

CONCISE REPORT

Factors related to radiological damage in 61 Spaniards with early rheumatoid arthritis

P Richi, A Balsa, S Muñoz-Fernández, V Villaverde, M Fernández-Prada, J L Vicario, E Martín-Mola

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Objective: To determine whether the presence of radiographic erosions at disease onset in patients with early rheumatoid arthritis (RA) is associated with clinical, serological, or genetic factors of poor outcome and whether patients with erosions only in the feet have a different pattern of presentation.

Methods: Sixty one patients with early RA (<6 months of evolution) were studied. Clinical evaluation and serological, radiological, and genetic studies were performed at disease onset and after one year.

Results: Forty one (67%) patients showed erosions in their hands or in their feet, or in both. Subjects with erosive RA had a higher number of swollen joints (SJC; 9 (SD 6) v 6 (3), $p=0.008$), and rheumatoid factor (RF) positivity was more common (80% v 50%, $p<0.02$) than those without erosions. Seven (17%) of the 41 patients in the group with erosions had erosions only in their feet. This group had a longer duration of morning stiffness (120 (60) v 72 (52) min, $p<0.005$), better patient's global assessment of general health (34 (22) v 57 (25), $p<0.05$), and lower erythrocyte sedimentation rate (32 (22) v 60 (30) mm/1st h, $p<0.05$) than the rest of the subjects with erosions, and none of them was in remission after one year. Remission after one year was related to a lack of cortical damage at onset and RF negativity.

Conclusions: Radiological damage at disease onset is associated with a worse clinical presentation and RF positivity, which are markers of poor outcome. There is a subgroup of patients, with erosions only in their feet, whose clinical presentation is less aggressive. To identify these cases of early erosive RA, radiographs of the feet should be obtained routinely.

Rheumatoid arthritis (RA) has a highly variable course and different prognosis in each person. It is important to identify risk factors which lead to a worse outcome. Therefore we studied the relation between the presence of early radiological erosions in small joints and those variables previously identified as risk factors.^{1–3}

The American Rheumatism Association (ARA) does not include the presence of characteristic radiographic changes in the feet among the criteria for RA. We studied the characteristics of patients with early RA and erosions only in their feet to determine whether this particular group presents different characteristics which may influence therapeutic decisions and outcome.

PATIENTS AND METHODS

Sixty one patients with early RA were included in the study. All of them fulfilled four or more of the 1987 revised ARA criteria for RA,⁴ and their symptoms had been present for less

than 30 weeks before they attended our clinic. Subjects with other inflammatory rheumatic diseases were not included in the study. All patients were taking non-steroidal anti-inflammatory drugs or low doses of corticosteroids, or both, and none of them had received disease modifying antirheumatic drug treatment. At baseline we recorded age, sex, time of evolution in weeks, number of tender joints on a 68 joint scale (TJN68) and number of swollen joints on a 66 joint scale (SJC66), the Ritchie articular index, and the patient's assessment of pain and general health on two visual analogue scales. Disability was assessed with a validated Spanish version of the Stanford Health Assessment Questionnaire,⁵ which has a minimum of 0 and a maximum of 3. Erythrocyte sedimentation rate (ESR), C reactive protein, rheumatoid factor (RF) by nephelometry, and antinuclear antibodies by indirect immunofluorescence using HEp-2 cells as a substrate (positive at a dilution $\geq 1/80$) were determined. HLA class II alleles were determined by polymerase chain reaction. Posteroanterior radiographs of hands and feet were evaluated by two rheumatologists using the van der Heijde method.⁶ The interobserver variation was 0.88 and the intraobserver variations were 0.92 and 0.88. After one year the ACR preliminary criteria for complete remission⁷ were used to assess the disease status.

Statistical analysis

Non-parametric tests were used for statistical analysis. Differences between groups were analysed by Student's *t* test for continuous data, and by χ^2 for discrete data. Correlation was studied using Spearman's test.

RESULTS

Sixty one patients (22 men, 39 women) were included in the study, with a mean age of 54 years (range 22–79) and a mean (SD) disease duration of 14 (13) weeks. Forty four (72%) subjects were RF positive, 35 (57%) patients had the shared epitope in their HLA class II sequence (13% were homozygous).

Forty one patients (67%) had erosions in their hands or feet, or both. These patients had a higher number of swollen joints (9 (6) v 6 (3), $p=0.008$), and RF positivity was more common (80% v 50%, $p<0.02$). No other differences were found between patients with initially erosive and non-erosive disease, and there was no significant correlation between radiological score and other clinical or serological parameters.

