

Psoriatic arthritis

Follow-up study

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Roberts, M. E. T., Wright, V., Hill, A. G. S., and Mehra, A. C. (1976). *Annals of the Rheumatic Diseases*, **35**, 206–212. **Psoriatic arthritis. Follow-up study.** 227 patients with psoriasis and various forms of arthritis have been kept under review. Psoriasis and inflammatory arthropathy was present in 168 patients, of whom 94 have been followed up for more than 10 years. An arthritis indistinguishable from rheumatoid disease was present in 78%, distal joint arthritis in 16.6%, and deforming arthritis in 4.8%.

There was a female predominance in the sex ratio of patients, although males predominated in the distal joint group (male:female 1.5:1). The peak age of onset was between 36 and 45 years, although in the deforming group the arthritis began before the age of 20 three times as commonly as it did in the indistinguishable group. Onset was acute in nearly half of the patients. At onset the distal joints were affected in one-third of the distal joint group. A synchronous onset of skin and joint changes was uncommon. Skin lesions usually preceded the arthritis but occurred after onset in 16%.

Apart from in the deforming group, the arthritis was mild, judged by the number of admissions to hospital for treatment of the joint disease, and the time off work. Deterioration clinically and radiographically occurred in only a small portion of the distal joint and indistinguishable groups. Antimalarial drugs have been used in 7 patients, with deterioration of the skin condition in 4. Uveitis occurred particularly in the men of all three groups, but was most frequent in those with deforming arthritis. A family history of psoriasis was obtained in 26% of first-degree relatives and 13% of second-degree relatives. A history of polyarthritis was most common in patients in the deforming group. The sheep cell agglutination test was negative in the majority, but was positive in 16% of the indistinguishable group, fluctuating in a further 10%.

A small number of joints only deteriorated radiographically (10% of the distal and indistinguishable groups). The men in the distal group showed greater radiographic changes and more deterioration in the terminal interphalangeal joints of the fingers than the women. Similarly they showed more deterioration of the metatarsophalangeal joints than the women. 18 patients died, one with gastric haemorrhage resulting from treatment of exfoliative psoriasis with immunosuppressive therapy, and 2 from bronchopneumonia thought to be related to immobility caused by the arthritis.

In recent years psoriatic arthritis has been considered to be a distinct entity rather than the coincidence of two common diseases (Vilanova and Pinol, 1951; Coste and others, 1958; Wright, 1959; Moll and Wright, 1973a). Evidence has come from clinical examinations (Wright, 1956; Baker, Golding, and Thompson, 1963; Tesarek, 1966; Theiss, 1971), epidemiological surveys (Baker, 1966), family studies

(Moll and Wright, 1973b), radiographic observations (Avila and others, 1960; Wright, 1961; Baker, 1965; Rozin, Mikulski, and Schwartz, 1970; Petres, Klumper, and Majert, 1970), and the infrequent presence of rheumatoid factor in the serum. On the basis of these studies we have defined psoriatic arthritis as an inflammatory disease of joints in a patient with psoriasis, usually with a negative sero-

logical test for rheumatoid factor (Moll and Wright, 1973a). Patients with the arthritis of gout, rheumatic fever, or pyogenic infection of joints are excluded from this definition. We are not aware of any longitudinal studies of the condition and this paper describes its course in a group of patients observed over a period which in a large number exceeds 10 years.

Materials and methods

Out of 227 patients (135 females, 92 males) reviewed, 5 men with gout and 54 with noninflammatory joint complaints (31 osteoarthritis, 23 other noninflammatory rheumatic complaints) were excluded from the longitudinal study, leaving a total of 168 patients. Of these 168 patients with inflammatory arthropathy and psoriasis, 94 were observed for more than 10 years, 15 for 5-10 years, 32 for 2-4 years, and 12 for one year. The remaining 15 were seen only once for reasons of distance, moving from the area, or death. The majority were examined at a special outpatient clinic with particular reference to the progress of their skin and joint disease and changes in radiographs. Radiographs of the hands and feet were taken annually, together with a sheep cell agglutination test.

Patients were divided into groups previously defined (Wright, 1956). The largest group of 132 patients with a pattern of polyarthritis indistinguishable from that of rheumatoid arthritis uncomplicated by psoriasis is designated 'indistinguishable'. That this group does not in its entirety represent the fortuitous occurrence among its members of two common diseases is indicated by a lower incidence of positive tests for rheumatoid factor and, as seen below, this was confirmed when serological tests were repeated in individual patients. It is reasonable to postulate that in most patients with a positive test the association of the skin and joint diseases is fortuitous and it is reasonable to assume, since not all uncomplicated cases of rheumatoid arthritis are seropositive, that this is true of a proportion of those with negative tests.

