Lupus Miliaris Disseminatus Faciei

Treatment With the 1450-nm Diode Laser

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The Cutting Edge: Challenges in Medical and Surgical Therapeutics

REPORT OF A CASE

A 35-year-old white woman presented with a 3-year history of brown-red papules on her forehead, cheeks, nose, and chin (**Figure 1**). The lesions were initially treated with topical metronidazole cream, without improvement. A biopsy specimen revealed epithelioid cell granulomas with central necrosis, consistent with a diagnosis of lupus miliaris disseminatus faciei (**Figure 2**). Oral minocycline therapy (100 mg twice a day) was initiated but was discontinued shortly thereafter because of drug-induced urticaria. Subsequent courses of oral erythromycin (500 mg twice daily for 1 month) and oral isotretinoin (1 mg/kg per day for 2 months) were ineffective. Because of the continued formation of new inflammatory lesions, oral prednisone therapy (40 mg/d) was initiated, but 1 month later there was still no improvement in the lesions.

THERAPEUTIC CHALLENGE

Lupus miliaris disseminatus faciei is a rare dermatologic disease that is characterized clinically by the presence of discrete, red-brown, dome-shaped papules on the face that resolve with pitted scars. It responds poorly to treatment with oral tetracycline-class antibiotics and oral isotretinoin, which are considered the mainstay of treatment. Our patient could not tolerate tetracycline-class antibiotics, and her disease was resistant to treatment with several systemic agents, including erythromycin, isotretinoin, and prednisone. This left few, if any, established treatments for her condition, which remained active.

SOLUTION

Given our previous successful experience in treating inflammatory acne with a 1450-nm diode laser, we elected to use this laser to treat our patient's lesions. The 1450-nm diode laser (Smoothbeam; Candela Corp, Wayland, Mass) with an integrated dynamic cooling device was used at a fluence of 13 to14 J/cm^2 and a 6-mm spot size to treat the entire face. Topical 5% lidocaine (Ela-Max; Ferndale Laboratories, Ferndale, Mich) was applied under occlusion 1 hour before the laser treatment. Emollient cream (MD Forté Replenish Hydrating Cream; Allergan Inc, Irvine, Calif) and sunscreen (MD Forté SPF 30 Sunscreen; Allergan Inc) were applied immediately after laser treatment. Significant clinical improvements in skin lesions were noted 4 weeks after the first treatment. Two additional treatments were administered at monthly intervals, with continued improvement (Figure 1). Complete resolution of skin lesions was noted by the third treatment. Five months after the last treatment, the patient remained clear of disease, without any flares and without the use of any topical or oral medications. The only treatment-related adverse effects were treatment-site erythema and edema that lasted 1 to 2 days. No scarring or pigmentary alterations were associated with treatment.

COMMENT

Lupus miliaris disseminatus faciei is a rare dermatologic disease that is characterized clinically by the presence of discrete, red-brown, dome-shaped papules on the face.[1-4] The onset tends to be fairly rapid, and lesions may persist for months to years without treatment. Residual pitted scars are a characteristic feature of this disease. The following histologic features are also characteristic: epithelioid granulomas with or without central necrosis and occasional multinucleated giant cells in the dermis.[1]

The etiology of this condition is unclear. Some authors consider it to be a variant of granulomatous rosacea,[1-4] while others believe that it is a distinct clinical entity.[5] Standard treatment is oral tetracycline; however, response may take 3 to 6 months, and long-term maintenance therapy is often needed.[6] Recently, isotretinoin has been used in some cases; however, cessation of therapy is commonly associated with a rapid clinical relapse. Overall, clinical response to all treatments has been poor.

Although its pathogenesis and nature are not completely understood, lupus miliaris disseminatus faciei shares several common features with both acne vulgaris

