

TOPICAL MINOXIDIL FOR THE TREATMENT OF ALOPECIA AREATA

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One percent minoxidil solution was used topically for the treatment of 10 patients having alopecia areata (4 each having alopecia universalis and totalis, and 2 patients with extensive alopecia areata). Significant hair growth did not occur even after 3 months of therapy.

Key words : Minoxidil, Alopecia areata.

Minoxidil (2, 4, diamino-6-piperidinopyrimidine-3-oxide) is a potent direct vasodilator used to control severe hypertension not responding to conventional therapy. It caused reversible, non-virilizing hypertrichosis of face, shoulders, arms and legs in women, and a generalised increase in body hair in men who received systemic therapeutic doses for one month or more.^{1,2} Topical minoxidil has since been used with success in the treatment of alopecia areata^{3,4} and hereditary androgenetic alopecia.⁵ Topical application of 1% minoxidil is free of any systemic side effects.^{3,4} Minoxidil acts by cutaneous vasodilatation and increased blood flow, and probably by immuno-modulation in alopecia areata as it leads to disappearance of the perifollicular infiltrate after treatment with minoxidil.⁴ It may have a direct effect on the hair follicles.⁵ It has also been shown to have suppressive effect on the normal human lymphocytes *in vitro*.⁶ The effect of topical minoxidil in baldness has recently been reviewed by Novak et al.⁷ Since there are no reports from India on treatment of alopecia areata with topical minoxidil, a pilot study was carried out to assess its efficacy in alopecia areata not responding to the conventional treatment.

Materials and Methods

Ten patients, five females and five males were included in this study. Their average age was 24.8 years (9-40 years) and the mean duration of alopecia was 10.5 years (2-20 years). Only patients who had previously been treated with topical and systemic corticosteroids without satisfactory and stable improvement, and were not suffering from cardio-vascular disease, were included. One percent minoxidil solution was prepared by grinding ten tablets of 10 mg each, in 1 ml propylene glycol, 2 ml distilled water and by adding 95% industrial spirit to make 10 ml.⁴ Patients were advised to apply daily a small amount (0.5 ml) as a thin film on the scalp and/or on eyebrows. Patients were assessed every four weeks for twelve weeks. At each visit, an enquiry was made about local irritation or systemic side effects. They were examined for hair growth, type of hair i.e. vellus or terminal and the hair length was measured. Blood pressure measurement was also done on each visit.

Results

Four patients each had alopecia universalis (AU) and alopecia totalis (AT), while the other two had extensive alopecia areata involving the scalp, face and extremities. One patient with AU had personal and family history of atopy, while another with AT had family history of alopecia areata. One patient each of AU and AT were lost to follow-up, thus data from the remaining

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eight patients is presented. Four patients (two with AT, one each with AU and extensive alopecia areata) showed growth of vellus hairs after 4 weeks of therapy. The hairs attained a maximum length of 6-8 mm by 8 weeks. Thereafter, there was neither any further growth in the length, nor terminal hair growth appeared during the next four weeks of therapy. No hair growth, vellus or terminal was seen in the remaining 4 patients. No patient had local or systemic side effects with 12 weeks of therapy.

Comments

Minoxidil 1% solution was not found useful in the treatment of alopecia universalis, totalis and extensive alopecia areata in the present study. Fenton and Wilkinson³ were first to report cosmetically acceptable hair growth in 16 of 26 patients treated with 1% minoxidil solution or ointment for six months. Weiss et al⁴ found cosmetically acceptable hair growth in only 11 out of 48 patients with 1% minoxidil solution. White and Friedman⁸ found it ineffective in the treatment of alopecia totalis even in 3% concentration used for four months. The lack of efficacy of 1% minoxidil solution in the treatment of AU and AT has also been observed by other workers.⁴⁻⁹ Recently, Weiss and West⁹ have suggested a dose-response relationship and recommended 5% minoxidil solution in the treatment of alopecia totalis and universalis. Franz¹⁰ had shown that significant amounts (5.4 mg) can be absorbed with twice daily applications of 1 ml of 5% minoxidil solution on the scalp. Hence, careful monitoring of the systemic effects is mandatory while using 5% minoxidil solution.

No patient in the present study developed local irritation or contact dermatitis due to minoxidil. Weiss et al⁴ had reported contact hypersensitivity in only one of their 48 patients.

The lack of response in the present study may be due to, (1) long standing extensive alopecia, (2) use of a relatively lower concentration of minoxidil,⁹ and (3) because of low thermodynamic activity of minoxidil in simple alcohol/water/propylene glycol mixture.¹⁰ Franz¹⁰ suggested search for a vehicle to enhance thermodynamic activity and hence its absorption.

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