Primary Cutaneous Plasmacytosis Successfully Treated with Topical Photodynamic Therapy

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Sir,

Cutaneous plasmacytosis is a rare disorder, which is characterized by multiple red to dark-brown nodules and plaques on the trunk and usually associated with polyclonal hypergammaglobulinaemia (1–3). In addition, peripheral lymphadenopathy can be detected in more than half of the patients (4). Histologically, skin lesions contain dense perivascular infiltration of mature polyclonal plasma cells without any atypia, intermingled with lymphocytes and histiocytes in the dermis. The clinical course is usually chronic without spontaneous remission (4). We report here a patient with cutaneous plasmacytosis who responded to topical 5-aminolaevulinic acid (ALA) photodynamic therapy (PDT) using long-pulsed ruby laser.

CASE REPORT

A 72-year-old Chinese man had an increasing number of brownish indurated plaques, measuring 1–2 cm, on his face, upper chest and back for 7 years (Fig. 1a). His liver and spleen were not palpable and there was no lymphadenopathy.

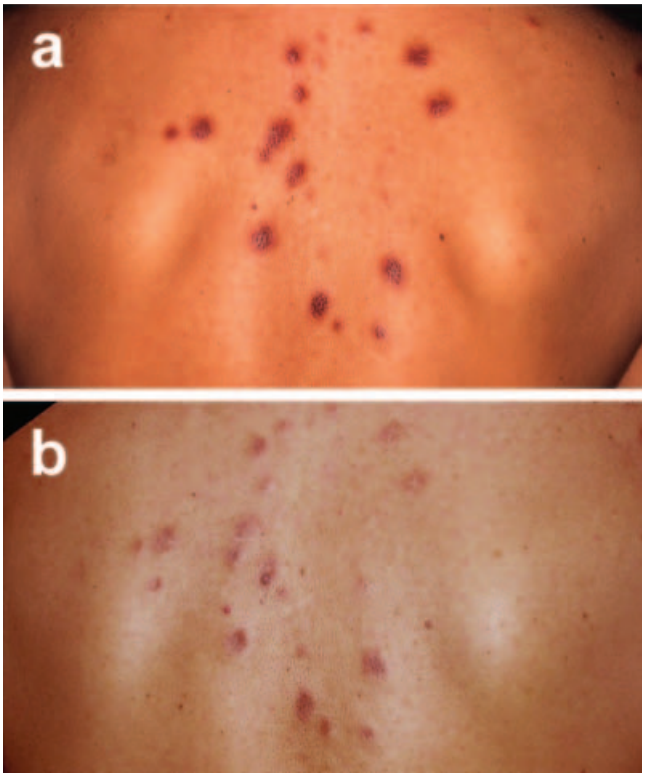

Fig. 1. (a) Multiple discrete, brownish indurated plaques on the back. (b) Decreased induration and pigmentation after five sessions of photodynamic therapy.

A skin biopsy taken from his back showed a pigmented basal layer and numerous plasma cells in the dermis mixed with lymphocytes and histiocytes (Fig. 2a). Immunohistochemical study showed polyclonality of plasma cells with expression of kappa and lambda light chain, and positive staining of IgA, IgG and IgM.

Further laboratory examinations revealed no abnormalities in the haemogram. Tests for syphilis and HIV infection were negative. Serum immunoelectrophoresis demonstrated mild polyclonal hypergammaglobulinaemia with an IgG value of 1920 mg/dl (735–1770). The plasma level of interleukin-6 was 6 pg/ml (0–95). Urine electrophoresis study did not show Bence-Jones protein. Abdominal sonography revealed many hepatic cysts but a normal spleen. No hot spots were found on a whole body bone scan or on gallium scintigraphy. Bone marrow study was not remarkable.

Following a diagnosis of cutaneous plasmacytosis, psoralen plus UVA (PUVA) photochemotherapy was performed. However, there was neither clinical nor histological improvement after a cumulative dosage of 27.2 J/cm^2. Repeated intralesional triamcinolone injection was used on one of the

