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DEMONSTRATION OF FIBRIN IN SKIN DISEASES

II. *Psoriasis*

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Abstract. Sixty-four patients with psoriasis were studied for the presence of fibrin in skin lesions. In 3 of the 27 patients with uncomplicated psoriasis vulgaris (11%), fibrin was found as a sharp line both in the dermo-epidermal junction and in the capillary walls of the papillae. The same phenomenon was registered in 3 of the 16 patients with acute psoriasis guttata (19%). The remaining 21 patients had either psoriatic arthropathy, psoriasis erythroderma, generalized psoriasis pustulosa or atypical, eczema-like psoriasis. In as many as 13 cases (62%) of this group, fibrin deposits could be demonstrated in the dermal papillae. The psoriatic pattern of fibrin differed from that seen in dermatitis herpetiformis, lichen ruber planus and lupus erythematosus.

Dilatation of papillary capillaries is a constant and perhaps fundamental change of psoriatic skin. Another constant finding in psoriatic dermis is papillary edema of a minor degree, which is especially pronounced in exfoliative forms of psoriasis (2). Discontinuity of the basal lamina has been electron microscopically demonstrated in both psoriasis (3) and dermatitis herpetiformis (4). The initial lesion of dermatitis herpetiformis consists of marked edema of the dermal papilla into which both fibrin and inflammatory cells accumulate (7, 8, 9).

In dermatitis herpetiformis, the accumulation of fibrin seems to occur even before the inflammatory infiltrate starts to form (8). On the other hand, fibrin and its degradation products are chemotactic (1). It has been speculated that the abnormal capillaries in the psoriatic skin may be responsible for the early suprapapillary changes by leaking polymorphonuclear leukocytes and enzymes into the epidermis (10). The present study was undertaken to examine the presence of fibrin in psoriatic skin.

MATERIAL AND METHODS

The present series comprised 64 patients with psoriasis. Twenty-one were classified as having "unstable" psoriasis (15), 27 as having psoriasis vulgaris, and 16 as having psoriasis guttata.

In the group of "unstable" psoriasis were included 10 patients with arthritis, which in 9 cases was of the psoriatic type and in 1 case of rheumatoid type. In addition, one of these had erythroderma. Three of the 10 patients were on systemic steroid treatment, 2 were receiving phenylbutazone and 1 was receiving indomethacin. Two of the remaining 11 patients had erythroderma without arthritis and one of them was on systemic steroid treatment. One patient had generalized psoriasis pustulosa, and he was receiving phenylbutazone. The 8 remaining patients had atypical psoriasis with eczema-like lesions localized on sun-exposed areas and showed unfavourable reactions to dithranol treatment. Seven of these reported intolerance to sunlight. Altogether, 9 of the 21 patients of this group had had exacerbations after exposure to sunlight. The mean duration of the skin disease in this group was 14 years (range 1–40 years) and the mean age of the patients 48.7 years (range 24–69 years) (Table I).

Twenty-seven patients had uncomplicated psoriasis vulgaris. None of these were photosensitive. This group included 12 females and 15 males. Their skin disease had lasted an average of 8 years (range 2 months–20 years). The mean age was 45.7 years (range 18–69 years).

In addition, 16 patients with psoriasis guttata were examined. Each had an acute eruption which had lasted only for a few weeks or months. Ten of the patients were females and the mean age of the group was 21.6 years.

Biopsies taken from the skin lesions were immediately frozen and sectioned in a cryostat at 4 μ. The anti-human fibrinogen conjugate and the methods used have been previously described (13). The investigator was unaware of the type of psoriasis in each case at the time of the immunofluorescent examination.

Table I. *Clinical data of the 63 patients with psoriasis*

Diagnosis	Total no.	Mean age	Range (y.)	Duration (y.)	Range
Psoriasis vulgaris	27	45.7	18–69	8	1/2–20
Psoriasis guttata	16	21.6	6–40		
"Unstable" psoriasis	21	48.7	24–69	14	1–40
Psoriatic arthropathy	10				
Psoriasis erythroderma	2				
Psoriasis pustulosa	1				
Eczema-like psoriasis	8				

RESULTS

The results are presented in Table II. Thirteen of the 21 patients with "unstable" psoriasis showed linear fibrin deposits along the dermo-epidermal junction of the dermal papillae (62%) (Fig. 1). In 12 of these, fibrin could also be found in the walls of the capillaries of the upper portion of the papillae (Fig. 2). Five of the 8 patients without detectable fibrin deposits in the papillae were on systemic therapy. Two of the remaining 3 patients lacking fibrin deposits had psoriatic arthritis and had earlier been on systemic therapy. Five of the 6 patients with eczematous lesions were found to have fibrin deposits in the papillae.

