Successful treatment of refractory alopecia universalis with infliximab: First case report in Sri Lanka

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Abstract

Alopecia areata is a common organ specific autoimmune disorder affecting the hair follicle causing non scarring alopecia. Exact pathogenesis of alopecia areata is not known but both cell mediated and humoral immunity is implicated to have a role. TNF alpha is an important cytokine with a dual role in alopecia areata, both promoting hair loss as well as protecting against hair loss. There are case reports of alopecia areata developing following treatment with infliximab for other indications. Isolated cases of refractory alopecia improving with infliximab therapy are also reported.

We present a 41 year-old woman with alopecia areata that rapidly progressed to alopecia universalis refractory to standard treatment which was successfully treated with TNF alpha inhibitor infliximab.

Introduction

TNF-α is an important cytokine implicated in the pathogenesis of many autoimmune disorders like psoriasis, inflammatory bowel disease, alopecia areata and hidradenitis sappurativa. Anti-TNF agents have been used off label to treat alopecia areata with variable response.

TNF-alpha has a dual role in alopecia areata. It is an important cytokine in hair loss by inhibiting hair growth in vitro and TNF-alpha producing cells can be found in the mononuclear infiltrate surrounding the hair follicle. On the other hand, TNF-alpha appears to protect from hair loss since blockade of TNF-alpha mediated effects by monoclonal antibodies such as infliximab resulted in worsening and precipitation of alopecia areata.

In this report we present a patient with alopecia universalis who was successfully treated with anti TNF-α monoclonal antibody infliximab.

Case report

A 41 year old previously well female presented with asymptomatic patches of hair loss for 2 months duration. She was initially treated with topical clobetasol and sulfasalazine. During the fourth week of treatment patient developed a generalized macular papular erythematous exanthem with facial swelling. Patient's liver enzymes were elevated and drug reaction with eosinophilia and systemic symptoms (DRESS) was diagnosed, it was managed by discontinuing sulfasalazine therapy and a tapering course of oral prednisolone starting from 40 mg per day. At this point patient has rapidly lost all scalp and body hair and progressed to alopecia universalis. Then the patient was treated with dexamethasone mini pulse and oral ciclosporin 100 mg per day for 6 months with no response. Throughout this period patient used topical betamethasone solution and 5% minoxidil. After 6 months she was started on intravenous methylprednisolone 500mg per day for three days pulse therapy. This was discontinued after 2 pulses due to severe muscle cramps lasting for a week following pulse therapy.

The patient was started on infliximab 5 mg/kg after failure of above treatment. Her baseline full blood count, liver function, renal function tests prior to starting infliximab were normal and antinuclear antibodies were negative. Chest x ray and screening for tuberculosis was negative. Patient was started on methotrexate 5 mg per week (to prevent neutralizing antibody formation and improve efficacy) and was continued dexamethasone mini pulse. Topical betamethasone and 5% minoxidil also were continued while on infliximab therapy. After receiving 4 doses of infliximab (standard protocol) regrowth with white hair was noted. By the 6th infliximab dose the white hair was regaining pigmentation.

Discussion

Although anti TNF-α agents are used to treat many autoimmune conditions like rheumatoid arthritis, psoriasis, inflammatory bowel disease, these drugs are also well known to precipitate other autoimmune diseases such as systemic lupus erythematosis. TNF-α has a dual role in alopecia areata. There are isolated case reports of alopecia areata successfully being treated with infliximab. There are also reports of alopecia areata being precipitated by it, supporting TNF-α's dual role in alopecia areata.

