INTRODUCTION

Trichostasis spinulosa (TS) is a disorder of retained telogen hair in the follicles. Successive telogen hair, after completion of the hair cycle, instead of being pushed out, is retained in the follicle. This leads to the formation of a plug of multiple telogen hairs which jut out from the follicle and appear as black dots. This tuft of hair is surrounded by a keratinous sheath which is secreted by the infundibular wall.

SUBJECTS AND METHODS

The study was an open-label, prospective, time-bound interventional study. The study duration was from June 2013 to October 2015.

The inclusion criteria were cases of TS on the nose, confirmed by clinical and dermoscopic examination. The exclusion criteria were a history of undergoing treatment for the condition in the past 6 months. A total of 50 patients participated in and completed the study. The patient came for a total of three visits. Photographs and first laser session were done on visit one on the first day.

The second laser session was done of day 60, and the last visit was on day 120 when the final photographs were taken. The patient was followed up telephonically at the end of 2 years to ask for the recurrence of lesions. The laser used was 800 nm diode laser (Lightsheer Diode Laser, Lumenis, USA). The patients were given two sittings. A gap of 2 months was kept in between the first and second sitting. Fluences ranged from 22 to 30 J/cm², and a pulse width of 30 ms was used. Evaluation of photographs taken at baseline and 2 months after the second sitting

Efficacy of 800 nm Diode Laser to Treat Trichostasis Spinulosa in Asian Patients

Dhananjay K Chavan, Dhanraj D Chavan¹, Balkrishna P Nikam¹, Mohan S Kale¹, Varsha P Jamale¹, Shruti D Chavan

Clear Skin Clinic, ¹Department of Dermatology, Krishna Institute of Medical Sciences, Karad, Maharashtra, India

ABSTRACT

Context: Trichostasis spinulosa (TS) is a common but underdiagnosed follicular disorder involving retention of successive telogen hair in the hair follicle. Laser hair removal is a newer treatment modality for TS with promising results. Aims: This study aims to evaluate the efficacy of 800 nm diode laser to treat TS in Asian patients. Subjects and Methods: We treated 50 Indian subjects (Fitzpatrick skin phototype IV–V) with untreated trichostasis spinulosa on the nose with 800 nm diode laser at fluence ranging from 22 to 30 J/cm² and pulse width of 30 ms. The patients were given two sittings at 8 week intervals. The evaluation was done by blinded assessment of photographs by independent dermatologists. Results: Totally 45 (90%) patients had complete clearance of the lesions at the end of treatment. Five (10%) subjects needed one-third sitting for complete clearance. 45 patients had complete resolution and no recurrence even at 2 years follow-up visit. 5 patients had partial recurrence after 8–9 months and needed an extra laser session. Conclusions: Laser hair reduction in patients with TS targets and removes the hair follicles which are responsible for the plugged appearance. Due to permanent ablation of the hair bulb and bulge, the recurrence which is often seen with other modalities of treatment for TS is not observed here.

Key words: 800 nm diode, laser, trichostasis spinulosa

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was done by two independent assessors. All patients were counseled about possible adverse effects such as superficial laser burns, persistent erythema, and postinflammatory hyperpigmentation. A contact station was provided to report any adverse effects.

RESULTS

The study included 50 patients who underwent and completed the treatment. 45 (90%) patients had complete clearance of the lesions at 8 weeks after the second sitting [Figures 1 and 2]. Complete clearance was defined as no clinically evident plugs as seen by naked eye examination. Five (10%) patients needed one-third sitting for complete clearance. All the patients were followed up telephonically for a 2 years period and five (10%) patients needed a follow-up treatment at 8–9 months interval and none of the rest 90% showed a recurrence of lesions. Two patients reported superficial laser burns; six had persistent erythema [Figure 3] for >2 days, which resolved on its own within 1 week.

DISCUSSION

The disorder was first recognized by the German dermatologist Felix Franke in 1901, who named it “Pinselhaar” (paintbrush hair). In 1913, Noble first introduced the term “Trichostasis spinulosa” when he reported six cases with spiky follicular papules due to vellus hair retention.

There are two clinical variants of TS – the common nonpruritic, asymptomatic variant with the most common site being the nose, and the itchy papular variant which is seen over the trunks and arms. Dermoscopic examination reveals multiple tufts of vellus hair arising from dilated pores.

The differential diagnoses for TS include open comedones of acne vulgaris, keratosis pilaris lichen spinulosus, Trichodyplasia spinulosa.

The commonly used treatments for TS include emollients, hydroactive adhesive tapes, local keratolytics, local and oral retinoids, erythromycin gel, and several means of depilation. However, all the mentioned topical treatments give variable results with the problem recurring very frequently.

Treatment with laser hair removal lasers-800 nm pulsed diode laser and 755 nm long pulsed alexandrite laser has shown promising results with a very low rates of recurrence. The proposed mechanism of action is the targeting of melanosomes in the hair bulb and their selective photothermolysis. A PubMed search of Medline indexed journals showed three[6-8] studies for the use of hair removal lasers in the treatment of TS.
The first study in 2003 by Manuskiatti and Tantikun[6] used an 800 nm pulsed diode laser on 13 subjects. Two treatments were delivered at 4 week intervals with fluences ranging from 24 to 40J/cm² and pulse width ranging from 12 to 20 ms. A greater than 50% reduction in the density of lesions in half of the subjects 20 weeks after the second treatment with no significant side effects was obtained.

The study by Toosi et al[7] in 2010 used a 755 long-pulsed Alexandrite laser in 31 patients with two treatments given 4 weeks apart. The parameters used were fluences ranging from 14 to 18 J/cm² (14 J/cm for skin type IV, 16 J/cm for skin type III, and 18 J/cm for skin type II) with a pulse duration of 3 ms and spot size of 18 mm. 51% patients had a >50% decrease in dark plug density while only 10% had a greater than 75% decrease.

The study by Badawi and Kashmar[8] in 2011 using 755 nm alexandrite laser in 20 patients showed satisfactory clearance in all patients after a single sitting. The parameters used were pulse duration 0.5 ms, fluence 15–17 J/cm², and spot size 5 mm. No recurrence was noted after 3 months of treatment.

The parameters for our study were decided according to the patient skin phototype. Fluences of 22–26 J/cm² were used for phototype V and 26–30 J/cm² were used for phototype IV.

We attribute better results noted in our study to the longer pulse width of 30 ms as compared to the 12–20 ms used by Manuskiatti and Tantikun In addition, we used a longer gap of 2 months in between the two as compared to 1 month in the previous studies of TS treated with diode hair removal.

This is the first study studying the role of diode laser in treating patients with TS in the Asian population. The study demonstrates the high efficacy and low recurrence in treating TS, as compared to the existing widely used treatments, which are quite frustrating to the patient.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

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