Seven (17%) of the forty one patients of the group with erosions had erosions only in their feet. These patients had a longer duration of morning stiffness (120 (60) v 72 (52) min, $p<0.005$), better patient's global assessment of general health

Abbreviations: ARA, American Rheumatism Association; ESR, erythrocyte sedimentation rate; RA, rheumatoid arthritis; RF, rheumatoid factor

Table 1 Differences between patients with erosions only in their feet and the rest of the patients with erosive RA. Results are shown as mean (SD) except where indicated otherwise

	Erosions only in the feet (n=7)	Erosions in the hands ± in the feet, (n=34)
Male/female	3/4	14/20
Age	53 (14)	55 (18)
Evolution (weeks)	14 (14)	14 (8)
Morning stiffness* (min)	120 (60)	72 (52)
TJN68	14 (4)	16 (9)
SJN66	7 (6)	10 (5)
Ritchie articular index	9 (4)	12 (10)
Grip strength	121 (56)	96 (34)
Pain (VAS)	48 (34)	55 (25)
Health (VAS)*	34 (22)	57 (25)
HAQ	1.6 (0.6)	1.6 (0.7)
Nodules (No (%))	0	8 (24)
ESR*	32 (22)	60 (30)
CRP	2.6 (2.2)	4.4 (3)
RF +ve (No (%))	7 (100)	26 (76)
RF titre	235 (180)	240 (204)
ANA +ve (No (%))	3 (43)	11 (32)
Rx score	5 (5)	5 (5)
SE +ve (No (%))	2 (29)	22 (65)
SE+ve/ SE-ve (No (%))	1 (14)	4 (12)
DR1 +ve (No (%))	0	11 (32)
DR4 +ve (No (%))	1 (14)	13 (38)
DQ7 +ve (No (%))	1 (14)	13 (38)
DQ8 +ve (No (%))	2 (29)	13 (38)

*p<0.05.

(34 (22) v 57 (25), p<0.05), and lower ESR values (32 (22) v 60 (30), p<0.05) than the rest of the patients with erosive RA. Table 1 shows the differences between these two groups who had erosive RA at the start of the study.

After one year, we found that remission was less common among seropositive patients and patients with erosions since the beginning of the disease (p<0.005). Although there were no differences in remission rate between subjects with erosions in their hands or in their hands and feet and those with erosions only in their feet, none of the last group reached remission. In 47 patients who were monitored radiologically, the increase in radiological damage was less in subjects on remission (0.6 (1) v 4.2 (4) p<0.005).

DISCUSSION

The presence of erosions in the early phases of RA has been identified as a risk factor for poorer outcome.⁸ Other studies found a lower rate of erosiveness than our study (67% v 37%⁹ and 29%¹⁰) in patients with a longer period of evolution—that is <12⁹ or <24¹⁰ months.

There may be several reasons for these different results. Firstly, positive RF at baseline has been recognised as a high risk factor for bony destruction,² and our series had the highest percentage of seropositive patients. Secondly, some authors¹¹ have suggested that patients with non-erosive, seronegative polyarthritis may not truly have RA, even though they fulfil the diagnostic criteria. In our series 50% of the patients with non-erosive RA were seronegative. The other studies do not give the equivalent data, but the inclusion of a high percentage of this special subgroup of patients might explain the less aggressive behaviour of the disease. Thirdly, a different radiological index was used, and it is not known whether a similar number of joints were evaluated. Fourthly, we consider an erosion to be any discontinuation of the cortical surface, without taking into account its size, whereas other authors consider only erosions >2 mm.¹² Only Higami *et al* reported similar results to ours.¹³ They studied 82 patients with RA who had had symptoms for <1 year. Seventy seven

(94%) were seropositive, 50% were heterozygous for the shared epitope and 16% homozygous. They used the Larsen index and found erosive changes in 50 (61%) of their patients.

Remission after one year of evolution was related to the absence of RF and erosions at disease onset, so lack of erosions at entry was associated with better prognosis.

In our daily practice we carry out an x ray examination of the hands and feet in all patients with polyarthritis. Seven patients (17%) of the group with erosions had erosions only in their feet. Priolo *et al* studied baseline radiographs of the hands, wrists, and feet of 284 patients with RA, and found that 31 (11%) subjects had erosions only in the feet.¹⁴ The main differences between Priolo's study and ours are that he included patients with an average disease duration of 1.4 years, and their patients might have received auranofin or an antimalarial agent before the first radiograph was obtained. On the other hand, Plant *et al* studied patterns of radiological progression in early RA and found that the feet showed the earliest changes and also tended to plateau earlier.¹⁵ Hence, feet radiographs may give interesting information mainly at the disease onset.

Patients with erosions only in the feet had a lower ESR, and better assessment of general health than those with erosions in hands, or in hands and feet. So if radiographs of the feet had not been obtained, 17% of our patients would have shown only a moderate increase of ESR and absence of erosions. These patients might have been considered to have a milder disease than they really had, which is affirmed by the fact that no one was on remission a year later. We agree with those authors who suggest that changes in radiographs of the feet should be added to the 1987 ARA diagnostic criteria for RA,¹⁴ in order to make good use of all the information available before choosing the best therapeutic option.

In summary, our results support the suggestion that radiological damage appears early in the evolution of RA. Sixty seven per cent of our patients, with a mean evolution of 14 weeks, had erosions in their small joints. Information on the initial onset of erosions and their progression, in addition to standard clinical measures, enables the rheumatologist to select a better long term strategy against the disease.

Authors' affiliations

P Richi, A Balsa, S Muñoz-Fernández, V Villaverde, M

Fernández-Prada, E Martín-Mola, Rheumatology Unit, La Paz Hospital, Madrid, Spain

J L Vicario, Transfusions Centre Comunidad Autónoma de Madrid, Spain

Correspondence to: Dr P Richi Alberty or Dr A Balsa, Servicio de Reumatología, Hospital Universitario La Paz, Madrid 28046, Spain; manuelvarelabellido@hotmail.com

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