial role in hair re-growth. Here, we reported the results of a randomized, trichoscan evaluator blinded, placebo half-head group study to compare the hair re-growth with PRP and with human follicle stem cells (HFSCs) versus placebo. To investigate the safety and clinical efficacy of autologous PRP injections and HFSCs for pattern hair loss.

Material & Methods: PRP, prepared from a small volume of blood, was injected on half of the selected patients' scalps with pattern hair loss. The other half was treated with placebo. Three treatments were given for each patient, with intervals of 30 days. The same protocol was performed with the use of HFSCs.

Aim: The endpoints were hair re-growth, hair dystrophy as measured by dermoscopy, burning or itching sensation, and cell proliferation as measured by Ki-67 evaluation. Patients treated with PRP were followed for 2 years. Patients treated with HFSCs were followed for 1 year.

Results: Regarding PRP treatment, 23 patients were enrolled, three of whom were excluded. At the end of the 3 cycles of treatment, the patients presented clinical improvement in the mean number of hairs, with a mean increase of 33.6 hairs in the target area, and a mean increase in total hair density of 45.9 (number of hairs/cm²) compared with baseline values. No side-effects were noted during treatment. Microscopic evaluation showed the increase of epidermis thickness and of the number of hair follicles two weeks after the last PRP treatment compared to baseline value ($p < 0.05$). We also observed previously an increase of Ki67+ keratinocytes of epidermis and of hair follicular bulge cells, and a slight increase of small blood vessels around hair follicles in the treated skin compared to baseline ($p < 0.05$). Regarding HFSCs treatment, 11 patients (38 to 61 years old) were treated with hair follicle stem cells (HFSCs), obtained by mechanical centrifugation of scalp's punch biopsy, to improve the hair density in affected by androgenetic alopecia (AGA). 23 weeks after the last treatment with HFSCs mean hair count and hair density increases over baseline values. In particular, a $29\% \pm 5\%$ increase in hair density for the treated area and less than a 1% increase in hair density for the placebo area.

Conclusion: Our data clearly highlights the positive effects of PRP and HFSCs injections on male pattern hair loss without major side-effects. PRP and/or HFSCs may serve as a safe and effective treatment option against hair loss, and calls for more extensive controlled studies.

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