

Disseminated Erosive Pustular Dermatitis also Involving the Mucosa: Successful Treatment with Oral Dapsone

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Erosive pustular dermatosis (EPD) is a rare cutaneous inflammatory disease of unknown aetiology characterized by sterile pustules, crusted erosions, cicatricial alopecia and skin atrophy. Since its original description in 1977, there have been approximately 150 cases published in the literature, most of which have reported erosive pustular dermatosis involving the scalp (1–3). Erosive pustular dermatosis can also occur on the legs, where it is highly associated with venous insufficiency, ulcers, cutaneous atrophy and diverticular disease (4–11). We report here the case of a woman with disseminated erosive pustular dermatosis affecting the scalp, upper and lower extremities, groin, and tongue, which was treated successfully with oral dapsone.

CASE REPORT

A 67-year-old woman with insulin-dependent diabetes mellitus, longstanding chronic venous insufficiency, peripheral vascular disease and associated chronic leg ulcers presented to our clinic with a rash shortly after a ray amputation of the first toe and metatarsal due to osteomyelitis. She initially developed severe erosive pustules adjacent to the amputation site, but quickly developed disseminated erosive pustules and erythema on many sites, which created severe burning pain. The pustular erosions on her feet were so severe that amputation was discussed prior to our dermatological consultation.

Physical examination revealed large erosive plaques with overlying, almost confluent, pustules and hyperkeratotic debris with a surrounding serpiginous border of erythema present on the distal and dorsal foot, inguinal area, upper arm in area of prior burn, scalp, and dorsal tongue. In parts, the surrounding non-lesional skin was atrophic (Fig. 1).

Histopathological examination showed a hypertrophic epidermis with a diffuse dermal inflammatory infiltrate composed of mainly neutrophils and occasional lymphocytes, macrophages and eosinophils. There were prominent large eosinophilic and

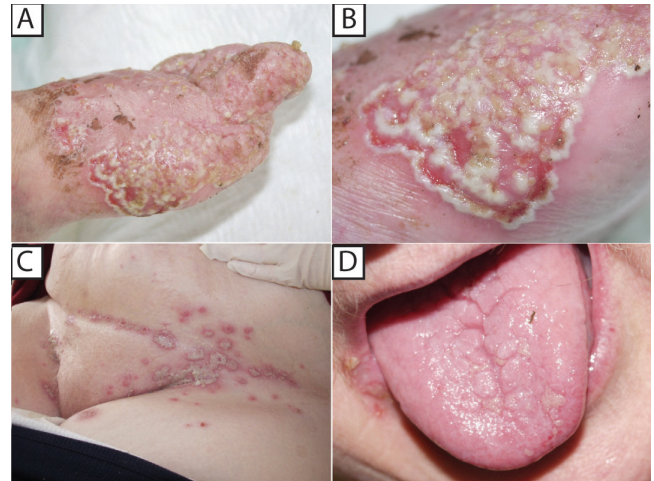


Fig. 1. Clinical photographs of the patient at presentation. A and B: left foot, C: inguinal region and D: tongue.

neutrophilic abscesses within the dermis (Fig. 2). A direct immunofluorescence assay was negative.

Laboratory studies were largely normal, but showed a moderate peripheral blood leukocytosis with increased neutrophils, lymphocytes, and eosinophils and slightly elevated C-reactive protein and haemoglobin A1c (7.2%; >6.5% is consistent with diabetes). The patient also demonstrated moderate plasma zinc deficiency.

Microbiology revealed mild growth of *Staphylococcus aureus* and *Streptococcus agalactiae*, which were consistent with benign colonization. Fungal cultures were negative. X-ray studies of her feet and toes were unremarkable. Vascular Doppler ultrasound studies of the patient's lower extremities revealed bilateral chronic venous insufficiency without signs of deep venous thrombosis. Neurology consultation confirmed the presence of severe diabetic neuropathy.

Prior to presenting to our clinic, the patient was treated with local topical therapies, including antifungal creams and anti-septic solutions and oral antibiotics, which were unsuccessful.

Initially, we began both local therapy with daily antiseptic solution and potent glucocorticoids (very potent) in conjunction with oral zinc replacement and oral fluconazole (which was discontinued once mycology results were proven negative). After 6 weeks of this regimen, a slight improvement was observed; however, many areas remained affected and patient began to develop new erosions and pustules in other areas.