The next group consisted of 28 patients with what is called for convenience 'distal joint arthritis'. As has been reported earlier (Wright, 1959) and emerges again in the present study, distal finger joints affected by arthritis, though clinically apparent, are rarely the only and by no means invariably the first site of joint involvement. Only 8 patients fell into the third group, exhibiting arthritis of the axial joints, closely resembling ankylosing spondylitis, combined with severe involvement of peripheral joints with more severe deformity and a greater tendency to bony ankylosis than is apparent in all but a few cases of uncomplicated rheumatoid arthritis. This will be referred to as the 'deforming group'.

The sex ratio in the indistinguishable group was 46 men:86 women; it was equal in the deforming group, and there was a mild male preponderance in the distal group with 17 men and 11 women.

Results

ONSET OF ARTHRITIS

Arthritis began before the age of 20 three times more frequently in the deforming group than in the

indistinguishable group (Fig. 1). In the whole series the peak age of onset was between 36 and 45 years.

Onset of arthritis was acute in nearly half the patients (42%), with no sex differences except that in the deforming group all 4 women had an acute onset. The joints affected at the onset of arthritis are shown in Fig. 2. In the distal group the terminal joints of the digits (DIP) were affected initially in one-third of patients. Wrists and elbows were rarely affected initially in any group. It was unusual for the shoulder to be affected in the distal group at onset, and the cervical spine was rarely affected in any group (e.g. only in 8% of patients with indistinguishable arthritis). The thoracolumbar spine, however, was affected initially in one-quarter of the patients with deforming arthritis. In the indistinguishable group

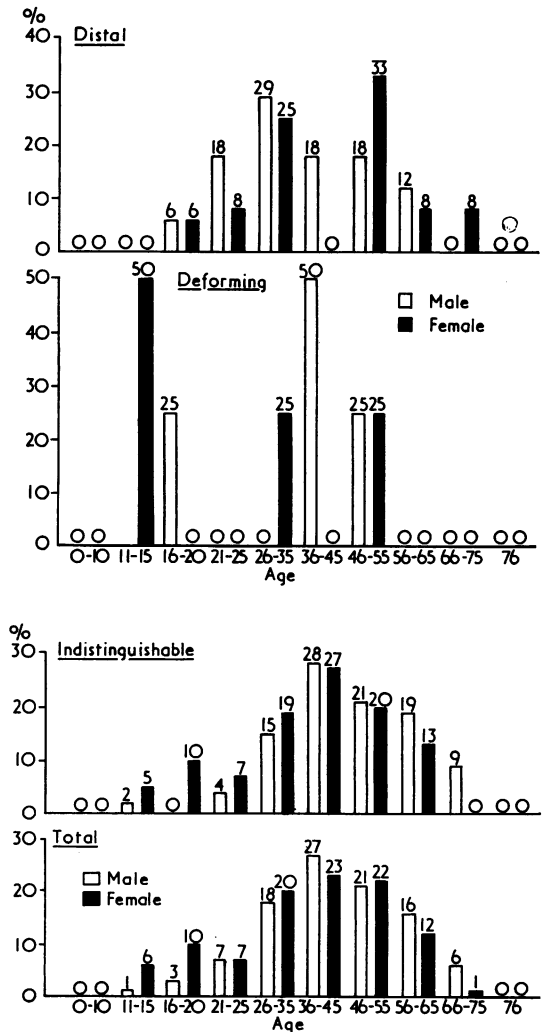


FIG. 1 Age of onset of arthritis in groups of patients

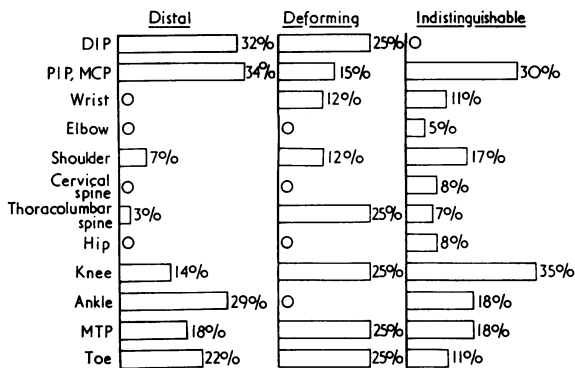


FIG. 2 *Joints involved at onset of arthritis*

initially the proximal interphalangeal (PIP) joints of the fingers and metacarpophalangeal (MCP) joints were twice as often affected in the women as in the men; and conversely in the indistinguishable group the shoulders were twice as often affected in the men as in the women. In the distal group the ankles and metatarsophalangeal (MTP) joints were more frequently affected in the men than in the women at onset, although the numbers were small.

