Use of CO2 Laser in the Treatment of Periungual Fibromas of Tuberous Sclerosis Complex

Chen-Hsi Hung   Kuo-Chia Yang

CASE REPORT

A 47-year-old woman came to our dermatological out-patient department due to multiple tender tumors on her toes for years. On physical examination, she was found to have firm, discrete, red-brown, telangiectatic papules, extending from the nasolabial furrows to the cheeks (Fig. 1). In addition, firm, flesh-colored excrecences emerging from the toenail folds were present (Fig. 2). She developed these extensive facial tumors when she was in the kindergarten. The periungual papules first appeared about 10 years ago. They ranged from 3mm to 10mm in size, and were located on her 7 toes (left: 1st, 2nd, 3rd, 5th, total 5 lesions, and right: 1st, 4th, 5th, total 5 lesions) and the left 3rd finger. The lesions were painful and bled upon contact, resulting in difficulty on shoe wearing. Skin biopsy of her left cheek and left toe were arranged, and the pathological results revealed angiofibroma on her face and periungual fibroma on her left toe respectively.

Fig. 1  Appearance of the patient’s face.

Fig. 2  Multiple periungual tender tumors of the toes prior to laser treatment.

Fig. 3  Appearance of wounds immediately following laser vaporization.

Fig. 4  Follow up at 6 months.
DISCUSSION

Since Maiman invented the first Ruby laser in the world in 1960, various laser applications have emerged rapidly. The usage of laser in skin treatment has developed very well. The CO2 laser has also been frequently used in skin disease. Reviewing the medical literature, many articles have been published on the use of the CO2 laser for the treatment of skin lesions. Some of the articles mentioned the use of the CO2 laser to treat periungual disease, for example: ingrown toenail, periungual or subungual warts, etc. These diseases have in common subungual or periungual location, where traditional methods of surgical operation, electrocurettage or cryotherapy may be time consuming or may injure adjacent normal tissue and blood vessels easily. We used a focused laser beam to vaporize the lesions without injuring the adjacent normal tissue. At the same time, the laser beam in defocused mode may be used to seal 0.5 mm arterioles or 1.0 mm venules. This reduces bleeding, allowing a bloodless surgical field. Postoperative wound care is easy; and postoperative pain, edema and infection are also minimized.

The patients of tuberous sclerosis complex (TSC) are prone to getting periungual fibroma over the toes. They are often painful and tender, affecting patients’ ability to walk or wear footwear. Some authors consider surgical excision of periungual fibroma as the treatment of choice traditionally, but the process is very complicated. We attempted to use CO2 laser to treat periungual fibromas of TSC, with some potential advantages. First, efficiency: in our case, after local anesthesia of lesions with 1% xylocaine, we used CO2 laser to treat 10 lesions of the 7 toes (Fig. 3), which took 6 minutes 6 seconds. On average, each lesion took 36 seconds. Using traditional surgical excision to treat 10 lesions of the 7 toes may take quite a long time. Therefore, using CO2 laser saves a lot of time. Second, there was decreased blood loss during treatment and reduced postoperative complications. No severe postoperative pain or infections were noted. Third, regarding safety concerns, all the operators wore glasses during operation, and the patient’s eyes were covered with 5 pieces of normal saline rinsed gauzes. The patient has been followed up for 6 months after the operation, with no recurrence of periungual fibromas (Fig. 4).

According to the above advantages, we propose CO2 laser as an alternative new therapeutic modality for the treatment of periungual fibromas of TSC.

REFERENCES

Numerous Minute Round Glistening Papules on Photodistributed Skin in a 4-year-old Boy
Chien-Te Lin, Kung-Kai Lin, Gwo-Shing Chen

CASE REPORT

A 4-year-old boy experienced numerous minute, round, glistening, flat-topped, flesh-colored to pink or reddish-brown papules, 1 to 3 mm in diameter, on the face, dorsa of hands, extensor aspects of forearms and lower legs of 2 year’s duration (Fig. 1). There was a history of summer exacerbation with occasional pruritus. No other part of the body was affected. The palms, soles, nails, mucous membranes, and scalp were spared. He had been in good health and there was no previous history of atopic dermatitis, lichen planus or similar lesions.

The histopathological findings showed a circumscribed granulomatous infiltrate which was composed of lymphocytes, histiocytes and some Langhans-type giant cells. The granulomatous infiltrate approximated the lower surface of the epidermis and was confined to a widened dermal papilla. The overlying epidermis was thin with diminished granular layer, and a prominent vacuolar alteration of the basal cell layer with focal subepidermal cleft formation was also noted. The adjacent rete ridges extended downward and seem to clutch the dermal infiltrate in the manner of a “claw clutching a ball” (Fig. 2). The immunofluorescence study was negative.

From the Department of Dermatology, Kaohsiung Medical University and Armed Forces Tso-Ying General Hospital.
Accepted for publication: November 02, 2006
Reprint requests: Gwo-Shing Chen, M.D., Department of Dermatology, Kaohsiung Medical University. No.100, Shih-Chuan 1st Rd., Kaohsiung, Taiwan, R.O.C.
TEL: 07-3208214  FAX: 07-3216580
DIAGNOSIS: *Actinic Lichen Nitidus*

**DISCUSSION**

Actinic lichen nitidus is a rare photodistributed variant of lichen nitidus that appears more common in dark-complexioned individuals with a history of exacerbation after significant sun exposure during the summer months.\(^1\)

It is seen in both pediatric and adult patients. The lesions may improve with sun protection and topical steroids, however, recurrences are common during subsequent summer seasons. Classic lichen nitidus (LN) is an uncommon chronic inflammatory condition of unknown cause. The dermatosis consists of multiple, discrete, minute, round, flat-topped, flesh-colored to pink or reddish-brown glistening papules 1 to 3 mm in diameter that are commonly found on the flexural surfaces of the arms and the wrists, lower abdomen, breasts, the glans and shaft of the penis, and other areas of the genital region or may occur in a generalized form occasionally.

