

Subcorneal Pustular Dermatitis in Association with Chronic Lymphocytic Leukaemia

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Sir,

Subcorneal pustular dermatosis (SPD) is a chronic, relapsing, pustular eruption, the aetiology and pathogenesis of which are unknown. It has previously been reported in association with rheumatoid arthritis (1), Crohn's disease (2), pyoderma gangrenosum, Sweet's syndrome and other neutrophilic dermatoses, benign monoclonal gammopathies (3) and IgA myeloma (4). Here we describe a patient with SPD in association with chronic lymphocytic leukaemia (CLL) and discuss the possibility of a pathogenetic link. No cases have previously been reported of SPD and CLL.

CASE REPORT

A 78-year-old woman was referred to the Dermatology Department in August 1996 with a pruritic rash affecting her scalp, axillae, inguinal and infra-mammary flexures. She had no personal or family history of psoriasis. Examination showed erythema, papules and pustules. A biopsy was inconclusive, showing in some areas hyperkeratotic, parakeratotic and mildly acanthotic epidermis with spongiosis and focal neutrophil exocytosis, while in other areas there were well-formed subcorneal pustules. Special stains were negative for bacteria and fungi. The patient was treated with topical steroids, emollients, tar preparations and calcipotriol, each with little benefit. She then received oral acitretin (10–25 mg daily for a total of 29 months), bath PUVA (twice weekly for 3 months) and oral methotrexate (up to 20 mg once weekly for 6 months); each produced at best a short-lived partial improvement in the rash.

In September 1999 the patient had a widespread erythematous pustular eruption affecting the trunk and limbs with a flexural distribution. She was systemically well and denied any joint or gastrointestinal symptoms. On this occasion, a mild lymphocytosis (white cell count $11.8 \times 10^9/l$, lymphocytes 62.6%, neutrophils 33.4%) was noted for the first time. Other haematological indices were normal.

The lymphocytosis has been sustained, increasing to $16.8 \times 10^9/l$ (75%). Lymphocyte marker studies indicate clonal B-cell proliferation (CD5 and CD23 positive) consistent with B-cell chronic lymphocytic leukaemia (CLL).

Other investigations of note have shown a low IgM (0.22 g/l; reference range 0.71–2.30 g/l) and decreased betaglobulins, but no serum or urinary paraprotein.

An autoantibody screen is negative; biochemical indices are normal, with the exception of a slightly low total protein (56 g/l; ref. range 60–80 g/l). Culture of pustule contents has repeatedly been negative.

The patient's rash has continued a relapsing and remitting course, despite treatment with oral ciclosporin (3 mg/kg daily), dapsone (50–100 mg daily, a dose limited by side effects), colchicine (1500 µg/day) and potent topical steroids. She was admitted to the dermatology ward in October 2000 with a widespread erythematous papulopustular scaly rash, showing well-defined serpiginous margins. The facial skin and mucous membranes were spared. Flaccid pustules 5–8 mm in diameter were noted, with characteristic horizontal fluid levels typical of SPD. A skin biopsy taken at this time showed features typical of SPD, namely subcorneal pustules filled with neutrophils and the occasional eosinophil, neutrophils migrating through the dermis, some acantholytic cells but no mitotic activity in the epidermis; there was a mixed superficial perivascular inflammatory cell infiltrate in the underlying dermis. Immunofluorescence, Gram and fungal stains were negative.

In view of the resistance to previous therapeutic modalities, a trial of oral prednisolone (20 mg per day) was commenced, because of its known activity in treating CLL. Within 7 days the patient's skin lesions had improved dramatically, an improvement maintained on follow-up.

DISCUSSION

CLL, the most common form of chronic leukaemia, is frequently associated with skin signs, including papules, nodules, plaques, vesicles, bullae and purpura (5). CLL has been associated with pemphigus (6), bullous pemphigoid (7), a characteristic vesicobullous eruption (6), linear IgA disease (8) and eosinophilic pustular folliculitis (9). The mechanisms of association are unknown and may simply be coincidental. However, CLL has well-documented immune defects (including thrombocytopaenia, haemolytic anaemia and red cell aplasia) and an underlying immune dysfunction may play a role in the skin pathology.

SPD was first described by Sneddon & Wilkinson in 1956 (10) and reviewed in 1979 after 150 case reports (11). The present case demonstrates many of the characteristic features of SPD, although the main

differential diagnosis is generalized pustular psoriasis (GPP). SPD and GPP can be difficult to distinguish both clinically and histologically, indeed some authors believe SPD to be part of a spectrum with pustular psoriasis and psoriasis vulgaris (12). We argue that this is a case of SPD rather than GPP for the following reasons: Clinically, the disorder has run a chronic relapsing course with a predilection for trunk and limb flexures; groups of flaccid pustules have developed on clinically normal skin, coalescing to produce gyrate patterns; there have been no systemic symptoms (in contrast to GPP). Histologically, the features show no evidence of pustular psoriasis other than subcorneal pustules. These have been observed in GPP but they are usually associated with spongiform pustules at all levels within the epidermis. The other differential diagnoses, including impetigo, dermatitis herpetiformis, linear IgA disease, pemphigus foliaceus, pustular psoriasis and a pustular drug eruption are not supported by the patient's history or investigations.

We are not aware of any previously reported association between SPD and CLL. The association in this patient may be purely coincidental; however, our rationale in support of a putative link is as follows: Firstly, the timing of onset of the widespread erythematous pustular eruption coincided with the detection of a lymphocytosis; the haematological abnormality has increased as the skin pathology has worsened. Secondly, the SPD has been resistant to various topical and systemic treatments reported to be of benefit in SPD, but responded dramatically to systemic corticosteroids. Prednisolone may act via an anti-inflammatory effect on the neutrophilic dermatosis; however, the total lack of response to potent topical steroids would not support this theory. We suggest, therefore, that this patient improved because of the therapeutic effect of prednisolone on the associated CLL. Finally, there are possible mechanistic links between SPD and CLL via immune dysfunction. The monoclonal lymphocytic proliferation may be secondary to an unknown chronic antigenic stimulus from within the epidermis; alternatively, immune complex deposition in the stratum corneum may stimulate transepidermal migration of neutrophils, as has been

postulated in the cases of SPD associated with IgA paraproteinaemia (5).

In summary, we believe that our patient has SPD as a distinct entity to pustular psoriasis. We consider the SPD to be pathogenetically associated with the CLL, although the mechanism is not known. We are not aware of any previously reported cases of SPD in association with CLL.

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