An Unusual Severe Case of Subcorneal Pustular Dermatosis Treated with Cyclosporine and Prednisolone

Sir,

Sneddon & Wilkinson first described subcorneal pustular dermatosis (Sneddon–Wilkinson disease) in 1956 (1) as a unique chronic benign entity, with relapsing, pustular eruptions. It was described as having a female:male ratio of 4:1 and an average onset at 40–50 years of age (2). Here a severe case of acute subcorneal pustular dermatosis in a young male patient is described.

CASE REPORT

A 29-year-old otherwise healthy Caucasian man was referred to the authors' department because of an acute pustular eruption in the axillae, groins and back (Fig. 1). Bullous impetigo was suspected and the patient was treated with dicloxacillin, erythromycin and betamethason–fusidin ointment. Cultures were negative and the eruption progressed to include all inverse parts of the body. The patient became febrile with pronounced leucocytosis and further pustular eruption spreading to the skin almost universally. As based on the histopathological findings with subcorneal pustules filled with neutrophils and the clinical diagnosis of either pustular psoriasis or subcorneal pustulosis, dapsone 100 mg/day was introduced and prednisolone 50 mg/day was added. Following a pronounced increase in liver enzymes believed to be caused by dapsone, the drug was discontinued, even though the number of pustules had decreased. The progression of the disease could not be controlled by an increase in prednisolone dosage, and the eruptions now involved the face, scalp, palms and soles, avoiding the mucous membranes. His clinical state worsened, with lowering albumin (26 g/l), increasing leucocytosis (36.2×10^9/l) and a high temperature, raised to 39.7°C. The skin became erythrodermic with flaccid pustules arranged in an annular pattern (Fig. 1). Cyclosporine 400 mg/day was initiated, and after 2 days a reduction in the white blood cell count and the number of new pustules was seen. Computed tomographic scanning, chest X-ray and bone marrow puncture were performed. This showed universal lymphadenopathy and an increased interstitial pattern of the lung, but no signs of leukaemia. The clinical course is summarized in Table I. Cyclosporine therapy was discontinued after 3 weeks and the patient was discharged after a total of 4 weeks. The subcorneal pustulosis was then totally cleared. Prednisolone was gradually reduced and discontinued after 2 months.

Pathological findings

In total, 4 biopsies taken over a period of 2 weeks were examined. All biopsies revealed subcorneal pustules filled with neutrophils and a few acantholytic keratinocytes (Fig. 2). Bacteria were not observed. Scattered neutrophils were seen within the epidermis without concomitant spongiosis. A mixed superficial perivascular inflammatory cell infiltrate was present in the underlying dermis. Direct immunofluorescence was negative.

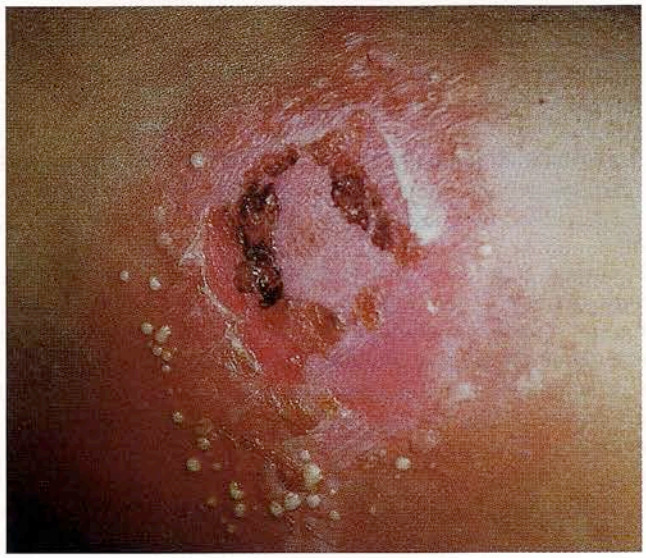

Fig. 1. Flaccid pustules with inflammation on the back.

DISCUSSION

The patient fulfils the criteria of subcorneal pustular dermatosis as defined by Sneddon & Wilkinson, with 4 out of 5 criteria present (1). The only criterion not met was "new onset of pustular eruptions without systemic symptoms", as this patient had a high temperature, leucocytosis and a severe reduced serum albumen due to the universal involvement of the skin. Owing to the severity of the disease with an almost universal involvement of the skin, it is not unexpected that the patient had systemic symptoms.

