

Imiquimod Boosts Port Wine Stain Laser Therapy

BY MIRIAM E. TUCKER

NATIONAL HARBOR, MD. — Topical application of imiquimod for 8 weeks following pulsed dye laser photothermolysis improved the efficacy of port wine stain treatment among 13 patients in a placebo-controlled study.

Pulsed dye laser (PDL) is the preferred method for treating port wine stains (PWS), but it is limited because multiple treatments are required, and there is often incomplete resolution secondary to posttreatment vessel recurrence.

Imiquimod, a topical immune response modifier, has antiangiogenic properties that could potentially enhance the maintenance of microvascular destruction and, thus, improve the vascular lesion treatment effect in PWS patients when applied during the subsequent wound-healing phase, Dr. Anne Marie Tremaine said at the annual meeting of the American Society for Laser Medicine and Surgery.

Imiquimod (Aldara), manufactured by Graceway Pharmaceuticals LLC, is approved by the Food and Drug Administration for the treatment of genital

warts and actinic keratosis. The company provided a research grant for the current PWS study, said Dr. Tremaine of the University of California, Irvine.

The 11 adults and 2 children in the study were randomized to receive either PDL plus 5% imiquimod or PDL plus placebo (vehicle cream). The patients received one PDL treatment and were then instructed to apply 250 mg of cream to an area of less than 25 cm², starting the first day after laser treatment and then three times weekly thereafter for 8 weeks. The PDL parameters were 585-595 nm and energy at 6-12 J/cm².

The treatment was well tolerated by all patients, although two required rest periods at 2 weeks post PDL because of mild crusting before they returned to imiquimod treatment. No serious adverse events were reported.

Laser speckle imaging was used to assess vascular flow. Chromameter measurements were used to

quantify changes in skin color, based on the Commission Internationale d'Eclairage (CIE) L*a*b color space with L* representing reflected light intensity; a*, the color saturation green to red scale; and b*, the color saturation blue to yellow scale.

Imiquimod may enhance the maintenance of microvascular destruction and, thus, improve the vascular lesion treatment effect in PWS patients when applied during wound healing.

Average a* values measured at baseline were compared with those at 8 weeks post treatment. The change in a* for PDL plus imiquimod was 0.8, compared with 0.1 for PDL plus placebo. The change in "E," the difference in color between normal and PWS skin calculated to achieve a more standardized form of measurement in seven of the subjects, was 9.1 for PDL plus imiquimod, compared with 1.4 for PDL plus placebo, Dr. Tremaine reported at the meeting.

"The addition of posttreatment imiquimod to PDL therapy may offer the next enhancement in the treatment of port wine stains," she concluded. ■

Neck Scarring Reported After Fractional Laser Resurfacing

BY MIRIAM E. TUCKER

NATIONAL HARBOR, MD. — Hypertrophic scarring of the neck has been seen in five patients who underwent ablative fractional carbon dioxide laser resurfacing.

The patients, who had received the laser treatment at four different practices around the country over a 4-month period, are believed to be the first reported cases of clinically and histopathologically confirmed hypertrophic scarring following fractional CO₂ laser resurfacing, although the complication has been frequently documented with traditional ablative CO₂ resurfacing, often in the setting of postoperative infection.

"Our goal here is to let people know this is happening," Dr. Mathew M. Avram said at the annual meeting of the American Society for Laser Medicine and Surgery.

The findings suggest caution should be observed when treating the neck with any ablative fractional laser, Dr. Avram, of the Harvard Medical School and Massachusetts General Hospital, Boston, and his associates wrote in their report on these five patients (*Lasers Surg. Med.* 2009;41:185-8).

One of the five cases, a 57-year-old white woman with Fitzpatrick phototype II skin, underwent ablative fractional resurfacing (AFR) under general anesthesia, with Fraxel re:pair (Reliant Technologies Inc.) for treatment of facial acne scars and neck photodamage (rhytids and laxity). Her neck was treated using a pulse energy of 30 mJ (859 mcm depth), with treatment of 25% of exposed skin.

