

Pigment reduction in nevus of Ota following leech therapy

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ABSTRACT

Nevus of Ota is a congenital blue-gray color nevus afflicting unilaterally, the area near the eyes. It poses a huge cosmetic concern besides being a potential threat for developing melanoma sometime in the course of the disease. The treatment options are neither many nor promising besides they are too expensive. We have treated a case of nevus of Ota with leech therapy where leech was applied upon the lesion for five times spanned in a period of 2 months. The results in terms of change in the color of lesion were evaluated with the help of serial photographs following every treatment session to mark the level of color changes in the lesion. A substantial reduction in color of the nevus was reported following the completion of the therapy. The results were demonstrated with the photographs. Although, recommended as the classical Ayurvedic management for skin diseases, leech therapy is not reported earlier in such conditions. It proposes a novel approach to deal with such congenital pigment lesions where other options are not promising.

Key words: *Ayurveda, hyperpigmentation, leech therapy*

INTRODUCTION

Nevus of Ota is a congenital blue-gray hyperpigmentation occurring on the face and the eyes. In over 70% of the cases the sclera is involved; however, among remaining 30% eye involvement is spared.^[1] It is five times more common among women comparing to men. Although nevus of Ota is a risk factor for uveal melanoma in white people, the development of cutaneous melanoma within nevus of Ota is a very rare occurrence with only a few reported cases. Nevus of Ota is typically a bluish or gray-brown lesion of the eye and the surrounding skin innervated by the first and second branches of the trigeminal nerve. Histologically, it is a benign dendritic

melanocytosis of the papillary and upper reticular dermis. This serious cosmetic problem is common among Japanese, Chinese, East Indians, Blacks, and Whites. Treatment includes surgical removal, skin grafting, dermabrasion, and cryotherapy. Surgical treatment causes scarring, and cryotherapy, is not reliable and may cause atrophy or scarring if over applied. Lasers have also been used to treat nevus in the past, but were ineffective, and complications such as scarring were common. Recently a selective photothermolysis using laser targeting the melanin, the pigment in melanosomes has been proposed to be a good alternative treatment.^[2] Despite these many treatment options, the treatment in case of nevus has never been satisfactory. There are cost, availability and hazard issues associated with almost every treatment option. Nevus of Ota for its proximity to eyes and face requires rather a safe intervention which can improve the skin color without having a chance of causing damage to the skin or without post-treatment complications. We present here a case of nevus of Ota treated with leech therapy as recommended in Ayurveda. After five consecutive sittings of local leech therapy spanned in a period of 2 months, the hyperpigmentation of the nevus lesion was substantially reduced. The color reduction was observable through the follow-up photographs [Figures 1-4].

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CASE REPORT

A healthy young girl of about 23 years age was reported to have a congenital blue-gray nevus on the right side of her

face surrounding the right zygomatic prominence sparing the right eye [Figure 1]. The nevus was reported since birth; however, it increased in size over the years. The patient worked as a trainee nursing staff in an Ayurvedic hospital where the authors (SR, PC) worked. It is for this reason, she asked for an Ayurvedic intervention for her condition, if possible. Earlier she also had taken the advice from the allopathic medicine for the same and had been told that the problem is only surgically correctable.

SELECTION OF THE AYURVEDIC TREATMENT

Neelika is the clinical condition described in Ayurveda which resembles to the case in discussion. Considering the Ayurvedic *dosha* and *dushtya* (pathophysiological factors) analysis for such cases, she was recommended for leech therapy (*jaluukavacharana*) at the local site. Being a girl having a pitta-rakta disease and having a pitta constitution, leech therapy was considered as the best option for the patient. For experimental nature of the treatment approach, however, she was explained about the uncertainty of the results. Upon receiving her consent and agreement upon uncertainty of the results she was planned of a few sessions of leech therapy at the site of nevus.

PROCUREMENT OF LEECHES

Medicinal leeches (*Hirudo medicinalis*) were procured from a local vendor who used to provide animals to various experimental laboratories in and around Lucknow. Before application, the leeches were kept in an earthen pot filled with clean water. The leeches were not provided any feeding before they were actually applied to the local site.

METHOD OF LEECH APPLICATION

Leeches were applied on the site as per the standard method of application described in Ayurvedic classics.^[3] On the day of application one or two leeches were taken out from the earthen pot and kept in clean water mixed with curcuma powder. After keeping them in this for around 15 minutes, they were taken out and kept in clean water again. The patient was made to lie down in a supine position with a slight tilt on her left side so to expose the area of nevus. The area of the nevus was made wet with water and wet cotton was placed around the area where the leech was to be applied. One leech was placed at the nevus area. After few minutes the leech started sucking the blood, which was seen by observing the abdominal movements of the leech. The leech was placed *in situ* for about 15 minute and then taken away by putting small amount of rock salt at the place of bite.

