

Limited Effectiveness of Platelet-Rich-Plasma Treatment on Chronic Severe Alopecia Areata

Roberto d'Ovidio^{1*} and Michele Roberto²

¹Consultant Dermatologist, National Co-ordinator of the Trichology Group of the Associazione Italiana Dermatologi Ambulatoriali (AIDA), Via F.Campione, 2; 70124 Bari, Italy

²Cervical-facial Plastic Surgeon, Past-President of the Italian Society for Hair Restoration (ISHR), Corso Cavour, 130; 70121 Bari, Italy

The platelet is a natural source of a multitude of growth factors and cytokines that promote wound healing. Platelet-Rich Plasma (PRP) is an autologous preparation of platelets in concentrated plasma. Activated platelet alpha granules release numerous cytokines, among others Platelet-Derived Growth Factor (PDGF), Transforming Growth Factor β (TGF β), Vascular Endothelial Growth Factor (VEGF), Insulin-Like Growth Factor (IGF) and Epidermal Growth Factor (EGF) [1]. Several studies evaluated the effects of treatment with PRP in male pattern baldness surgery. The authors observed a significant improvement in hair density and stimulation of growth when follicular units were pre-treated with platelet plasma growth factors before their implantation. They hypothesized that growth factors released from platelets may act on stem cells in the bulge area of the follicles, stimulating the development of new follicles and promoting neovascularization [2]. A recently published paper in the British Journal of Dermatology demonstrated PRP usefulness in a randomized double-blind controlled study in the therapy of Alopecia Areata (AA). PRP was found to increase hair re-growth significantly and to decrease hair dystrophy in patients affected by limited forms of AA [3]. We report here our experience with PRP in 25 patients affected by chronic (> 2 y), severe AA (> 50 of the scalp involved). All patients are volunteers of ANMAA (Associazione Nazionale Mediterranea Alopecia Areata. Our protocol was almost similar to the study of Trink et al. and presupposed a minimum of three sessions of infiltration every 45-60 days, injected with a needle 27G 2-4 ml of PRP in areas of about 15-20 cm² in two symmetrical site of the scalp (occipital or frontal) [3]. More precisely, after the activation of calcium gluconate we wait 2-4 min. before the intradermal injection of PRP. The equipment used is Technica Centric 90, the rpm is 1200 and the time of rotation is 8 min. After several trials we found that the platelet concentration was about 3-4 times higher than the overall quantity found in the blood with no contamination of red and white cells. Two patients with Alopecia Universalis (AU) were also subjected to eyebrows inoculation. Only 9 patients completed the protocol. Eight have carried out only the first session of infiltration and 8 went as far as the second. The follow-up is been done - in any case - to all of them up to a year. The most common reason for discontinuation of treatment was significant discomfort and pain caused by infiltration, followed by the absence of significant results after the second and fourth month. None of the patients achieved noticeable cosmetic results, which however could have not been achieved due to our decision to practice infiltration only in limited test areas of the scalp. Of the nine evaluable patients at the eighth month, 6 have obtained re-growth of terminal pigmented hair the others noted non-pigmented vellus in the seats of infiltration after the second session of infusion of PRP (also in one of the 2 cases treated at the eyebrows) (Figure 1a). In one case the re-grown hair have proven resistant to an episode of severe relapse of AA (Figure 1b). In another case the infusion of PRP was followed immediately by a severe relapse that hit the areas surrounding the sites of infiltration therefore configuring as a iatrogenic Koebner phenomenon (Figure 1c) [4]. None of the cases at an average follow-up of one year still had the hair re-grown with therapy. In our opinion the treatment with PRP presents some activity in a few cases with severe forms of AA, probably therapeutic results could improve increasing

the frequency of infiltration, even with the disadvantages of cost and tolerability. But we underline that this treatment regimen does not seem to be able to give persistent results and fails to inhibit the appearance of new relapses during treatment in our severe forms - which are also cases in most need of innovative therapies. On the other hand, the documented induction of re-growth in some of our patients



Figure 1: a: Re-growth of terminal pigmented hair. b: Re-grown hair has proven resistant to an episode of severe relapse of AA. c: Infusion of PRP followed by severe relapse hitting areas surrounding sites of infiltration configuring as iatrogenic Koebner phenomenon.

***Corresponding author:** Roberto d'Ovidio, Consultant Dermatologist, National Co-ordinator of the Trichology Group of the Associazione Italiana Dermatologi Ambulatoriali (AIDA), Via F.Campione, 2; 70124 Bari, Italy, Tel: +390805564181; E-mail: robdovi@tin.it

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stimulates interest in the study of the factors present in the PRP which may be able to trigger the anagen phase. We could also hypothesize that in these patients TGF β played a role. This protein -present in high concentrations in PRP- is other than a growth factor for fibroblast also a potent immunosuppressive cytokine [5,6]. These data underscore the importance for the treatment of AA also to stabilize the disease, trying to restore the follicular immune privilege to prevent that the recurrence of the disease nullify the results laboriously and painfully achieved, frustrating and prostrating patients and therapists [7].

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