Before the description of actinic lichen nitidus by Hussain in 1998,\(^2\) summertime actinic lichenoid eruption was first described by Bedi in 1978.\(^3\) Other synonyms such as lichen nitidus actinicus or photosensitive lichen nitidus were proposed by Kanwar and Kaur.\(^4\) Hussain also suggested that the term summertime actinic lichenoid eruption should be replaced with actinic lichen nitidus because not only is the latter term descriptive but it also reflects the parallelism between classic lichen planus (LP) and LN on the one hand, and actinic LP and actinic LN on the other.\(^2\)

Since sunlight is incriminated as a precipitating and perpetuating factor in lichen planus, especially of the actinic variety, it is possible that it may also play a role in the etiology of lichen nitidus, especially in patient like ours in whom the lesions are limited to photosensitive areas.

The diagnosis of actinic lichen nitidus is easily established based on the characteristic morphology, distribution, and clinical history. The pathognomonic microscopic changes of skin biopsy will confirm the diagnosis. Direct immunofluorescence examination is usually negative.

The treatment modalities, mostly from isolated case reports, include topical and systemic steroids, topical tacrolimus, systemic cetirizine, levamisole, astemizole, etretinate, itraconazole, cyclosporine, topical dinitrochlorobenzene. Clinical improvement of palmoplantar lichen nitidus with acitretin 75 mg (0.75 mg/Kg) daily treatment was also reported by Lucker *et al.*\(^5\)

The authors speculated that the down-modulation of lymphocyte activation by acitretin based on the findings of a concentration-dependent inhibition of DNA synthesis in mitogen-stimulated lymphocytes and inhibiting the antigen-presenting properties of epidermal cells in vitro. Furthermore, sun protection appears to be more important therapeutically than topical steroid in actinic lichen nitidus.

The presented patient was treated with oral acitretin 12.5 mg (0.66 mg/Kg) daily for 5 weeks, and clobetasol propionate ointment applied locally twice a day with sun-protection measurement. The lesions partially resolved over two months.

**REFERENCES**

Several Erythematous Papules with a 1.5-cm Sized Nodule Scattering on the Face of an Old Woman

Shiou-Han Wang ¹,³ Tsen-Fang Tsai¹,²

CASE REPORT

A 67-year-old woman presented with a 4-month history of asymptomatic papules on the face. She was a housewife with unremarkable past medical history. On physical examination, these dome-shaped papules were variably sized with erythematous hue, and some of them showed tendency to confluence. They were disseminated on the periorbital and paranasal regions. Both cheeks were also involved. A large brownish red nodule measuring 1x1.5-cm in size was noted on the right upper eyelid. Some papules were confluent and developed a 1.5-cm long transverse nodule on the left upper eyelid (Fig. 1). A biopsy was taken from the right eyelid and sent for histopathologic examination, including acid-fast stain and diastase periodic acid Schiff reaction (Fig. 2). Microscopic examination showed granulomatous inflammation with perifollicular granulomas and focal caseous necrosis in the dermis. Neither mycobacterial bacilli nor hyphae of fungi were demonstrated.

Fig. 1
(A) Variably sized erythematous dome-shaped papules on the face with tendency to confluence. (B) A large brownish red nodule measuring 1x1.5-cm in size on the right upper eyelid. (C) Cheeks involvement. (D) Scattered papules on the perioral and paranasal regions.

Fig. 2
(A)(B)(C)(D) The histopathology and special stain of the nodule on the right upper eyelid and the papule on the perioral region showed similar findings with superficial perifollicular granulomatous inflammation and caseous necrosis. (C)(D) Stains for mycobacterial bacilli and hyphae of fungi demonstrated negative results.
DIAGNOSIS: Acne Agminata (lupus miliaris disseminatus faciei, LMDF)

DISCUSSION

LMDF, as known as acne agminata, is a self-limited disease of unknown etiology. LMDF usually occurs on the face, but extrafacial presentations have been reported. It clinically shows discrete brown papules of diameter about 1-3 mm. A 1.5 cm nodular lesion was present in this case, which is a rare feature. It is characterized by superficial granulomatous inflammation with central caseation necrosis in the perifollicular granulomas.

LMDF may have a multifactorial etiology. Mycobacterium tuberculosis or its products may cause a caseous necrosis and thus maybe one of several possible causes. Some authors view LMDF as a variant of granulomatous rosacea or a presentation related to Demodex folliculitis. Others suggest it as a new independent entity and proposed a new term: Facial Idiopathic GranUlomas with Regressive Evolution (FIGURE). Misago et al. postulated LMDF as a common adult form, granulomatous periorificial dermatitis as a rare childhood form, and perioral dermatitis as a peculiar form exacerbated by topical corticosteroids.

There are no randomized controlled studies available for the treatment of LMDF. The usual first-line therapy is oral tetracyclines with variable success rates. Dapsone, low dose prednisolone, clofazimine and isotretinoin have all been tried in some cases. Our case was treated with a regimen of oral tetracycline (1000 mg/d). The skin lesions showed satisfactory response to this therapy subjectively by the patient, and most papules resolved successfully with sequela of scarring after 8 months of treatment. Recently, the 1450-nm diode laser has been shown to improve LMDF.

REFERENCES