

Role of hand held low level laser device in treatment of alopecia our experience: Case report

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Abstract

Alopecia is a problem among people and different treatment modalities are used for its treatment. The methods include systemic immunomodulation (cyclosporine, methotrexate), ultraviolet light (PUVA), topical Minoxidal, topical immunotherapy (diphencyprone [DPCP], anthralin, squaric acid) and off-label use of Janus kinase (JAK) inhibitors both systemically or topically. Recently we came across the use of laser in androgenic alopecia and we have used laser comb and found it to be useful

Keywords: Low level laser device, Alopecia, Hair rejuvenation.

Introduction

Although initially used for the treatment of benign vascular tumors, laser therapy is considered first-line for the removal of pigmented lesions, tattoos, scars, wrinkles, and unwanted hair. The ability of lasers to produce hair growth was noted in 1967 by Mester and colleagues when they used low-level laser therapy (LLLT) to treat cancer in mice with shaved backs.¹ After that a number of studies have put forward the use of lasers as an effective way for the treatment of alopecia, particularly androgenetic alopecia and alopecia areata. In this article, we recently came across usage of low level laser device in alopecia and we have used it and found it to be beneficial.

Materials and Methods

This study was conducted in the department of Plastic Surgery at tertiary care center after getting the departmental ethical committee approval. Informed written consent was taken from the patient. The details of the patient in study are as follows: 56 yr gentle man with c/o increased hairloss and alopecia reported to our OPD (Fig. 1), he was evaluated and found to have androgenic alopecia. The patient was put on minoxidil however the patient was non-compliant with the drug and showed no improvement. The patient was decided to be given laser comb (figure 2) which emitted 660 nanometre and 470 nanometre laser beams and was advised to use it daily once for 8 weeks. After 8 weeks of usage, patient was reviewed and experienced less hair fall and better texture and quality. The cost of the laser comb devices range from 400 to 400 to 5000 INR

Results

There was less hairfall and increase in the quality and texture of the hair as told by the patient. The hair-pull test was also significantly better. The patient was satisfied with the treatment.



Fig. 1: before the treatment with laser comb



Fig. 2: Laser comb

Discussion

Androgenetic alopecia is a hereditary disease in which blockage of androgen signaling results in the decreased

proliferation of hair follicle as well as progressive shortening of terminal hairs of the scalp.² Recently it was discovered that in patients suffering from alopecia, follicular stem cell populations were preserved but progenitor cell populations were significantly lowered, thus suggesting a defect in change from stem cell to the progenitor cell.³

LLLT, particularly 650 to 900 nm wavelengths at 5 mW, is an effective treatment option for alopecia and even if no regrowth was found, patients noted an improvement in the texture and quality of the hair.⁴ On a cellular level, inflammation causes an increase in local blood flow and release of inflammatory factors that promote follicular vascularization.⁵ In normal skin tissue, the anagen phase is accompanied by follicular angiogenesis and an upregulation of vascular endothelial growth factor (VEGF) in outer root sheath keratinocytes. This vasculature rapidly regresses during the catagen phase. Thus, the enhanced vasculature induced by inflammation will promote the development of healthy hair follicles, also the heat shock proteins associated with low levels of thermal energy upregulate heat shock protein HSP-27, which has got a role in the follicular stem cell growth and differentiation

Apart from providing immunomodulation, light stimulation activates dormant follicles, or synchronize the follicles into the anagen phase so that the hair density increase.⁶ Follicle regeneration may also induce a suppression of inhibitory cells that prevent the progression of follicle stem cells to progenitor cells.³

Conclusion

Laser comb was found to be useful in the management of androgenic alopecia. The patient had better hair quality and texture. Patient was satisfied with the treatment. We have used only subjective method of assessing the improvement

and not an objective one. However, it needs large scale randomised control trials for application in clinical practice.

Conflicts of Interest

All contributing authors declare no conflicts of interest.

Source of Funding

None.

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