At the onset of joint disease half the patients in the deforming group had constitutional disturbances, feeling ill, sometimes with pyrexia. This was only true of 17% in the distal arthritis and 15% in the indistinguishable groups. Skin lesions usually preceded the arthritis (Fig. 3). However, in 16% the arthritis preceded the skin lesions. A synchronous onset of skin lesions and joint changes was not common, but was equally prevalent in the three groups (7% distal group, 12% deforming group, and 11% indistinguishable group). Changes in pre-existing skin lesions at the time the joints first became affected followed no consistent pattern. Lesions improved in 5 patients (2 men, 3 women) with indistinguishable arthritis, but became worse in 17% of patients with distal arthritis and in 5 (2 men, 3 women) with indistinguishable arthritis. Skin lesions remained unchanged in 55% of the patients with distal arthritis and with deforming arthritis.

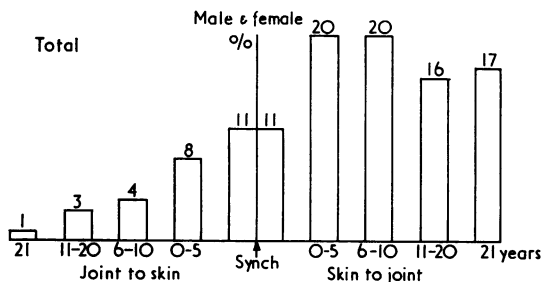


FIG. 3 *Relationship of onset of skin and joint involvement*

COURSE OF ARTHRITIS

During the course of the arthritis the identity of the joints involved in the distal group and the indistinguishable group was similar, but not unexpectedly the deforming group showed much more widespread arthritis. In the distal group the shoulders were less frequently involved than in the indistinguishable group. Similarly, the thoracolumbar spine was only involved in 14% clinically, compared with two-thirds of those with deforming arthritis and one-third of those with indistinguishable arthritis. The knee joints of the distal joint group were involved less frequently also, but the toes much more frequently than in the indistinguishable group.

Fig. 4 shows the joint involvement at follow-up examination. Apart from the obvious differences of the deforming group having more widespread arthritis and the DIP joints being more commonly involved in the distal joint group, it is apparent that the MCP joints, elbows, and hips were less often involved in the distal joint group than in the indistinguishable group. Otherwise the distribution of involvement was similar. From the history it had been noted that there was less involvement of the shoulder in the distal joint group, but this was not borne out at the time of examination. There was no obvious sex difference in any group.

Dactylitis (Fig. 5) was present in 23% of the men with distal joint arthritis, and in the indistinguishable group in 2% of the men and 7% of the women. Subcutaneous nodules were invariably absent in the distal joint and deforming groups but were present in 3 men and 2 women with indistinguishable arthritis. All 5 had a positive sheep cell test, and are regarded as having coincidental rheumatoid arthritis and psoriasis. A topographical relationship between the nail and joint changes was noted in one-third of the patients with distal joint arthritis, 35% of the men and 27% of the women. Asymmetry was a common feature in that group, being present in over one-half, 23% of men and all the women. In the indistinguishable

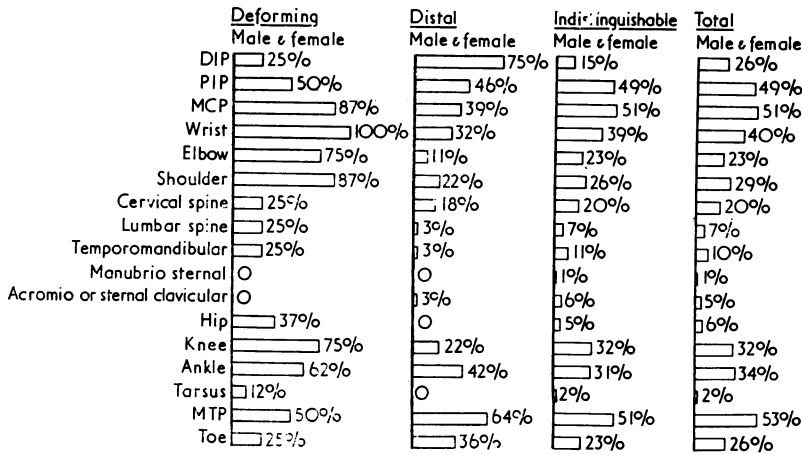


FIG. 4 Joints involved at follow-up in various groups



FIG. 5 Psoriatic dactylitis

able group it was present in 4% of the men and 14% of the women.

