Successful Management of Treatment-Resistant Alopecia Areata with Platelet Rich Plasma: A Case Series

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Abstract

Introduction. Alopecia areata (AA) is an autoimmune disease-causing non-scarring alopecia. It is usually treated with immunosuppressive agents, to which some patients fail to respond adequately. **Material and Methods.** Three patients with AA refractory to standard therapy were treated with intra-dermal injection of autologous platelet rich plasma (PRP) every four weeks. **Results.** All three patients showed remarkable improvement after multiple sessions of PRP treatment. **Conclusion.** Autologous PRP is safe and effective in treatment-resistant forms of AA demonstrated in many case reports; therefore it deserves further study with randomized, placebo-controlled trials.

Key words: Alopecia Areata; Platelet-Rich Plasma; Treatment Outcome; Case Reports

Introduction

Alopecia areata (AA) is an autoimmune disease ranging from a single patch of alopecia to alopecia universalis (1). It is usually treated with topical, intralesional and systemic immunosuppressive drugs (2). Since AA does not always respond to standard treatment, alternative therapies are required.

Platelet rich plasma (PRP) is a concentrate of autologous platelets widely used in various clinical disciplines to promote tissue regeneration. It is now emerging as a treatment for AA with minimal adverse effects (2).

We report the successful treatment of three challenging clinical presentations of alopecia areata with PRP.

Case Reports

Case 1

A 25-year-old female presented with AA (area of scalp hair loss approximately 75%), which has lasted for three years. She had been previously treated with topical steroids, 2% minoxidil lotion, dithranol paste, 0.1% tacrolimus ointment, intralesional triamcinolone and several courses of oral prednisolone, dexamethasone, azathioprine and sulfasalazine without success.

Case 2

A 23-year old female presented with alopecia totalis lasting for 6 years. She had undergone topical treatments with steroids, 2% minoxidil lotion, dithranol paste, 0.1% tacrolimus ointment, intralesional triamcinolone, intravenous dexamethasone pulses, oral prednisolone, and sulfasalazine. By the time she presented to us there was no progression of the hair loss but there was no new hair growth.

Case 3

A 55-year-old female presented with alopecia totalis lasting for 4 years. She was treated with topical steroids, dithranol paste, 0.1% tacrolimus ointment, intralesional triamcinolone acetone injections, oral prednisolone, intravenous dexamethasone pulses, sulfasalazine and oral methotrexate.

As stated above a fair trial of the available treatment protocols was attempted; however, in spite of it there was continued progression and despite regrowth of hair it was followed by a relapse of symptoms. We treated these three patients with autologous PRP as mentioned below.

Figure 1. Prior to commencement of therapy and following commencement of therapy

Material and Methods

Their basic haematological and biochemical investigations were within the normal range. Their thyroid functions were normal and thyroid antibodies were negative. They had no other co-morbidities.

PRP was prepared using 40ml of each patient's blood using sodium citrate (9:1) as the anticoagulant. Centrifugation was carried out at 3000 rpm for ten minutes followed by 2000 rpm for five minutes. A total volume of about 10ml of PRP was injected intradermally to the bald patches on the scalp 1cm apart under regional anaesthesia with lignocaine and adrenaline (2% lignocaine with adrenaline 1:80 000 at a dose of 7 mg/kg with roughly around 15 ml of lignocaine diluted up to 20 ml with distilled water was used). The procedure was repeated every four weeks until a satisfactory response was obtained.

During the PRP treatment, the patients were advised to apply 5% minoxidil lotion and topical steroids. No systemic therapy was used.

The treatment was well tolerated by all three patients without side effects. The response to treatment was monitored with global photographs of the scalp at each visit. At the end of the third session, case 1 had showed a marked response with approximately 80% recovery of scalp hair growth (**Figure 1**). Case 2 and case 3 demonstrated almost complete recovery of scalp hair growth after the sixth and eighth sessions, respectively.

Discussion

Alopecia areata (AA) is an autoimmune disease targeting anagen hair follicles leading to non-scarring alopecia ranging from being relatively mild with some patches of hair loss to total loss of scalp (alopecia totalis) and

body hair (alopecia universalis). It is usually treated with corticosteroids (intralesional, topical and oral), contact immunotherapy, minoxidil and immunosuppressive drugs. Some patients do not respond to any of the above treatment modalities.

PRP is an autologous platelet concentrate suspended in plasma. It is used in many clinical disciplines to promote tissue regeneration. Amongst more than 20 growth factors (GFs) present in PRP, platelet-derived growth factor (PDGF), transforming growth factor- β (TGF- β) and vascular endothelial growth factor (VEGF) are mainly responsible for the regenerative action (3).

These GFs bind to receptors of stem cells located in the bulge area of the hair follicles and promote their transformation to hair follicular cells (4). They also cause proliferation of dermal papillary cells (3). The end result is activation and continuation of the anagen phase of the hair cycle (4, 5). PDGF and VEGF have angiogenic potential and improve perfusion to hair follicles (6). PRP can be used alone or in combination with other treatment methods (3).

Several randomized, double blind, placebo-controlled, half-head studies in patients with AA have demonstrated increased hair growth after treatment with PRP without major adverse effects. As the effectiveness of PRP

in treatment-resistant forms of AA has been demonstrated mainly in case reports, it deserves further study with randomized, placebo-controlled trials. As of now, PRP may be offered as a new and potentially successful treatment for patients with AA who fail to respond to standard therapy (7).

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Primena plazme obogaćene trombocitima u uspešnom lečenju alopecije areata otporne na tretman – prikaz serije slučajeva

Sažetak

Uvod. Alopecija areata je autoimuno oboljenje koje izaziva alopeciju bez ožiljaka. Obično se leči imunosupresivnim agensima na koje neki pacijenti ne reaguju adekvatno. **Materijal i metode.** Tri pacijenta sa alopecijom areata, koji nisu reagovali na standardnu terapiju, lečeni su intradermalnim ubrizgavanjem autologne plazme obogaćene trombocitima svake četiri nedelje. **Rezultati.** Kod sva tri pacijenta je došlo do primetnog pobolj-

šanja posle višestrukih tretmana plazmom obogaćenom trombocitima. **Zaključak.** Autologna plazma obogaćena trombocitima je bezbedna i efikasna u lečenju onih oblika alopecije areata koji su otporni na lečenje, kao što je pokazano u mnogim prikazima slučajeva i stoga zaslužuje dalje istraživanje u okviru studija sa slučajnim uzorkom i placebo kontrolom.

Cljučne reči: Alopecija areata; Plazma bogata trombocitima; Ishod terapije; Prikazi slučajeva

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