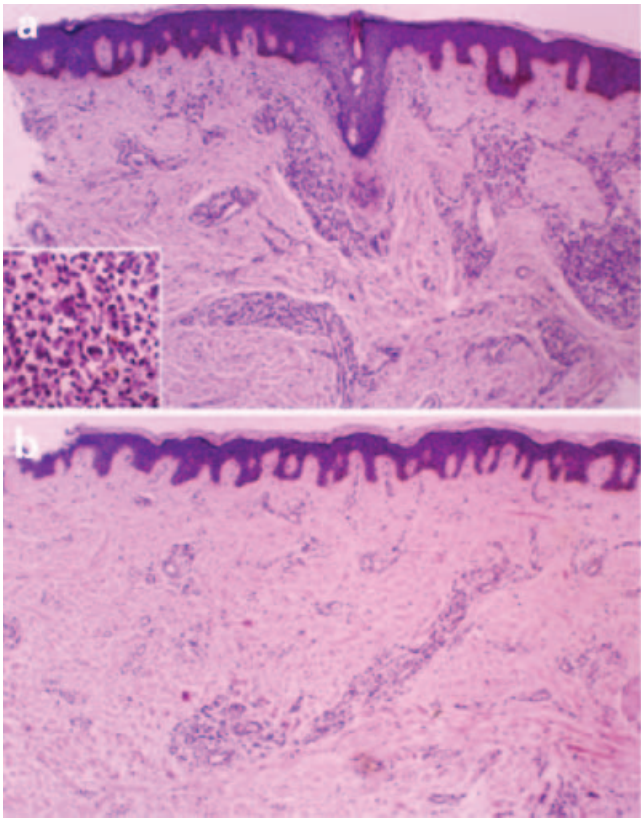

Fig. 2. (a) Dense perivascular infiltration in the upper and mid dermis. Inset: Higher magnification (×400) reveals numerous plasma cells mixed with lymphocytes and histiocytes. (b) Decreased perivascular infiltration of plasma cells was noted one month after five sessions of photodynamic therapy.

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back lesions. Until central atrophy was noted, no definite improvement was found histologically. PDT was then considered because the skin lesions showed reddish fluorescence distinguished from the surrounding normal area under Wood's light after topical ALA application.

Selected lesions on the patient's back were irradiated with long-pulse ruby laser (694 nm, Epitouch 5000, Sharplan; 15 J/cm^2, 4 mm) after occlusion with 20% 5-ALA cream for 6 h. The pulse duration was 1.2 ms. Repeated PDT was performed once monthly. A punch biopsy was done 2 weeks after the first and the third irradiation and 1 month after the fifth irradiation (Fig. 1b). Decreased infiltration was found after the third irradiation. Further improvement was found after the fifth irradiation (Fig. 2b). Control lesions treated with ruby laser alone showed no decrease in cellular infiltration except decreased basal pigmentation even after five irradiations. The patient was followed up for 3 years after PDT. Neither recurrence of skin lesions nor any systemic involvement was noted.

DISCUSSION

Available treatments for cutaneous plasmacytosis include PUVA, radiotherapy, systemic chemotherapy and intralesional steroid injection (5–9). In 1996, Kaneda et al. (5) reported a case of cutaneous plasmacytosis successfully treated with topical PUVA. Wong et al. (7) stated that local irradiation and systemic chemotherapy comprising cyclophosphamide, epirubicin, vincristine and prednisone (CEOP) improved primary cutaneous plasmacytoma. However, the improvement of all these cases was evaluated by clinical inspection or palpation. No definite evidence such as histopathological findings was provided.

PDT has been used to treat cutaneous neoplasms as well as some benign dermatological conditions such as psoriasis, acne and verruca vulgaris (10–12); it has never been used to treat skin conditions with increased plasma cell infiltration. After ALA is applied to the skin, it is converted enzymically in the target cells into the endogenous photosensitizer protoporphyrin IX (PpIX) (13, 14). Examination of the patient's skin with Wood's light provided evidence for is a selective uptake of ALA in lesional plasma cells. PpIX with absorption peaks at 630 nm and 690 nm releases cytotoxic radicals when irradiated with light of corresponding wavelengths (11), damage of these cells might be induced.

Pigmentation is a concern when PDT is used because it is known that pigmented basal cell carcinomas (BCCs) do not respond to conventional PDT as well as unpigmented BCCs (15). The difference in response is believed to be related to the competing chromophore, melanin, which absorbs the photoactivating light interred for PpIX. Ruby laser can destroy melanin and thus increase the proportion of light delivered to the target plasma cells. When the basal hyperpigmentation and its absorption were taken into consideration, long-pulsed ruby laser instead of conventional polychromatic red light was chosen as light source. We believe that the observed response in our patient was attributable to the combined effects of PDT.

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