After removal of the leech, the area was cleaned with sterile water. After oozing of small amount of blood, the

bite wound was applied with alum powder (*sphatika churna*) and pressed with cotton to achieve proper hemostasis.

Leech applied in the procedure then treated as per the protocol described in Ayurveda. The sucked blood was emitted with the help of curcuma powder and such evacuated leeches were kept separately mentioning the date of their use. Similar procedure was applied five times on a weekly to fortnightly interval.

OBSERVATIONS

The patient was photographed before the start of the leech treatment [Figure 1] and subsequently after each treatment session [Figures 2-4]. Photographs were taken with the same camera, magnification, lighting, angle, and film exposure. Any side effects of the therapy in the form of symptoms, darkening, atrophy and scarring was also asked to be reported [Table 1].

RESULTS

Five consecutive leech applications were done upon the nevus site separated by a week - fortnightly interval. A photograph was taken every time within 2-3 days of completion of one treatment session. The consecutive photographs taken after the treatment sessions when compared with the before treatment status were able to demonstrate substantial pigment reduction at the nevus site [Figures 1-4]. This marks a substantial improvement in the skin color following leech therapy comparing to the before-treatment status.

DISCUSSION

Nevus of Ota is typically a bluish or gray-brown lesion of the eye and the surrounding skin innervated by the first and second branches of the trigeminal nerve. Histologically, it is a benign dendritic melanocytosis of the papillary and upper reticular dermis. This serious cosmetic problem occurs in 0.6% of Japanese, but is also seen in Chinese, East Indians, Blacks, and Whites. Treatments have included surgical removal, skin grafting, dermabrasion, and cryotherapy. Surgical treatment causes scarring, and cryotherapy, although it may be somewhat effective depending on the site of the lesion, is not reliable and may cause atrophy or scarring if over applied. Lasers have also been used to treat nevi of Ota in the past, but initially without a firm theoretical or experimental basis. Early treatment techniques were ineffective, and complications such as scarring were common. These disappointing results fostered the belief that laser therapy was harmful, despite the availability of a wide variety of techniques. Selective photothermolysis

produces specific, heat-mediated injury to pigmented skin cells and other structures by means of brief and selectively absorbed laser pulses. Melanin, the pigment in melanosomes, is a potential target for selective photothermolysis, because it is the primary light-absorbing compound of cells exposed to laser energy of a certain wavelength.^[2]

Recently, pulses of Q-switched ruby lasers have been shown to interact selectively with the cutaneous pigmentary system. In this technique, energy obtained from a deep-red wavelength (694.3 nm) is allowed to build up in the laser, creating powerful high-energy bursts. One of the benefits of the Q-switched ruby laser may be in the selective targeting of cells that contain pigment, such as dermal melanocytes.^[2]

Leech therapy is commonly applied to the conditions like osteoarthritis, venous congestion, and surgical reconstructions.^[4-6] Leech therapy in cases of nevus pigmentation management has never been observed earlier. We were not able to find any published report stating the application of leech in such condition. Ayurvedic fundamentals propose leech application in conditions where

a rakta (blood) or pitta derangement is observed. Pitta is the major determinant which decides about the color of the skin. A hyperpigmented lesion could therefore be a locally accumulated pitta causing melanin accumulation. A 2-month leech treatment in the case spanned in five treatment sessions resulting in marked reduction in hyperpigmentation endorses Ayurvedic view point toward this pathology and proposes a novel approach to intervene in such conditions. A leech therapy is found convenient, least expensive and safe comparing to all other alternative options recommended for treating the nevus conditions.^[7-9] A 1-month subsequent

Table 1: Leech application and subsequent observations

Date of leech application (day)	Number of leeches applied	Observation
1 (04.09.13)	1	A reduced color after two days [Figure 1]
8 (14.09.13)	2	A reduced color after two days [Figure 2]
22	1	Periorbital edema
36 (12.10.13)	2	A reduced color after two days [Figure 3]
51 (27.10.13)	2	A reduced color after two days [Figure 4]