This case of subcorneal pustulosis showed severe clinical signs with high fever and a universal involvement of the skin, including the face, thus differing from the normal progress of subcorneal pustulosis. The involvement of the face, which has

Table I. *Clinical course*

Date	April		May								June							
	24	29	1	3	4	5	6	8	9	10	12	13	14	15	18	25	27	17
Skin status	+	++	++	+++	+++	++	++	+	++	+++	+++	++	+	+	+	+	0	0
Temperature (°C)			37.4	39.7	38.8	38.7	38.3	39.2	39.6	36.5	37.0	37.0	36.9	36.9				
Leucocytes (10^9/l)		13.6		20.5	23.7	14.3	18.4	21.9			36.2	30.4	28.7	27.2	20.4	7.5		10.4
ASAT (U/l)		19		31		41	415	186			192	307	131	107	65	16		
Albumin (g/l)					32		31				28	26	28	27	33	40		
Prednisolone (mg/day)					50	50	50	50	50	100	100	75	75	50	45	40	35	15
Cyclosporine (mg/day)											400	400	400	400	300	200	100	
Dapsone (mg/day)				100	100	100	100											

Skin status: scored arbitrary according to the number of new pustular eruptions (0, +, ++ and +++). Blank fields: not tested. ASAT: aspartate aminotransferase.

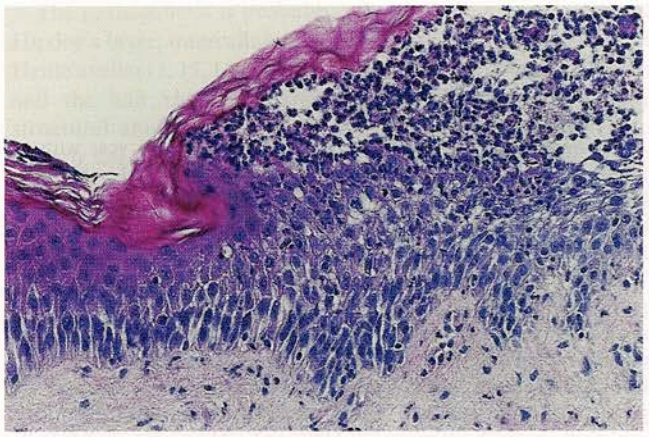

Fig. 2. Subcorneal pustular dermatosis. (Haematoxylin & eosin, ×200).

not been described before, could in part be accounted for by the severity of the disease.

Clinically and histologically, subcorneal pustulosis may occasionally be difficult to differentiate from pustular psoriasis, acute generalized exanthematous pustulosis (AGEP), impetigo, pemphigus foliaceus, dermatitis herpetiformis and other neutrophilic dermatosis.

Absence of pathogenic organisms in the pus as well as the missing response to antibiotics ruled out impetigo. AGEP was not likely, as it is characterized by numerous small pustules and is a drug-related dermatosis. The patient had no family or personal history of psoriasis. The histological picture showed that the pustules appeared high in the epidermis rather than within it, and there were no elongated rete ridges or parakeratosis. The diagnosis of subcorneal pustulosis is supported by the fact that the patient responded to dapsone but could not tolerate it. Direct and indirect immunofluorescence did not demonstrate deposits as seen in pemphigus foliaceus and dermatitis herpetiformis. Early in the course Sweet syndrome had been considered because of the pronounced leucocytosis, fever and disease state, but the histology ruled out the diagnosis.

Subcorneal pustulosis may be associated with gammopathy (3), but no changes were found in his gammaglobulin and M-component. Previously presented data have suggested an immune-mediated cause, which is supported by the response to cyclosporine and prednisolone in combination.

There are several different points of attack for the effect of cyclosporine, i.e. an inhibition of the production of the first-line inflammatory cytokine tumour necrosis factor-α (TNFα (4), an inhibition of the TNFα-induced production of the inflammatory cytokine interleukin-8 (IL-8), which is chemotactic for neutrophils (4), an inhibition of the chemotactic activity of neutrophils towards IL-8 (5) or an inhibition of the adhesion of neutrophils (6). In support of this, TNFα has been detected with a 4-fold increase in serum and a 300-fold increase in pustules of patients with subcorneal pustular dermatosis (7).

Cyclosporine, which to our knowledge has not been used for subcorneal pustulosis before, can either alone or in combination with prednisolone be a well-tolerated alternative to dapsone, for severe cases of subcorneal pustulosis.

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