Mast Cells in the Synovium of Patients with Psoriasis Arthropathy

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Key Words

Mast Cell
Psoriasis arthropathy
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Recent studies have demonstrated that mast cells may play an important role in the pathogenesis of psoriasis [1], Vascular changes are associated with mast cell degranulation in eruptive guttate psoriasis [2], and, especially in early lesions, the mast cell number is significantly increased in the upper dermis [3]. We have examined the mast cell number in synovial tissue of patients with psoriasis arthropathy (PA) and studied the immunohistochemical localization of stem cell factor (SCF), which is a mast cell growth factor, and endothelial leukocyte adhesion molecule 1 (E-selectin).

Biopsy was performed from the involved skin of psoriasis and synovial tissue from painful, swelling joints of the distal interphalangeal joint of the second finger of a 45-year-old man with PA and from the proximal interphalangeal joint of the right second finger of a 33-year-old man with PA. Both patients showed negative titers of rheumatoid factor, and radiologic examination revealed a 'pencil-in-cup' appearance at the distal interphalangeal joints. Biopsied specimens were cut into two and one part was fixed with 10% formalin solution and then stained with hematoxylin-eosin and toluidine blue at a pH of 2.5, 4.1 and 7.0 for the identification of mast cells, and the other part was put in OCT compound and snap-frozen immediately at -80°C. Mast cells were counted in 10 fields under high magnification and the mean number was calculated. Results are expressed as means $\pm$ SD. Student's t test was performed for statistical analysis. 5- μ m cryostat sections were allowed to air-dry, fixed in acetone at room temperature for 5 min and washed in phosphate-buffered saline (PBS). The standard avidine-biotin peroxidase technique (Histotone SAB[M], Nichirei Co., Tokyo, Japan) using anti-SCF monoclonal antibody (Genzyme, Cambridge, Mass., USA; diluted in PBS, 1:100) and anti-E-selectin monoclonal antibody (R&D Systems, Minneapolis, Minn., USA; diluted in PBS, 1:500) was applied to the sections. The sections were developed with 3-amino-9-ethylcarbazole solution as chromogen and

counterstained with hematoxylin, dehydrated, cleared and mounted. Negative controls were prepared by omission of the specific antibody and its substitution with a nonspecific IgG subclass mix antibody.

Results showed that a large number of mast cells were present in the synovial tissues (fig. 1 a). The number of mast cells in the papillary dermis in the involved skin was significantly increased in both cases ($52.4 \pm 8.7/\text{mm}^2$ in case 1 and $60.4 \pm 10.2/\text{mm}^2$ in case 2) as compared to that in 3 normal skin samples obtained from the dorsa of the hands ($38.3 \pm 6.4/\text{mm}^2$; $p < 0.05$). That of the 2 patients did not reach any significant difference from that of 5 patients with psoriasis vulgaris ($55.7 \pm 10.8/\text{mm}^2$).

Mast cells were much more increased in the synovial tissues ($111 \pm 31.5/\text{mm}^2$ in case 1 and $99.7 \pm 25.6/\text{mm}^2$ in case 2; $p < 0.05$). SCF was expressed in mast cells, fibroblast-like spindle cells and

endothelial cells in the synovial tissue (fig. 1b). E-selectin was

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Fig. 1. a Increased number of mast cells in the synovial tissue. Toluidine blue. $\times 140$. b SCF expression in the fibroblast-like cells (arrows) and endothelial cells (*) in the synovium. $\times 350$. c E-selectin protein expression on vessels surrounded by scattered inflammatory infiltrates. $\times 250$.

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expressed in the endothelial cells surrounded by inflammatory infiltrates (fig. 1c). Our study showed that the mast cell number was significantly increased in the lesional skin, and much higher mast cell numbers were found in the synovium in PA. In the synovium of patients

with rheumatoid arthritis (RA), the mast cell number is also increased [4-6]. Mast cells are supposed to play a role in the promotion of angio-genesis in RA [4] or in the initial phase of RA [6]; however, the precise role remains unknown. SCF is a growth factor cytokine produced by stromal cells that is known to influence mast cell proliferation and differentiation. To our knowledge, however, SCF expression has not been previously studied in PA. Our result showed SCF expression on fibroblast-like cells, mast cells and endothelial cells in the synovium, indicating that SCF plays an important role in the joint involvement in PA. It has been shown that mast cell degranulation in human skin organ cultures induces expression of E-selectin on vascular endothelial cells [7], and mast cell-derived tumor necrosis factor α has the potential to induce the early expression of E-selectin [8]. In our study, E-selectin was preferentially expressed in the blood vessels in the synovium, and it is of note that the vascular expression of E-selectin was associated with perivascular inflammatory infiltrates as Kriegsman et al. [9] have recently shown, which may demonstrate that the synovium in PA is also in a continuous state of endothelial activation like RA. It was speculated that the continuous expression of E-selectin in the synovium maintains the influx of circulating inflammatory cells into the joints, which may contribute to synovial hyperplasia leading to an increased number of mast cells through SCF.

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The Sound of Scratching:

An Unusual Cause of Neurotic Excoriations

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Key Words

Neurotic excoriation · Itch-scratch cycle ·

Self-inflicted dermatosis

Neurotic excoriations are produced by the patient as a result of repetitive self-excoriation, which may be initiated by an itch or other cutaneous dysesthesia, or because of an urge to excoriate a benign irregularity on the skin. This can initiate and perpetuate the 'itch-scratch' cycle, which in some patients becomes a true compulsive ritual [1]. We report an interesting case of neurotic excoriations in which the patient liked to hear the rhythmic sound of scratching produced on her skin.

A 19-year-old female presented with mildly pruritic, superficial crusted lesions of 7 months duration. The patient denied any history of psychosocial stress or depression. On examination, the lesions were confined to the extensor surfaces of both forearms including the dor-sum of the hands. The eruption consisted of superficial excoriations varying in diameter from 5 to 10 mm covered at places with sanguineous crusts and having erythematous edges. At few places, pale scars with hyperpigmented borders were noted. On further elicitation of the patient's urge to scratch, she came forth with the explanation that she enjoyed the sound produced by scratching the skin with her long nails. The patient further admitted that she maintained long nails for this very purpose.

Neurotic excoriation, perhaps the commonest of self-inflicted der-matoses, differs from other artefactual conditions in that those who suffer from it readily admit to an uncontrollable urge to gouge and pick at their skin. The most consistent psychiatric disorders reported in association with neurotic excoriations are a personality with per-fect-ionistic and compulsive traits, obsessive-compulsive disorder and depression [2, 3]. Psychosocial stress has been reported to precede neurotic excoriations in 33-98% of patients [4]. This patient presented with a unique explanation for the urge to scratch her skin.

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