

Atrophoderma Vermiculata Successfully Treated by 595 nm Dye Laser and Carbon Dioxide Laser

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ABSTRACT

The treatment of atrophoderma vermiculatum is challenging. A 7-year-old girl had a unilateral atrophic skin lesion on her right cheek, which was diagnosed as unilateral atrophoderma vermiculata. She was treated by carbon dioxide and 595 nm pulsed dye laser and carbon dioxide laser. This resulted in prevention of the lesional progression with favorable cosmetic appearance of the skin.

Keywords: Atrophoderma Vermiculata; Dyed Laser; Carbon Dioxide Laser

1. Introduction

A 7-year-old Japanese girl had a 2-year history of atrophic skin lesion on her right cheek. She had been treated by a local dermatologist with topical corticosteroid without response. Examination showed grouped atrophic scars in a honeycomb pattern accompanied with slight erythema on her right cheek (**Figure 1(a)**). The patient had not suffered from any preceding skin lesion and was in good health. No family history was detected. Physical examination and laboratory investigations including blood analyses, liver and renal functions and urinalysis, were all within normal limits. The patient refused a biopsy.

We performed pulsed dye laser irradiation (V-Beam; Candela Corp, Wayland, MA, USA) at 595 nm with 1.5-msec pulse-duration and at an energy fluence of 12 J/cm² using the 7 mm spot diameter. Although slight skin swelling was observed following the irradiation, edema was improved within 48 hr. After 3 months, we performed face resurfacing using a high-energy, pulsed carbon dioxide laser (NIDEK CO., LTD) at 300 mJ energy and 60 W power through 10 mm² scanning hand piece and 30% density. The laser-irradiated skin showed pale pink erosion without bleeding and gentamycin ointment was applied until reepithelization was completed (7 days). Significant lesional improvement was observed after 6 months following the laser irradiation (**Figure 1(b)**).

2. Discussion

Atrophoderma vermiculatum is a rare, benign inflamma-

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tory follicular atrophy that mainly affects cheeks of children. Clinical morphological hallmark is “worm-eaten” or “honey-combed” reticular atrophy. The pathogenesis is speculated as an abnormal keratinization of pilosebaceous units [1]. Atrophoderma vermiculatum usually affects both cheeks and only 3 cases of unilateral atrophoderma vermiculatum have been reported [2-4]. Hsu *et al.* [2] reported a case associated with ipsilateral cataract, alopecia, and a seizure. This suggests that some type of atrophoderma vermiculatum should be regarded as a neurocutaneous syndrome such as seen in epidermal nevus and nevus comedonicus.

The treatment of atrophoderma vermiculatum is challenging. Previous reports showed the effectiveness of systemic isotretinoin or topical tretinoin [5-7]. Although isotretinoin is useful for atrophoderma vermiculatum, adverse effects such as hyperlipidemia, cheilitis, and premature epiphyseal closure limit its use. In contrast,



Figure 1. Clinical appearance of skin lesion before and after the laser irradiation. (a) Patients before the treatment: Grouped, honeycomb-patterned atrophic scar with erythema; (b) Improvement of the skin lesion following after the 595 nm dye laser and carbon dioxide laser.

local laser treatment is less harmful and could be the first-choice treatment for the atrophoderma vermiculatum.

The usefulness of dye laser for inflammation such as psoriasis and scarred condition has been described [8-10]. Recently, pulsed dye laser and carbon dioxide laser have been successfully applied [11,12]. Previous reports showed that 585 nm dye laser, which is vascular-specific modality, was effective for atrophoderma vermiculatum. In our case, 595 nm dye laser was also effective for inflammatory atrophoderma vermiculatum. Dye laser with 595 nm is more penetrant and more potent than 585 nm dye laser and it was successfully applied for the atrophoderma vermiculatum. Furthermore, carbon dioxide laser was effective for the atrophic scar and our case confirmed its effect for the atrophoderma vermiculatum [12]. The mechanism is derived from both removal of fibrotic tissue and regeneration of collagen synthesis after its shrinkage [4]. Therefore, we speculate that the treatment using both dye laser and carbon dioxide laser is more useful than the treatment of either modality.

In conclusion, 595 nm pulsed dye laser and carbon dioxide laser were applied for a case of unilateral atrophoderma vermiculatum with favorable cosmetic response without adverse events.

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