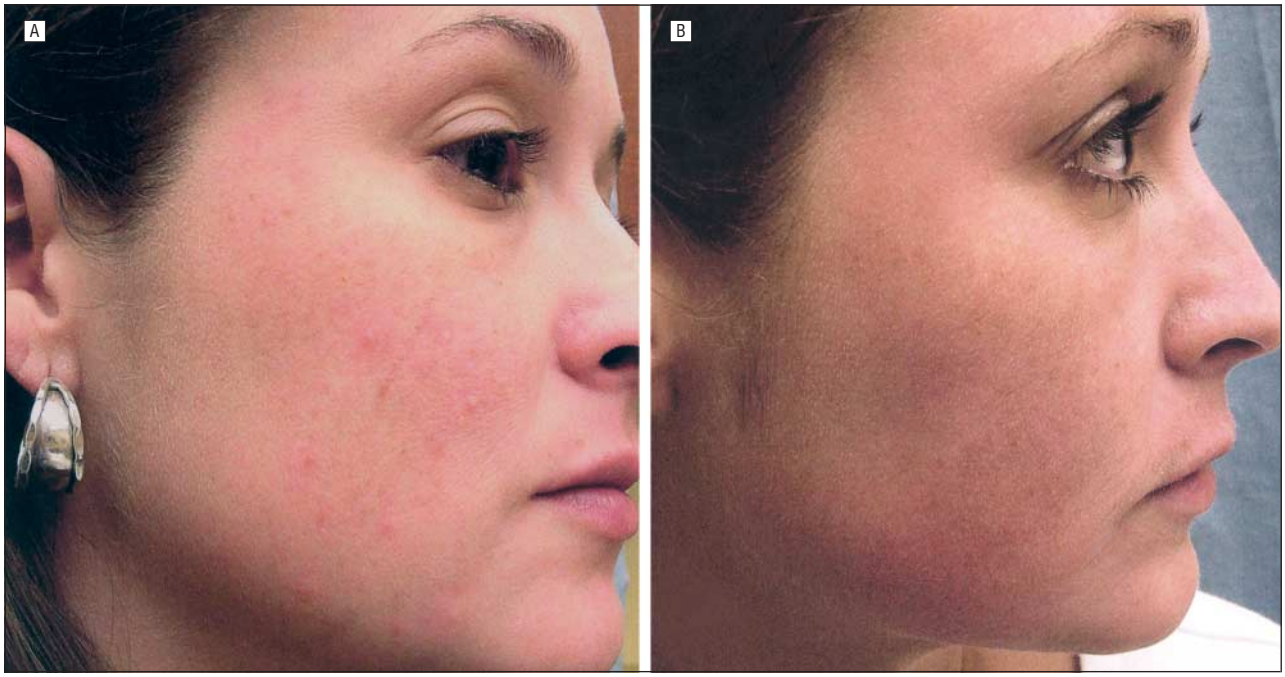

Figure 1. Lesions of lupus miliaris disseminatus faciei before treatment (A) and after 3 treatments (B) with the 1450-nm diode laser. A, Well-demarcated, indurated, reddish-brown papules on the cheek before laser treatment. B, Resolution of papules after 3 treatments with the laser.