In the group of 27 patients with uncomplicated psoriasis vulgaris, 3 were found to have fibrin deposits both in the dermo-epidermal junction of the papillae and in the capillary walls (11%). Two of these 3 had earlier (within 2 years) been on steroid therapy but did not receive any systemic treatment at the time of the investigation. Only 1 other patient of this group had earlier received systemic treatment.

Table II. *Occurrence of fibrin deposits in the dermal papillae and/or capillaries in the different groups of psoriasis*

Diagnosis	No. of cases	Positive	
		No.	%
"Unstable" psoriasis	21	13	62
Psoriasis vulgaris	27	3	11
Psoriasis guttata	16	3	19

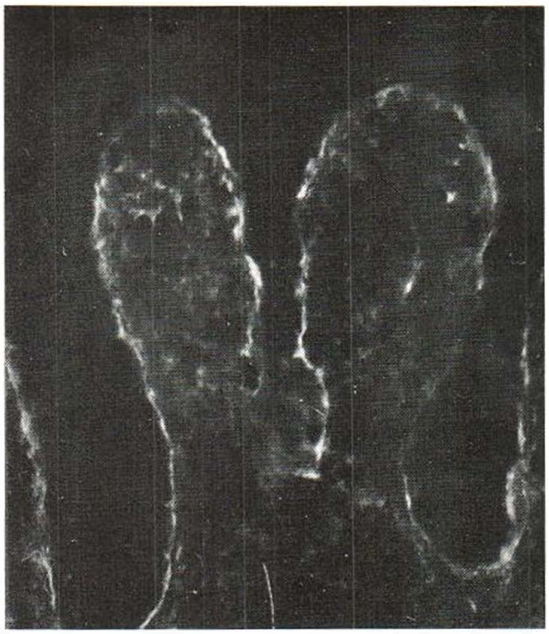

Fig. 1. IF-staining for fibrin in the lesion of psoriasis. Sharply linear accumulation of fibrin in the dermo-epidermal junction.

Three of the 16 patients with psoriasis guttata (19%) had fibrin deposits both in the capillary walls and in the dermo-epidermal junction of the papillae. Two of these 3 patients belonged to the 4 patients of this group who within a few weeks before the present study had suffered from acute tonsillitis.

DISCUSSION

Even if the scales from parakeratotic skin of psoriasis show high fibrinolytic activity (5, 6, 11), extracts from psoriatic skin exhibited normal values (5), and in the "fibrinolysis autographs" the fibrinolytically active area was restricted to the parakeratotic horny layer (6).

The results of the present series show that accumulation of fibrin into the dermo-epidermal junction is by no means a common event in uncomplicated psoriasis vulgaris. Keeping in mind the close connection between fibrin accumulation and tissue fibrinolysis demonstrated by Ryan et al. (12) it can be assumed that in these cases there is no impairment of the fibrinolytic activity of the tissue.

It is interesting that in 2 out of 4 patients with

Fig. 2. IF-staining for fibrin in the lesion of psoriasis. Linear accumulation of fibrin in the dermo-epidermal junction and strong accumulation in the capillary walls.

psoriasis guttata and streptococcal tonsillitis a few weeks earlier, clear-cut linear fibrin accumulations could be demonstrated along the dermo-epidermal junction of the dermal papillae.

In contrast to the findings in uncomplicated psoriasis vulgaris, fibrin depositions in the tissue were seen in 13 of the 21 patients with "unstable" forms of psoriasis. This difference in the frequency of fibrin accumulation might have been even greater if some of the patients had not been on systemic treatment with corticosteroids. In these "unstable" cases, fibrin was seen as a sharp linear accumulation along the dermo-epidermal junction and along the lining of papillary capillaries. These accumulations of fibrin were different from those seen in dermatitis herpetiformis in which they are seen as globular or crescentic deposits in the tips of dermal papillae (7, 8). The psoriatic pattern of fibrin accumulation also differed from that seen in lichen ruber planus and lupus erythematosus (13).

In short, junctional fibrin accumulation occurred mainly in patients with "unstable" psoriasis, i.e. with erythroderma, arthritis, pustulosis or light-sensitive eczema-like lesions, which Sönnichsen (14) from other evidence coined the perhaps more appropriate term "psoriasis exudativa".

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