Eradication of Angiolymphoid Hyperplasia With Eosinophilia by Copper Vapor Laser

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The Cutting Edge: Challenges in Medical and Surgical Therapeutics

REPORT OF CASES

CASE 1

A healthy 47-year-old white woman presented with 4 vascular-appearing plaques on the left upper part of the forehead (Figure 1A), which had been present for approximately 9 years. On physical examination, there was a 1.0 x 1.2-cm pink plaque with 3 similar-appearing papules above it measuring 0.4 to 0.8 cm. One lesion extended into the hairline. Two 3-mm punch biopsy specimens were obtained, which showed features of angiolymphoid hyperplasia with eosinophilia (ALHE) (Figure 2A). Of note, the patient experienced severe neuropathic symptoms of dysesthesia and hyperesthesia of the left frontoparietal part of the scalp 1 to 2 months after her biopsy, which gradually resolved during the ensuing 6 months.

CASE 2

A healthy 54-year-old white woman presented with a 19-year history of a purplish-red plaque located on the posterior part of the scalp and marked associated pruritus. A biopsy specimen obtained approximately 15 years previously was interpreted as showing acne keloidalis nuchae. Therapy had included intralosomal and topical corticosteroids and systemic isotretinoin. The lesion had remained stable in size during the last 15 years, but pruritus had persisted. On physical examination, there was an 8.0 x 5.5-cm plaque composed of beefy red to purple nodules (Figure 3A). Histopathologic examination showed features of ALHE.

THERAPEUTIC CHALLENGE

The challenge was the treatment of ALHE. Various modalities have been used to treat ALHE in the past, but as yet there is no standard of care. Furthermore, none of the therapeutic options has provided consistent results.

SOLUTION

CASE 1

Treatment with the copper vapor laser (CVL) was initiated and continued nearly monthly for a total of 7 sessions. Each lesion received 5 treatments during this period. Laser variables were 578 nm, dwell time of 100 milliseconds on and 100 milliseconds off, spot size of 267 µm, and 660 mW. An immediate light gray blanching of the lesion occurred. The power was then gradually increased with each treatment, with a final treatment power of 1.005 W. Each treatment end point was a light gray blanching of the lesions. With clinical resolution evident...
(Figure 1B), a follow-up incisional biopsy was performed in the area of the original largest lesion. Histopathologic examination demonstrated mild fibrosis with no evidence of ALHE (Figure 2B). A follow-up examination 6 years after therapy showed no recurrence of disease.

**CASE 2**

Initially, the most symptomatic portion of this plaque was excised without noted recurrence. Two weeks later, 3 nodules were randomly chosen for treatment with the CVL. Laser variables were 578 nm and dwell time of 75 milliseconds on and 100 milliseconds off. The lesions were treated with either a 150-µm or 267-µm spot size and an average power of 750 mW. Each site developed slight graying with treatment. One month later, the 3 lesions were treated with a spot size of 267 µm and 960 mW of power. A third treatment was performed 1 month later, with a dwell time of 100 milliseconds on and 100 milliseconds off, a 267-µm spot size, and a power of 900 mW. The lesions significantly decreased in size and the pruritus was moderately relieved (Figure 3B). Because visits required several hours of travel time, the patient requested excision of the remaining non–laser-treated lesions 2 months later. Specimens were also obtained from the treated areas for histologic examination. Histopathologic study of the laser-treated area showed fibrosis without evidence of residual ALHE. The patient was found to be clinically free of ALHE 6 years after treatment.

**COMMENT**

Angiolymphoid hyperplasia with eosinophilia is a rare benign proliferation of hyperplastic vessels lined by plump endothelial cells in conjunction with a dense inflammatory infiltrate composed of lymphocytes and characteristic eosinophils. The vascular component is predominantly capillaries, but in some cases small arteries and venules are found. At times, a peripheral eosinophilia is present, and some have designated this entity Kimura disease. This latter condition was first reported in Asia but is also seen in the Western world. The terms Kimura disease and ALHE have been used interchangeably by some, while other authors contend that these are distinct entities. Although regional lymphadenopathy has been reported in approximately 15% of cases, no reports of metastasis are known. Treatment of ALHE has been difficult, and several modalities have been reported. The lesions can be quite large and extensive, especially when involving the scalp. Surgical excision has been reported to be successful in some cases, but recurrences may occur. Complete removal of the involved tissue or its destruction is therefore the goal of treatment. The ALHE may extend quite deep within the skin.