On postoperative day 7, three horizontal "necklacelike" lines of delayed wound healing were noted on her anterior neck. These became tender on postoperative day 11, with small papules and diffuse erythema. On postoperative day 15, the area was treated with a nonablative fractional



Caution should be taken when treating the neck with any ablative procedure, as scarring (shown above) can occur.

Er:glass (1,550-nm) resurfacing laser (Fraxel re:store) in order to modify healing and flatten the thickened areas, using a 10-mJ pulse energy (555 mcm depth) applied for 14% skin coverage.

On day 20, she developed a pruritic eruption on the anterior neck consisting of macular erythema, desquamating scale, and mild induration in the horizontal arrays. She was given a diagnosis of resolved cutaneous candidiasis and treated with 0.1% triamcinolone ointment for residual inflammation. A diagnosis of resolved cutaneous candidiasis infection with residual inflammation was considered, and she was given 0.1% triamcinolone ointment twice daily for a week.

The eruption resolved 6 days later, but the area still was remarkable for multiple well-defined firm pale papules in linear arrays along skin folds of the anterior neck, with mild hypopigmentation. On examination, she had multiple, well-defined, firm patchy papules in linear arrays along skin folds of the anterior neck. A clinical diagnosis of prior candidal infection was made. Triamcinolone was stopped, and she was given clobetasol

cream, applied twice daily to the papules.

A punch biopsy was obtained, and histopathologic examination showed a hypertrophic scar characterized by epidermal atrophy, follicular plugging, fibroplasia, and angioplasia with dense collagen bundles replacing the dermis and extending into the platysma muscle.

Three weeks later, the papules had completely resolved and the clobetasol cream was discontinued. Mild hypopigmentation persisted at 3 months.

The second case was a 61-year-old white woman with Fitzpatrick phototype I skin, who was treated for acne scars on the cheeks and photodamage on the face and neck.

She had previously undergone a facelift, traditional full-face ablative CO₂ resurfacing, and minimal access cranial suspension face and neck lifts. She had successfully undergone multiple treatments with a nonablative fractional Er:glass (1,550-nm) laser (Fraxel re:store) on the face, chest, and neck over 2 years with no adverse effects.

In October 2008, her face and neck were treated with CO₂ AFR, with the neck treated at a pulse energy of 20 mJ (630 mcm depth), with 30% coverage of exposed skin and total treatment energy of 5.0 kJ.

Wound healing on her face was normal, but she noted "tightness" on her neck at about 2 weeks, and at 3 weeks noted firm horizontal and vertical linear

bands over the treated area diagnosed as hypertrophic scars. Treatment with intralesional Kenalog injections and pulsed dye laser produced improvement but not resolution, Dr. Avram said.

While not as effective as traditional ablative resurfacing, AFR is thought to be a safer procedure because of its unique thermal damage pattern, which spares most of the treated area and significantly reduces postprocedure erythema, edema, wound care, downtime, hyper- and hypopigmentation, infection, and scarring.

However, these two cases, and three others that could not be presented because of potential litigation, highlight the fact that neck skin is more vulnerable to thermal injury than the face. This may be because the neck contains fewer pilosebaceous units, resulting in less efficient wound re-epithelialization with more limited cutaneous vasculature providing less support for wound healing, Dr. Avram said.

Use of either Er:YAG or CO₂ ablative fractional laser on the neck should be performed with the least pulse energy, pulse density, and treatment fraction necessary to avoid complications and yet produce satisfactory improvement.

The presented cases provide a suggestion as to what parameters have proven excessive. Moreover, the pattern of linear scarring also suggests the possibility of excessive thermal injury via excessive overlap of energy application, he said.

As with traditional ablative resurfacing, patients undergoing fractional resurfacing need to be monitored carefully for infections. In addition, a history of plastic surgical procedures should be elicited prior to undergoing these procedures, since these may result in neck skin being placed above the jaw line.

Dr. Avram has received honoraria from Reliant Technologies. ■