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Treatment of the nevus of Ota with the 1064-nm Q-switched Nd: YAG laser

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ABSTRACT

Nevus of Ota is a benign hamartoma which presenting as blue-gray hyperpigmented patches on the face and mucous membranes usually within the distribution of first and second branches of the trigeminal nerve. It may occur at birth or during adolescence and the nevus of Ota is very common seen in Japan and east countries. The pigmentation varies and can be dark brown to blue to black-blue. We report a 31-year-old female patient with the nevus of Ota. The Q-switched Nd: YAG laser, had a spot size of 3 mm, an 8 Hz repetition rate, 720 mj/cm^2 fluence. The patient's lesion improved in a rate of 60% with a single session. The Q-switched Nd: YAG laser has a significant effect in treating the nevus of Ota.

Keywords: Nevus of Ota, 1064-nm Q-switched Nd: YAG laser, single session

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The nevus of Ota, also known as naevus fusco-coeruleus-ophthalmo-maxillaris, was first described by the Japanese dermatologist Ota in 1939 [1]. It is characterized by an increase in pigmentation in the skin and mucous membranes in the regions of the maxillary and ophthalmic branches of the trigeminal nerve [2]. It is melanocytic hamartoma that presents unilateral or bilateral. The nevus of Ota is common in females and it usually appears at birth. In the treatment, cryosurgery, surgical excision, skin grafting and dermabrasion are employed [3]. Since the development of laser technology, several lasers have been introduced into the treatment of benign pigmentary lesions. Notably, Q-switched laser systems have gained popularity in the treatment of the nevus of Ota as they produce less scarring and better outcomes. Nonetheless, the introduction of various treatment options for the nevus of Ota have made it difficult for dermatologists to choose the best solution in practice.

CASE PRESENTATION

A 31-year-old female patient presented to the hospital with a pigmented patch over on the right side of her forehead that had been present since birth (Figure 1). The case history revealed that this pigmented lesion was asymptomatic and was present since ten years old. She had no history of ocular disease, hearing loss, or use of medications that produce pigmentation. Physical examination revealed a blue-gray, hyperpigmented, poorly defined patch on the right forehead area. There was no pigmentary disturbance of either eye or the oral mucosa. She was diagnosed with the nevus of Ota based on her history.

The local anesthesia was achieved by 15 minutes of pretreatment with topical 5% lidocaine and then cleaned with hydrogen peroxide-sodium-hypochloride. The test shot was placed in a suitable non-exposed area. The patient was initially treated

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Figure 1. Baseline photos of patient with the nevus of Ota.

with 2 sessions of 1064-nm Q-switched Nd: YAG. The entire lesion was then scanned with a 3 mm spotsize at 720mj/cm2 and 8 Hz. The treatment produced an expected petechial rash (Figures 2a and 2b). Spot hunting" was then performed on the second scan to

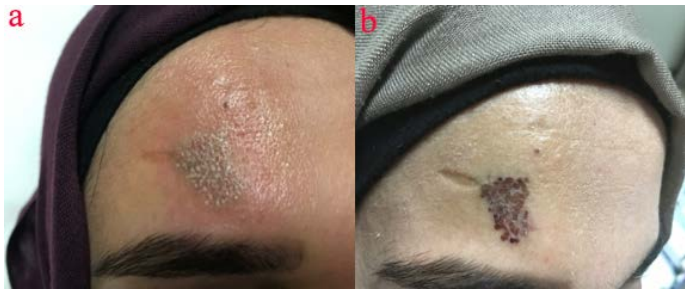

Figure 2. After laser treatment (a) and after 1 week treatment (b).

treat untreated and skipped areas. An antibiotic ointment (2% fucidic acid) was applied and the treatment area was covered with a sterile gauze pad and kept occluded for 24 hours. The ointment was

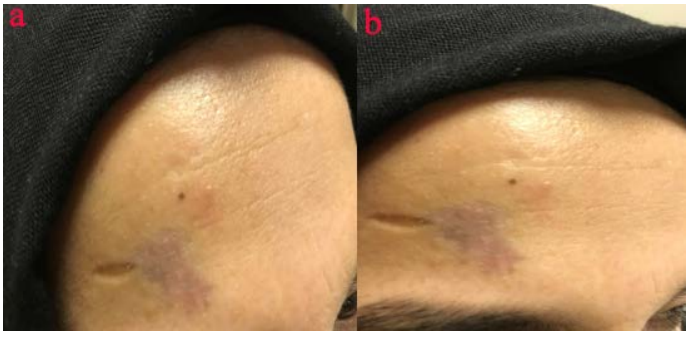

Figure 3. Four week after laser treatment.

used 3 times a day for the next 7 days without any occlusion. Sun avoidance was recommended. The treatment interval was four week. Since the patient lived outside the country, she could not come to the hospital after the second session of laser therapy. However, the improvement in the color of the nevus of Ota satisfied the patient even after the first session (Figure 3).

DISCUSSION

The nevus of Ota characterized by a blue-gray color discoloration and originates from dermal melanocytes. The nevus is more common in females, with a male-female ratio of 1:4.8. The nevus present at birth or in the first year of life 36% appear between the ages of 11 and 20 years old [4]. The pigmentation can also involve conjunctiva, cornea, retina, lips, palate, pharynx or nasal mucosa.

The nevus of Ota originates from dermal melanocytes. During embryonic development, melanocytes migrate from the neural crest to the epidermis. It is thought that the nevus of Ota represent melanocytes that have experienced migrational arrest in the dermis. Some have speculated that there is a hormonal influence as well, accounting for the lesions that appear at puberty and the female predominance [5]. Trauma has also been reported as a trigerring mechanism.

The Q-switched neodymium-yttrium aluminium-garnet (Q-switched Nd: YAG) laser has been used in the treatment of the nevus of Ota. Q-switched Nd:YAG laser is the least absorbed laser by melanin and has the deepest penetration feature. This laser emits a longer, near infrared ray of 1064-nm, which destroying the dermal melanocytes of the nevus of Ota, by selective photothermolysis [6]. The treatment outcome with Q-switched Nd: YAG laser may vary depending on the depth and density of the melanocytes in the dermis and also the skin types.

In the studies conducted, laser sessions were usually planned as 3-4 session, and the healing rate was found as 80-85% [7]. The treatment effect increases with treatment sessions. If we could complete the treatment sessions in three, we observed that the healing rate would reach 80-90%. Nevertheless, even with a single treatment, it is

possible that the Q-switched Nd: YAG laser is effective in the treatment of the nevus of Ota.

CONCLUSION

The treatment of the nevus of Ota by Q-switched Nd: YAG laser is safe and effective, with rare complications.

Informed consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

Conflict of interest

The authors declared that there are no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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