**Figure 2.** A, Skin biopsy specimen showing eosinophilic infiltrate and vascular channels lined by characteristic plump endothelial cells (hematoxylin-eosin, original magnification ×100). B, Follow-up histopathologic study demonstrating mild fibrosis without evidence of angiolymphoid hyperplasia with eosinophilia (hematoxylin-eosin, original magnification ×40).

**Figure 3.** A, Occipital scalp plaque composed of red to purple nodules. B, Significantly improved clinical appearance of angiolymphoid hyperplasia with eosinophilia after 3 copper vapor laser treatments.
Clinicians, local and regional societies, residents, and fellows are invited to submit cases of challenges in management and therapeutics to this section. Cases should follow the established pattern. Submit 4 double-spaced copies of the manuscript with right margins nonjustified and 4 sets of the illustrations. Photomicrographs and illustrations must be clear and submitted as positive color transparencies (35-mm slides) or black-and-white prints. Do not submit color prints unless accompanied by original transparencies. Material should be accompanied by the required copyright transfer statement, as noted in “Instructions for Authors.” Material for this section should be submitted to George J. Hruza, MD, Laser and Dermatologic Surgery Center Inc, 14377 Woodlake Dr, Suite 111, St Louis, MO 63017. Reprints are not available.

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REFERENCES

11. Massa MC, Fretzin DF. Angiolymphoid hyperplasia: a clinicopathologic and treatment modality with minimal morbidity for ALHE without recurrence several years after treatment. It appears that the thickness of the lesion of ALHE plays a role in the treatment response and overall effectiveness of treatment with the CVL. It stands to reason that other vascular lasers could also be effective in this disease, but recurrences are likely. The superiority of one laser over another will need to be tested to establish a definitive therapy.

and involve the subcutis. Because of this deep involvement, other treatment modalities have not been as successful. These include cryosurgery,1 intralosomal and systemic corticosteroids,8 curettage and electrodesiccation,9 radiation therapy,10 pentoxifylline,11 and chemotherapy.12,13 Lasers used in the treatment of ALHE have been tried, with some success with total resolution of the vascular component and curettage and electrodesiccation.18,19 Recurrence after treatment is not uncommon and has been reported in up to one third of patients.

The clinical challenge was the treatment of a known recalcitrant, benign lesion of the forehead and scalp. Because of the recurrent nature of ALHE, treatments have been variably successful. Various lasers have been used, but none has demonstrated long-term eradication of these lesions. We hypothesized that targeting oxyhemoglobin in a benign vascular proliferation may cause intravascular coagulation, followed by vasospasms and then regression of the lesion. The exact depth of penetration of the laser is not well known but is estimated to be 0.5 to 1.5 mm.

The CVL emits a pulsed light of 578 nm. The pulse duration is 20 nanoseconds, with a pulse repetition rate of 15 000 cycles per second. Although 1 pulse will not supply enough thermal energy to coagulate the vessel being treated, the summation of thermal energy from numerous pulses will lead to coagulation. Generally, dwell times of 100 milliseconds are used with this laser. The rhodamine pulsed dye laser has been tried, with some success. The 585-nm wavelength is longer, but the total pulse durations are shorter than those with the CVL. The CVL has a steep learning curve because of the many settings that can be adjusted by the operator. The longer dwell times afforded by the CVL may provide less selective vascular thermal injury in the dermis.

Our first patient had gross clearing of lesions after 5 treatments, while the other experienced improvement but not gross eradication after 3 treatments. This may reflect the first patient’s relatively sessile but indurated lesion, compared with the more exophytic and thicker lesions in the second patient, as well as the difference in treatment number. Complete resolution of the lesions in the second patient was not expected. However, the histopathologic examination in both patients showed fibrosis with total resolution of the vascular component and eosinophilic infiltrate. The duration of the lesion, previous treatments, greater lesion thickness, and degree of inflammation seen in the second patient may also account for the variable clinical success seen early in the course of follow-up. It is not clear why both patients responded similarly from a histologic perspective.

Herein, we report a noninvasive, well-tolerated treatment modality with minimal morbidity for ALHE without recurrence several years after treatment. It appears that the thickness of the lesion of ALHE plays a role in the treatment response and overall effectiveness of treatment with the CVL. It stands to reason that other vascular lasers could also be effective in this disease, but recurrences are likely. The superiority of one laser over another will need to be tested to establish a definitive therapy.