Due to the progression of the EPD during aggressive topical treatments and the disseminated nature of this patient's disease, we considered a trial of oral dapsone. Dapsone was started at 50 mg orally (first week twice a day, then three

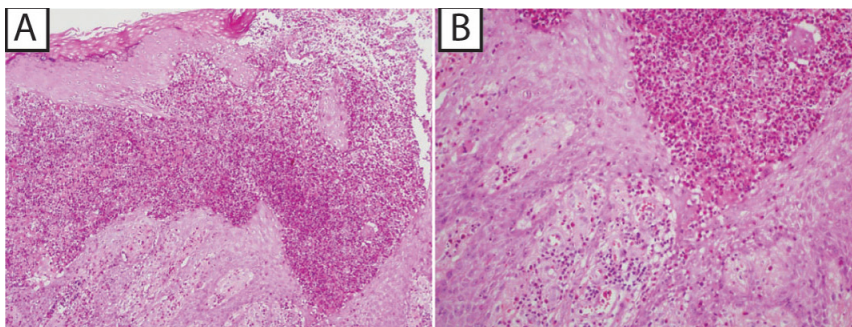


Fig. 2. Haematoxylin and eosin staining of a skin biopsy taken from the patient's groin at presentation. (A) Low-power magnification $\times 40$; (B) medium-power magnification $\times 100$.

times a day) in combination with vitamin C (1,000 mg daily). Within a few days, a significant improvement in all skin lesions was observed. A sustained and complete remission of all erosive pustules was observed 6 weeks after initiation of dapsone therapy. We continued treatment with dapsone 50 mg twice daily for an additional 2 months after the skin had cleared before discontinuation. The patient remained clear of any skin lesions at follow-up examinations at 3, 6, and 12 months post-treatment.

DISCUSSION

EPD is a non-infectious skin disease that is under-recognized (3, 8, 9). It often occurs in elderly individuals and has a female to male ratio of approximately 3:1. In the literature, lesions affecting the scalp vastly predominate (1–3). However, cases can also occur on the legs (4–11).

Exogenous factors that may induce or exacerbate EPD include physical trauma (incidental trauma, surgical procedures, cryotherapy, CO₂ lasers, and shaving) (9, 12), chemical agents (5-fluorouracil and methylaminolaevulinate), ultraviolet exposure (8), viral infection (herpes zoster), and mechanical pressure (compression therapy) (7). Systemic diseases associated with the development of EPD of the scalp include autoimmune processes (Hashimoto's thyroiditis and rheumatoid arthritis). While EPD of the leg can be associated with venous insufficiency, lower extremity ulcers, skin atrophy and diverticular disease (13), a coincidence cannot be excluded.

The differential diagnosis for erosive pustular dermatosis includes folliculitis decalvans (scalp), dissecting cellulitis of the scalp, psoriasis pustulosa, bacterial and fungal infections (kerion celsi), solar keratosis, squamous cell carcinoma, eosinophilic pustulosis, pustular drug-induced eruption, cicatricial pemphigoid, and early stages of pyoderma gangrenosum. The morphology, disease course, and histopathology all can aid in distinguishing EPD from the above disease processes. Sterile pustules, erosions, crusted plaques and overlying alopecia are typical morphological features of EPD. On histopathological examination, a somewhat non-specific pattern of hyperkeratosis and chronic inflammatory changes, including increased plasma cells, neutrophils and eosinophils, with accompanying epidermal atrophy and erosions is often observed (2, 8, 15). In many cases, bacteriology and mycology are negative. However, one report noted that laboratory evidence of fungal infection was present in approximately 50% of cases of EPD of the legs and that lesions often cleared after oral antifungal treatment (7). An anti-inflammatory effect of various anti-fungals, however, cannot be excluded. Rapid and robust clinical responses are often seen after application of high-potency topical glucocorticosteroids. Nevertheless, this treatment is mostly short-lived. In the literature, there have been descriptions of successful treatments with other topical agents, including tacrolimus and calcipotriol (14–16). Oral agents that have been attempted to

treat EPD include zinc sulphate, isotretinoin, prednisone, methotrexate, colchicine, terbinafine and antibiotics, but none has achieved consistent favourable and reproducible treatment results (3, 7, 10, 11, 17).

Due to the presence of the neutrophil-rich papillary dermal infiltrate and the fact that erosive pustular dermatosis of the leg has been postulated to be related to the family of neutrophilic dermatosis, we decided to initiate oral dapsone monotherapy in our patient. She responded rapidly to this treatment. The patient did not experience any dapsone-related side-effects during the entire treatment course. She remained disease-free after one year follow-up.

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