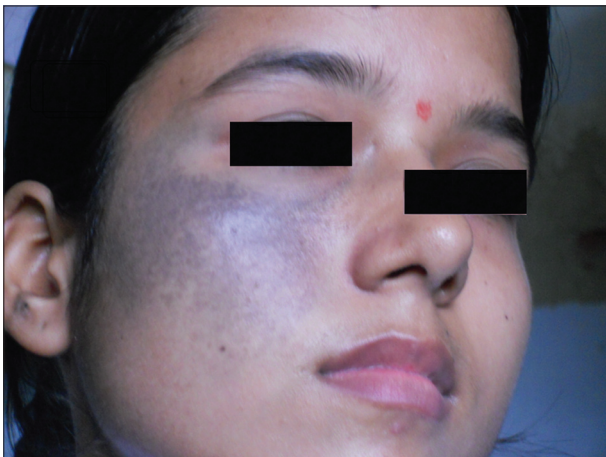


Figure 1: Lesion before treatment

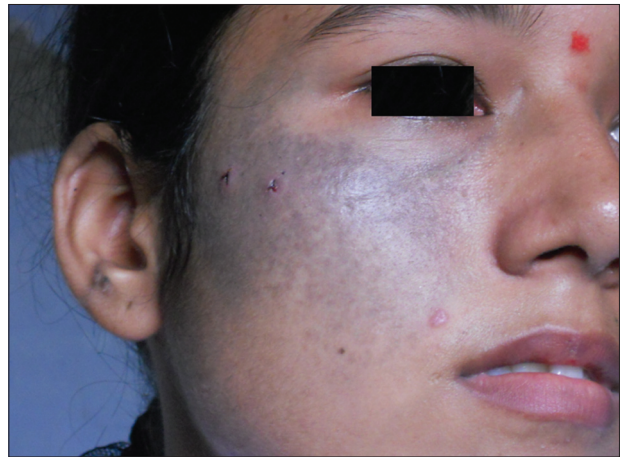


Figure 2: Lesion after 1st treatment session

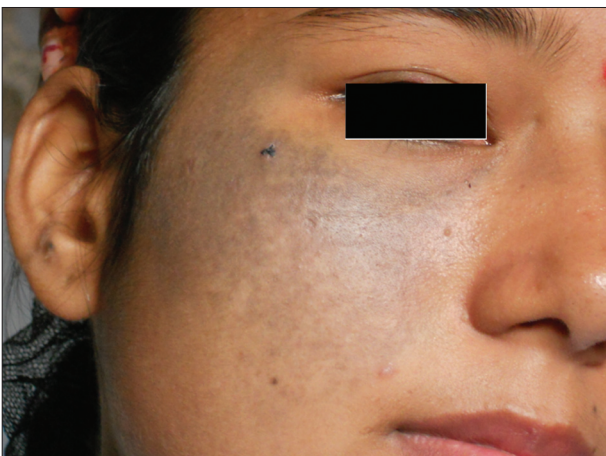


Figure 3: Lesion after 2nd treatment session

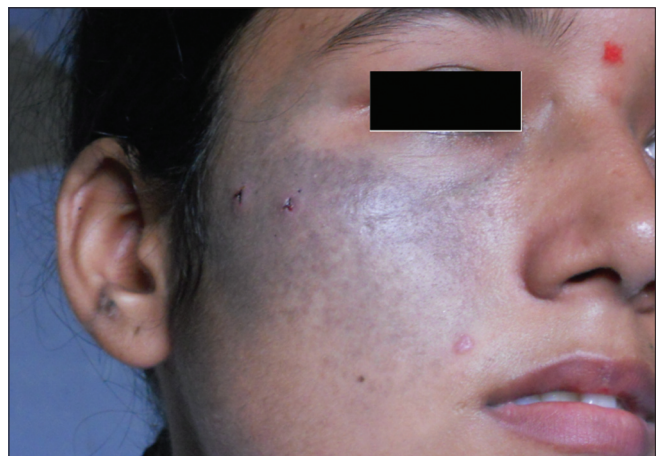


Figure 4: Lesion after 3rd treatment session

follow-up of the patient after the withdrawal of the therapy did not cause any reversal to the pigment status. This observation further endorsed leech therapy as a possible method of intervention in cases of nevus of Ota.

CONCLUSIONS

Nevi are difficult to treat congenital skin lesions. Besides cosmetic issues related with hyperpigmentations, they are also associated with increased risk of developing melanoma some time in life. The treatment options available for such a condition are limited to surgical corrections or laser therapy. These options, however, are expensive, not easily available and require the higher centers to get the therapy. Besides this, these options are also not devoid of risk of developing scarring to the lesion site. Leech therapy in this condition provided a safe and amenable treatment option which is least expensive and is easy to be done. Besides, leech therapy is also associated with minimal hazards as are seen in common Ayurvedic practice. Application of leech in nevus lesions may expand its indications and at the same time a difficult-to-be-treated condition may be provided with an easy treatment option.

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