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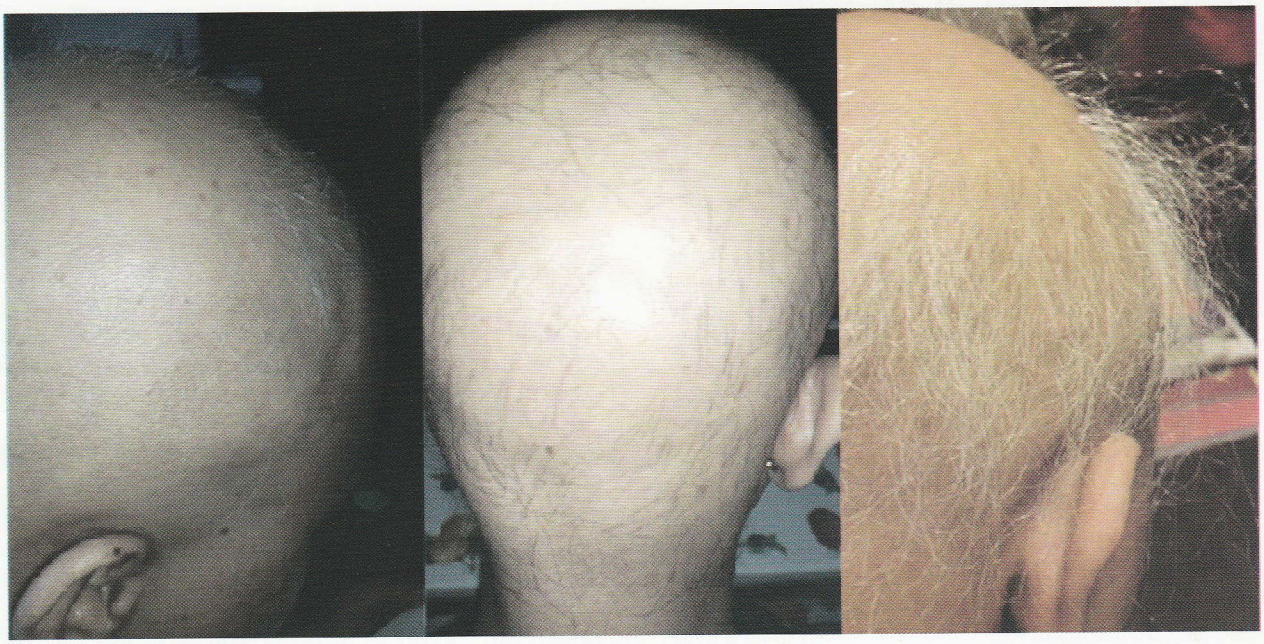
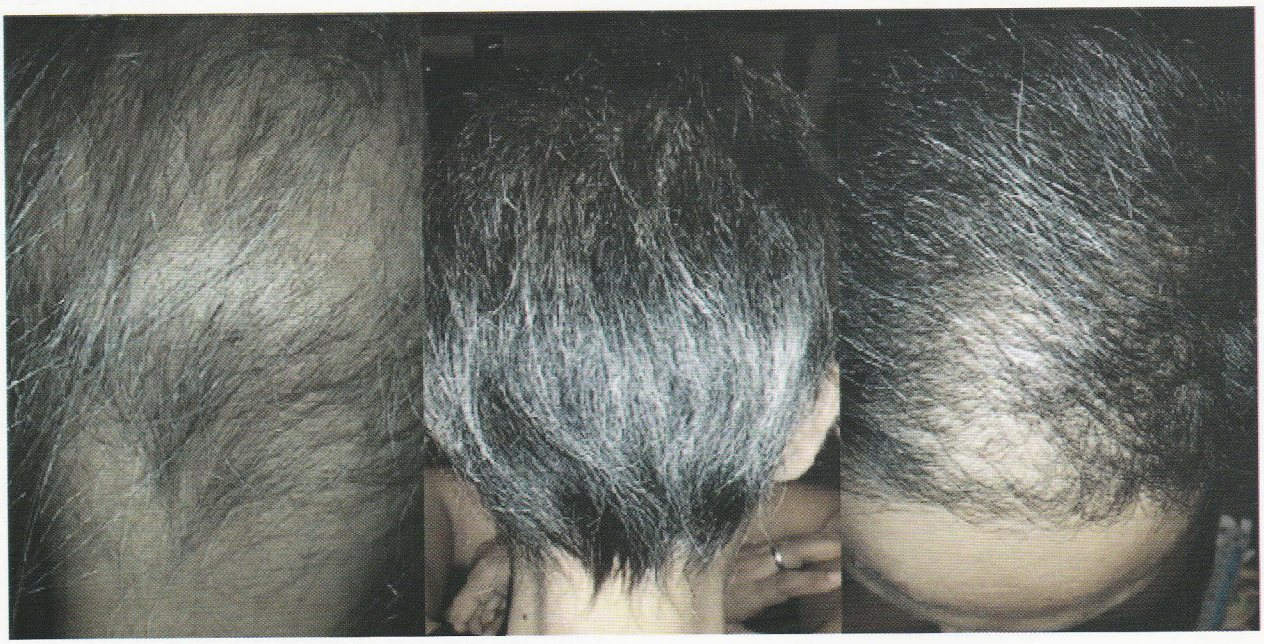
Response to infliximab treatment



4 weeks 6 weeks 4 months



6 months 8 months

T lymphocytes play a central role in pathogenesis of alopecia areata. Although the exact patho-physiology remains unknown, it is postulated that CD4+ and CD8+ T cell reactive to hair bulb auto antigens induce the autoimmune process leading to non-scarring alopecia[4].

Studies have shown that TNF-α promotes both the expansion and suppressive functions of T regulatory cells, which play an essential role in maintaining immune tolerance[3]. It is possible that anti TNF-α induced autoimmunity is mediated by the inhibition of suppressive functions of regulatory T cell[5]. This is evidenced by few cases of alopecia areata developing following therapy with biological agents[1,2,7-9].

Philpott et al.[6] showed that IL-1α, IL-1β and

TNF-α were potent inhibitor of hair follicle growth in vitro; which is evidenced by isolated cases of alopecia areata successfully treated with infliximab.

Exact role of anti TNF-α agents in treating alopecia areata is yet to be established. TNF-α has complex role in alopecia areata and hair follicle growth. Our patient was successfully treated with infliximab after failing to respond to standard first and second line systemic and topical treatment.

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