Long-Pulsed Dye Laser for the Treatment of Erythromelanosis Follicularis Faciei: Report of Two Clinical Cases

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Erythromelanosis follicularis faciei (EFF) is characterized by the triad of well-demarcated erythema, hyperpigmentation, and follicular prominence of the face.1 With the same symptoms but extending to the neck, erythromelanosis follicularis faciei et colli (EFFC) is also known as close morbidity.2

Because the primary symptoms of EFF are of a relatively mild cosmetic nature and the disease generally takes an asymptomatic course, very few EFF patients actually request a medical treatment.3 Also, as EFF is not readily recognized by physicians and there is no defined therapy, the actual number of those afflicted and the number reported are dissociated.4

Although topical retinoid is a known treatment for the condition with modest results, a more effective therapeutic modality has been sought.5–8 We experienced the cases of two Japanese men with EFF for whom long-pulsed dye laser (LPDL) therapy yielded satisfactory results. We believe our cases achieved results better than those of previously reported cases.

Case Reports

Two Japanese men complained of redness of their jowls and requested treatment of those areas. Examination revealed well-demarcated reddish-brown pigmentation with granular texture on both sides of the cheeks. The redness of the lesion was mainly caused by dilation of superficial vessels and vanished when pressure was applied. Both patients were diagnosed as EFF by the classical triad,1,2 which is composed of erythema, hyperpigmentation, and follicular prominence.

A flashlamp-pumped LPDL (V-beam, Candela Corp., Wayland, MA) was used. It was operated at a 595-nm wavelength, with continuous adjacent, nonoverlapping 7-mm spots. The initial laser treatment was started at pulse durations of 10 msec and a low energy fluence of 10 J/m². In subsequent treatments, the parameters were adjusted so as to induce transient purpura, lasting no more than 2 to 3 days. The principles are based on the method of Kono and colleagues,9 who stated that the appearance and duration of transient purpura are indicative of the extent of the effect on the cutaneous microvasculature lesions. Higher-energy fluences and shorter pulse durations are more effective on lesions, but at the same time, may result in extended duration of purpura and increase the risks of long-lasting or permanent complications. After irradiation, no ointment or dressings were applied, but patients were advised to avoid sunburn to prevent the onset of hyperpigmentation.

Treatments were performed at 2-month intervals until the
physical evidence of erythema improved to be close to normal skin color and the patient was satisfied with the outcome.

Case 1
A 26-year-old Japanese man complained of bilateral well-demarcated redness on the cheeks and a portion of the neck. He underwent LPDL treatment 12 times over a 2-year period. Irradiation duration varied between 10 and 40 msec, with a fluence rate of 10 to 15 J/m². The 10-msec and 13.0 J/m² irradiation treatments were most effective in the course. No postirradiation complications were noted but transient purpura lasting 2 or 3 days was observed. Eventually, evidence of the erythema and telangiectasia disappeared, although moderate hyperpigmentation, presumably postinflammatory hyperpigmentation, and papules remained (Figure 1).

Case 2
A 22-year-old Japanese man complained of bilateral well-demarcated redness on the cheeks. He underwent LPDL treatment three times over a 6-month period. Irradiations were 10 msec with a fluence rate of 10.5 J/m², 40 msec at 14 J/m², and 40 msec 15 J/m², respectively. Two months after the final treatment, the distinguished erythema disappeared, although originally existing slight hyperpigmentation remained. Follicular papules improved once, but gradually recurred in the 6-month follow-up period after the last irradiation treatment. The patient found this an acceptable result and expressed satisfaction with the outcome (Figure 2).

Discussion
In EFF, clinical manifestation appears to be persistent, but treatment modalities have yet to be established. Topical retinoids have been tried, and some reports describe the effectiveness of a combination of retinoid treatment and other types of face creams, such as ammonium lactate cream and hydroquinone or metronidazole. But the effectiveness of these therapies is limited, and a more effective therapy has been sought for decades.

The pulsed dye laser (PDL) has been known as the therapeutic modality for a variety of cutaneous vascular lesions, such as port wine stain and a variety of telan-
giectasia.\textsuperscript{10} We used the V-beam, a PDL operated at 595-nm wavelength, called a long-pulsed dye laser (LPDL), with a cryogen spray cooling system known as a dynamic cooling device (DCD). With the V-beam, applicable pulse durations and fluence rates range between 0.45 and 40 msec and 5.0 to 15.0 J/cm\textsuperscript{2}, respectively, permitting treatments of a variety of capillary dilatations with a single machine. The DCD removes heat from the epidermis and prevents nonspecific thermal injury especially in individuals with dark skin as reported that for Asians.\textsuperscript{9,11} Such features enable safe treatment for relatively mild cosmetic problems accompanying EFF with minimal downtime. After irradiation, our patients presented with transient purpura for 2 to 3 days and no significant side effects, such as bulla formation or ulceration, with slight postinflammatory hyperpigmentation in one case.

Characteristic erythema and telangiectasias dissipated with no recurrence. Follicular papules disappeared immediately after therapy, but they relapsed within 6 months in both cases. As the main concern of both patients, however, was the cosmetic improvement of the redness due to telangiectasia, they expressed satisfaction with the outcome.

As far as we are aware, there have been no reports about the effectiveness of laser therapy on EFF itself; however, there are reports on successful treatment with PDL of dermatoses with clinical manifestations similar to EFF.\textsuperscript{12,13} Diagnosis of such disorders is often discussed to differentiate from EFF.\textsuperscript{2,4,8} For example, keratosis pilaris atrophicans (KPA), synonymous with ulcerethema ophryogenes, exhibits erythema in association with atrophy and scarring with a predilection for the eyebrows, forehead, and malar.\textsuperscript{2} With a PDL treatment of KPA, Clark and colleagues\textsuperscript{12} reported a significant reduction in erythematous elements and improved clinical appearance of skin roughness. Handrick and Alster\textsuperscript{13} reported two cases of atrophoderma vermiculata of which the chief symptom was a symmetric worm-eaten or reticular atrophy of the cheeks, sometimes accompanying erythema that may extend to the ears or forehead. They reported vaporization of atrophic scars with one session of pulsed and scanned carbon dioxide (CO\textsubscript{2}) lasers improved the clinical appearance of atrophic scars in one case, and four sessions of vascular-specific flashlamp-pumped PDL treatments improved the erythema and pitted follicular scars in a second case.\textsuperscript{13} The presence of cutaneous atrophy and scarring in KPA or in atrophoderma vermiculata leads us to believe that EFF is a distinct entity. We hypothesized, however, that the rationale for LPDL irradiation to EFF may be nearly the same as laser treatments for KPA\textsuperscript{12} and atrophoderma vermiculata.\textsuperscript{13} Improvement of conspicuous facial erythema satisfied the expectations of patients suffering from facial cosmetic problems induced by morbidities of unknown etiology.

Optimization of irradiation protocols for use in future treatments of the EFF should be established through clinical trials involving larger numbers of patients. An established therapeutic protocol for the LPDL in the treatment of EFF should create a greater awareness in both doctors and potential patients of the efficacy of such treatment.

**References**


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