Interplay between environmental factors, articular involvement, and HLA-B27 in patients with psoriatic arthritis

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Abstract

Medical records of 138 patients with psoriatic arthritis and 138 with rheumatoid arthritis were reviewed for the occurrence of an environmental factor triggering arthritis.

Twelve (9%) of the patients with psoriatic arthritis had had an acute disorder immediately preceding onset of arthritis (an operation in four cases, articular trauma in three, abortion in two, myocardial infarction, thrombophlebitis, and phosphoric ester intoxication in one case each). Peripheral arthritis occurred in all these patients.

Among the rheumatoid patients, an acute event immediately preceding the onset of the disease was recorded in two cases (1%) only ($\chi^2=7.52$; $p=0.006$).

No significant association was found in the arthritic patients between the incidence of acute events preceding arthritis onset and positivity of the HLA-B27 phenotype.

The suggestion that environmental factors might play a part in the development of psoriatic arthritis was advanced a long time ago, and the role of articular trauma seems particularly intriguing. Initial reports on this topic have appeared since 1959¹⁻³ and, more recently, further stimulating contributions, involving other forms of seronegative spondylarthritis, have been published.⁴⁻⁶

At present, particularly in psoriasis, the list of environmental factors suggested as possible triggering agents for arthritis is increasing. In addition to the classical microbial agents, genetic factors, or articular trauma, several other elements, such as acute disorders, have recently been considered and included.⁷

In view of this we evaluated a wide range of environmental factors, potentially triggering arthritis, in a group of patients with psoriatic arthritis attending the rheumatology unit.

The relation with the HLA-B27 antigen was also determined.

Patients and methods

The hospital medical records of 138 consecutive outpatients with psoriatic arthritis (67 women, 71 men), attending the rheumatology unit because of articular disease, and of 138 consecutive patients with rheumatoid arthritis (112 women, 26 men), used as control group, were reviewed. The two groups were of similar age (psoriatic arthritis: mean age 48.8 (range 23-77) years; rheumatoid arthritis: mean age 50.9 (22-83) years). Diagnosis of psoriatic arthritis

was according to the criteria of Wright and Moll,^{8,9} showing 13 patients with distal interphalangeal joints affected, two with mutilans arthritis, 46 with symmetrical polyarthritis (simulating the rheumatoid form), 18 with oligoarthritis, and 59 with spondylitis, 23 of them with, additionally, peripheral arthritis. Diagnosis of rheumatoid arthritis was according to the American College of Rheumatology criteria.¹⁰ Eighty three rheumatoid patients were seropositive for IgM rheumatoid factor as assessed by the latex fixation test.¹¹

For each patient every acute event, other than psoriasis, immediately preceding onset of arthritis (<10 days before) was recorded. The relation of the acute event with the articular pattern (patients with peripheral arthritis or exclusive spine disease) was evaluated in the patients with psoriatic arthritis.

The incidence of articular trauma and localisation of the arthritis following it were also recorded.

In all patients with psoriatic arthritis the HLA-B27 antigen was typed by a micro-lymphocytotoxicity technique.¹² Statistical analysis of the association between the incidence of acute events preceding onset of arthritis and the HLA-B27 phenotype was by χ^2 test, for all patients and for those with peripheral arthritis only.

Results

The hospital medical records of 12 (9%) patients with psoriatic arthritis showed the occurrence of an acute disorder immediately preceding onset of arthritis (an operation in four cases, articular trauma in three, abortion in two, myocardial infarction, thrombophlebitis, and phosphoric ester intoxication in one case each).

The incidence of an acute event immediately preceding the onset of the disease among the 138 patients with rheumatoid arthritis was significantly different, occurring in two cases (1%) only (trauma in one, viral infection in one; $\chi^2=7.52$; $p=0.006$).

In all 12 patients with psoriatic arthritis following an acute disorder peripheral joint disease developed—one patient with distal interphalangeal joints affected, six with symmetrical polyarthritis, three with oligoarthritis, and two with spondylitis with a peripheral joint affected (the distal interphalangeal joint in one patient and a true symmetrical polyarthritis in the other patient).

Statistical analysis confirmed that the occurrence of an acute event preceding arthritis in patients with psoriatic arthritis was significantly

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higher in patients with peripheral arthritis than in those with exclusive spine disease ($\chi^2=4.64$; $p=0.03$; Fisher's exact test two tailed $p=0.04$).

In the three patients in whom arthritis followed articular trauma, oligoarthritis developed in two and an overlap of spondylitis and peripheral arthritis in the third. In only one case did arthritis occur at the joint affected by the trauma.

The HLA-B27 phenotype was present in 45 (33%) of 138 patients with psoriatic arthritis—five with distal interphalangeal joint disease, 11 with polyarthritis, nine with oligoarthritis, and 20 with spondylitis.

In the 12 patients in whom arthritis followed an acute event, HLA-B27 was present in two (17%) cases—the two patients with spondylitis and peripheral arthritis.

No significant association was found between the incidence of acute events preceding onset of arthritis and the presence of the HLA-B27 phenotype, either in the entire sample studied or in those with peripheral arthritis only.

Discussion

Genetic factors play a fundamental part in the development of arthritis in patients with psoriasis, and several studies have suggested a familial aggregation.⁹

On the other hand, environmental factors have been implicated too, as reported since 1959. Among these, articular trauma has been suspected as it is often followed by chronic arthritis.¹⁻³ In addition, infectious agents previously considered,¹³ have again been suggested more recently.^{14 15}

In this study, taking into account Moll's hypothesis,⁷ a wide range of environmental agents was considered. The hospital medical records of a large group of patients and controls were studied and every acute disorder was considered as a potential triggering agent for arthritis. Psychological stress was not studied but, nonetheless, the present results, showing the importance of environmental factors, suggest it might be useful to pursue this line of investigation as in the classical studies on psoriasis and stress.^{16 17}

Data show that in a considerable number of cases arthritis in patients with psoriasis was preceded by events such as myocardial infarction, abortion, thrombophlebitis, or intoxication by chemical agents. The incidence was significantly higher than in the control group.

Such events occurred significantly more often in patients who developed peripheral arthritis than in those developing spondylitis only.

The lack of evidence for a microbial infection preceding arthritis was intriguing. Indeed, infectious diseases had been believed to be the most likely environmental triggers of

arthritis.¹³⁻¹⁵ It should be remembered, however, that the increased use of antibiotics has modified the natural history of infectious diseases, greatly reducing the contact time between infectious agents and host.

In only one case has arthritis following a trauma been found to occur at the same joint ('deep Koebner effect').¹

Some studies have reported a role for HLA-B27 in predisposing to arthritis following trauma.⁴⁻⁶ The role claimed for HLA-B27 in the pathogenesis of seronegative spondylarthritis is also well known.¹⁸ In our patients, however, the presence of HLA-B27 did not seem to predispose to arthritis following acute events.

In conclusion, there is increasing evidence of the importance of acute events as triggering factors for the onset of arthritis in patients with psoriasis. Our work suggests that a wide range of acute disorders, previously overlooked, may be important. These acute events in patients with psoriasis may be followed by an arthritis that in most cases affects the peripheral joints and is not associated with the presence of the HLA-B27 phenotype.

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