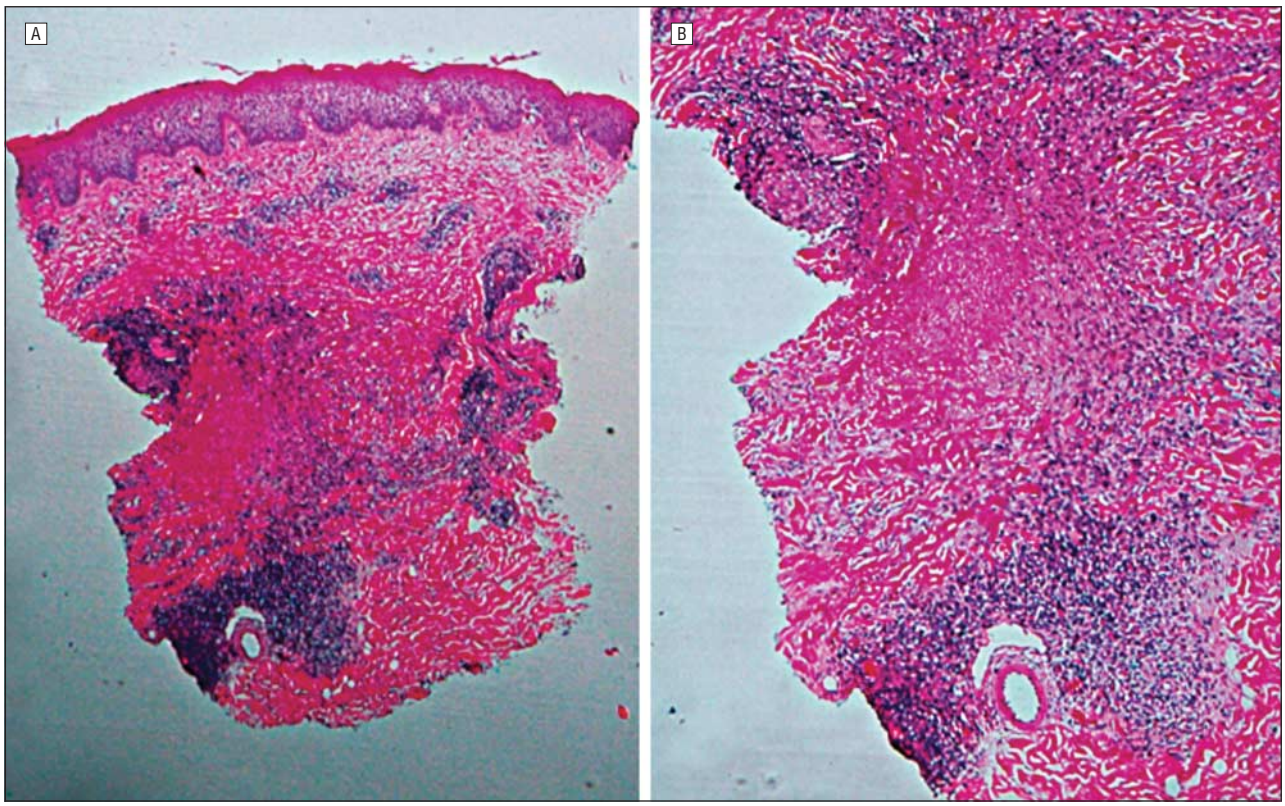

Figure 2. Low (A) and high (B) magnification of a biopsy specimen from a cheek lesion. A, Histopathologic features of dermal granulomatous inflammation with central caseous necrosis (hematoxylin-eosin, original magnification ×10). B, An epithelioid granuloma with central necrosis (hematoxylin-eosin, original magnification ×200).

and rosacea. The inflammatory lesions are located on the face, where the density of pilosebaceous units is highest. Also, the lesions respond to treatments that are often used for acne vulgaris and rosacea and may result in ice-pick scarring that is indistinguishable from that seen in acne vulgaris. There is often a periorbital and perioral component that is similar to that seen in acne vulgaris and rosacea as well. However, lupus miliaris disseminatus faciei is distinguished histologically by more intense granulomatous inflammation, which is often associated

with caseating necrosis in the absence of an apparent infectious origin.

The 1450-nm diode laser has recently been shown to be effective in the treatment of active inflammatory acne lesions on the back and face.[7,8] The main mechanism of action of this laser in the treatment of acne lesions appears to be via selective targeting and disruption of sebaceous glands.[7] Theoretically, this process may lead to decreased sebum production and reduced conversion of sebum to inflammatory-free fatty acids by resident bacteria such as *Propionobacterium acnes*. The 1450-nm diode laser would presumably also be effective in the treatment of the inflammatory and soft tissue forms of rosacea by targeting hair follicles and sebaceous glands and by reducing associated inflammation and fibrosis.

There are a number of possible mechanisms by which the 1450-nm diode laser can improve lupus miliaris disseminatus faciei. This laser has been shown to target pilosebaceous units, perhaps reducing the production of proinflammatory agents that may underlie lupus miliaris disseminatus faciei.[7] Also, thermal damage to the dermis may result in disruption of granuloma structure.[9] Previous reports have shown that some chronic infectious granulomatous skin infections can be treated effectively with the application of local heat.[9,10] Replacement of chronically photodamaged dermal collagen by newly formed and remodeled collagen may also reduce the tendency to form or sustain the inflammation and scarring that are associated with this disease. Moreover, bacteriostatic effects resulting from dermal thermal damage may reduce offending bacteria that potentiate granuloma formation in conditions such as granulomatous rosacea and possibly lupus miliaris disseminatus faciei.

In conclusion, the 1450-nm diode laser should be considered for the treatment of lupus miliaris disseminatus faciei not only because of the chronic nature of the disease but also because of its tendency to result in permanent scarring, especially in cases that are resistant to standard medical care, as in the case reported herein.

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Submissions

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