Indices of disease activity in psoriatic arthritis

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Keywords: psoriatic arthritis, erythrocyte sedimentation rate, C-reactive protein

Paper read to Section of Rheumatology & Rehabilitation, 12 February 1986

Summary

Psoriatic arthritis (PA) may respond to disease-modifying antirheumatic therapy. The value of assessing disease activity with indices devised for rheumatoid arthritis (RA) was investigated in 72 patients with seronegative PA. Thirty patients had a peripheral polyarthritis including the distal interphalangeal joints (DIPJs) and 15 a symmetrical arthritis sparing DIPJs (RA-like). Significant correlations (Spearman rank test) were seen between the clinical variables (pain score, grip strength, Ritchie articular index and a summated index of disease activity) in these two groups. Ten patients with a markedly asymmetrical arthritis showed a poor correlation between clinical variables. Although the objective indices – erythrocyte sedimentation rate (ESR) and C-reactive protein – correlated together in the first two groups, the ESR correlated solely with clinical indices, and then only in RA-like patients.

These results cast some doubt on the value of assessment methods based on RA when evaluating subgroups of PA other than RA-like disease.

Introduction

Psoriatic arthritis (PA) may take several forms[1] and is often considered to be benign. However 10% of patients have been reported to progress to arthritis mutilans (AM) and it is suggested that all patients are at risk of this complication[2]. Data collected from over 150 of our patients suggest that approximately 75% suffer a progressive arthritis (in preparation). The use of various disease-modifying antirheumatic drugs (DMARDs) including gold salts[3-5] has been advocated. Adequate methods of assessing the disease activity are therefore required, both to select patients in need of DMARDs and also thereafter to monitor their response.

Most studies utilize indices of activity originally devised for assessing rheumatoid arthritis (RA) although their usefulness has not been proven for PA. This study was designed to evaluate some of these indices when used in PA.

Patients and methods

Seventy-two patients with psoriasis and arthritis, persistently seronegative for IgM rheumatoid factor, were assessed in a single interview by one observer (SD). The pattern of joint involvement was recorded and the disease activity was measured using the following indices: (*a*) pain score (10 cm horizontal visual analogue scale marked from 'no pain' to 'pain as severe as possible'); (*b*) duration of early morning stiffness (EMS); (*c*) grip strength (Boots pressure gauge inflated to 30 mmHg; average of three recordings from both hands combined); (*d*) articular index (using the technique of Ritchie *et al.*[6]); and blood was taken for the estimation of (*e*) haemoglobin concentration (Hb), (*f*) erythrocyte sedimention rate (Westergren) (ESR) and (*g*) C-reactive protein (turbidometric nephelometry, rate reaction) (CRP). An overall index of disease activity (IDA) was constructed using the first five variables, as for the Mallya score[7], but excluding the ESR so that both the ESR and the CRP could be independently compared with the other combined indices.

Table 1. Distribution of patients with psoriatic arthritis into subgroups based upon the pattern of joint involvement

Classical	30
RA-like	15
Asymmetrical	10
Oligoarthritis	10
Spondylitis	7
Total	72

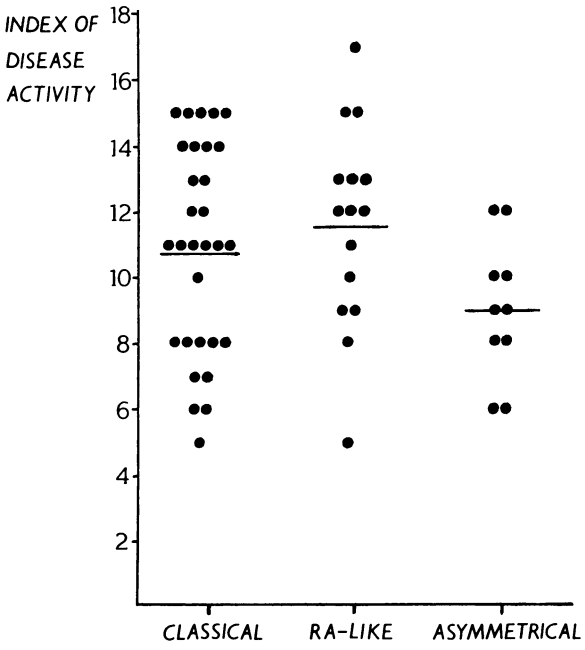

Figure 1. Index of disease activity scores (maximum score possible = 20) observed in patients with peripheral polyarthropathy, by disease subgroup

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Table 2. Classical psoriatic arthritis: correlation matrix showing significant correlations (Spearman rank test)

	CRP	*ESR*	*IDA*	*Hb*	*Ritchie*	*EMS*	*Grip*
Pain score	NS	NS	$P<0.001$	NS	$P<0.01$	NS	$P<0.001$
Grip	NS	NS	$P<0.001$	NS	$P<0.01$	NS	
EMS	NS	NS	NS	NS	NS		
Ritchie	NS	NS	$P<0.001$	NS			
Hb	$P<0.05$	$P<0.01$	$P<0.05$				
IDA	NS	NS					
ESR	$P<0.001$						

Table 3. RA-like psoriatic arthritis: correlation matrix showing significant correlations (Spearman rank test)

	CRP	*ESR*	*IDA*	*Hb*	*Ritchie*	*EMS*	*Grip*
Pain score	NS	$P<0.05$	$P<0.01$	NS	$P<0.05$	NS	$P<0.05$
Grip	NS	$P<0.01$	$P<0.001$	NS	$P<0.001$	NS	
EMS	NS	$P<0.05$	NS	NS	NS		
Ritchie	NS	NS	$P<0.01$	NS			
Hb	NS	NS	NS				
IDA	NS	$P<0.01$					
ESR	$P<0.01$						

Table 4. Asymmetrical psoriatic arthritis: correlation matrix showing significant correlations (Spearman rank test)

	CRP	*ESR*	*IDA*	*Hb*	*Ritchie*	*EMS*	*Grip*
Pain score	NS	NS	$P<0.05$	NS	NS	NS	NS
Grip	NS	NS	$P<0.01$	NS	NS	NS	
EMS	NS	NS	$P<0.05$	NS	NS		
Ritchie	NS	NS	$P<0.05$	NS			
Hb	NS	NS	$P<0.05$				
IDA	NS	NS					
ESR	NS						

Subsequently the patients were divided into disease subgroups based upon the pattern of joint involvement. Patients with peripheral polyarthritis including distal interphalangeal joints (DIPJs) were termed 'classical', those with a symmetrical arthritis sparing the DIPJs 'RA-like', and those with a markedly asymmetrical arthritis 'asymmetrical'. Patients with an oligoarthritis or with spondylitis were excluded from further analysis as the paucity of peripheral joint lesions prevented the meaningful application of all of the indices under study.

The relationships between the indices were analyzed using the Spearman rank correlation test.

Results

The various disease subgroups of patients are shown in Table 1. The 55 patients with peripheral polyarthritis exhibited a wide range of apparent disease activity. This variability is well expressed by the distribution of scores for the IDA as demonstrated in Figure 1.

Correlation matrices for all the indices for each subgroup are shown in Tables 2, 3 and 4. Patients with classical PA showed a correlation between pain score, grip strength and the Ritchie index, and most of the indices correlated with the IDA to which they contributed. A similar relationship between the clinical indices was seen in the RA-like group. However, the only correlations in the asymmetrical group were between the IDA and its individual components.

The relationship of the laboratory measurements ESR and CRP is emphasized in Table 5. Although these correlated in the classical and RA-like groups, only the ESR showed a relationship with the clinical indices and then only in RA-like patients.

Table 5. Correlation t values (Spearman rank correlation test) observed for ESR and CRP in patients with classical, RA-like and asymmetrical psoriatic arthritis

	Classical (n = 30)		*RA-like (n = 15)*		*Asymmetrical (n = 10)*	
	CRP	*ESR*	*CRP*	*ESR*	*CRP*	*ESR*
Pain score	0.08	0.24	0.44	0.59●	−0.41	0.04
Grip strength	−0.25	−0.27	−0.46	−0.66■	0.17	−0.47
EMS	0.25	0.25	0.48	0.57●	−0.09	0.60
Ritchie index	0.14	0.10	0.15	0.38	−0.28	0.55
Hb	−0.44●	−0.52■	−0.01	−0.37	−0.51	−0.50
IDA	0.24	0.33	0.49	0.74■	−0.05	0.62
ESR	0.79▲		0.75■		0.35	

Significant values (based on standard tables): ● $P<0.05$, ■ $P<0.01$, ▲ $P<0.001$

Discussion

The results demonstrate that these indices of disease activity used in RA fail to show a close correlation in PA, especially in non-RA-like disease. The poor results obtained for CRP may be accounted for by the fact that 24 of the 55 patients had unrecordable levels when tested. We conclude that these laboratory variables should not be relied on too heavily when deciding whether patients have PA of sufficient activity to justify treatment with DMARDs.

This belief has been supported by our subsequent experience of treating over 50 patients with DMARDs over the last two years. Although patients with high scores prior to therapy will reflect any response to treatment with a lowering of these values, other patients with low/normal values for ESR and/or CRP may have clinically active and progressive disease and may also demonstrate a beneficial response as reflected in their clinical and global assessment scores. Inclusion of these latter patients in clinical trials would lead to an underemphasis of the therapeutic response in terms of their laboratory results.

Clinical trials in PA should therefore include a clear account of the disease subgroups being treated. In addition, the results for both clinical and laboratory indices should be reported individually so that any changes attributable to therapy can be clearly interpreted.

References

1 Moll JMH, Wright V. Psoriatic arthritis. *Semin Arthritis Rheum* 1973;**3**:55–78

2 Kammer GM, Soter NA, Gibson DJ, Schur PH. Psoriatic arthritis: a clinical, immunologic and HLA study of 100 patients. *Semin Arthritis Rheum* 1979;**9**:75–97

3 Dowart BB, Gall EP, Schumacher HR, Krauser RE. Crysotherapy in psoriatic arthritis; efficacy and toxicity compared to rheumatoid arthritis. *Ann Rheum Dis* 1978; **21**:513–5

4 Richter MB, Kinsella P, Corbett M. Gold in psoriatic arthropathy. *Ann Rheum Dis* 1980;**39**:129–30

5 Dequecker J, Verdickt W, Gevers G, Vanschoubroek K. Long term experience with oral gold in rheumatoid arthritis and psoriatic arthritis. *Clin Rheumatol* 1984; **3**(Suppl):67–74

6 Ritchie DM, Boyle JA, McInnes JM *et al.* Clinical studies with an articular index for the assessment of joint tenderness in patients with rheumatoid arthritis. *Q J Med* 1968; **37**:393–406

7 Mallya RK, Mace BEW. The assessment of disease activity in rheumatoid arthritis using a multivariate analysis. *Rheumatol Rehab* 1981;**20**:14–7

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