One measure of the severity of the arthritis used was the number of times the patient required admission to hospital for treatment of joint disease. By this criterion the distal group appeared to have the mildest arthritis. In 60% no admissions had been necessary at all, contrasting sharply with 12% for the deforming group and 44% for the indistinguishable group.

More than one admission was required for 7% of the distal group, 50% of the deforming group, and 17% of the indistinguishable group.

No time was lost from work by 38% of the patients with distal arthritis, 12% of those with deforming arthritis, and 34% of those with indistinguishable arthritis. On the other hand, more than a year had been lost from work by 62% of those with deforming arthritis as opposed to only 3% in both the distal and indistinguishable groups.

Specific inquiry was made for an acute episode of synovitis mimicking gout occurring at any time; it had been recorded in 37% of the patients with deforming arthritis, 28% with distal arthritis, and 12% in the indistinguishable group.

Over the review period the arthritis had deteriorated in the majority of the deforming group, but had only deteriorated in 18% of the distal group and in 11% of the indistinguishable group. Intermittent exacerbations occurred in 10% of the distal group and 16% of the indistinguishable group. Arthritis occurred as a single acute episode in one man and one woman in the deforming group and in 4 men and 4 women in the indistinguishable group, but in none of the distal group.

RESPONSE TO TREATMENT

Treatment in the main was with standard anti-inflammatory analgesic drugs, phenylbutazone or oxyphenbutazone being given to 57 patients of whom 27% had a good response. Side effects were recorded in 5%. The deforming group had better results with these drugs than the other groups, 50% of the former having a good response compared with 28% of the distal group and 25% of the indistinguishable group. (These observations are neither blind nor controlled.) Antimalarials had been used by other physicians in 7 patients, resulting in exacer-

bation of psoriasis in 4. Corticosteroids were used in 75 patients and a good response was obtained in the majority (93%). Side effects requiring withdrawal of the drug occurred in 5 patients. It should of course be borne in mind when using steroids for psoriatic arthritis that attempted withdrawal may result in an exacerbation of the skin disease.

OCULAR COMPLICATIONS

Uveitis was present in 12% of men with distal arthritis, 25% of men with deforming arthritis, and in 4% of men and 9% of women with indistinguishable arthritis.

FAMILY HISTORY

From the history as given by the patients psoriasis was present in the first-degree relatives of 26%, and in the second-degree relatives of 13% of all patients (Table I). A history of polyarthritis of rheumatoid type was given in 3% of the group with distal arthritis, in none of the deforming group, and in 2% of the indistinguishable group.

SHEEP CELL AGGLUTINATION TEST

In the group with arthritis indistinguishable from rheumatoid arthritis 21 had a consistently positive SCAT, representing 16% of this group (24% of the men, 12% of the women). In addition, 13 patients (5 men, 8 women) had a fluctuant SCAT; sometimes positive and sometimes negative. Thus 26% had

either a persistently positive or a fluctuating SCAT. One woman with distal joint arthropathy had a persistently positive SCAT and one man a fluctuating SCAT. The highest recorded titres in these 2 patients were 1:32. The fluctuating group therefore represents 10% of patients with polyarthritis indistinguishable from rheumatoid arthritis who have psoriasis and at some time no rheumatoid factor in the blood.

RADIOGRAPHY

Because the arthritis is often asymmetrical clinically the joints on the right and left were recorded separately. Deterioration in the various joints of the hands and feet is shown in Table II. There was little difference in deterioration between the two sides of the body. Only a small number of the joints deteriorated radiographically. The deforming group was the worst, but even in these no more than a quarter became materially worse. In other groups the incidence of deterioration rarely exceeded 10%.

There were few differences between the sexes. In the distal joint group the DIP joints of the fingers showed more severe erosions in the males than in the females, and greater deterioration (indeed none of the female joints deteriorated). This greater involvement among males was not apparent in the distal joints of the feet. In the MTP joints of this group the initial changes were more marked among the men than among the women, whereas they were about equal in the other groups.

Table I *Family history of psoriasis in groups of patients*

| Group | First-degree relative (%) | Second-degree relative (%) |
|-------------------|---------------------------|----------------------------|
| Distal | 22 | 15 |
| Deforming | 37 | 12 |
| Indistinguishable | 26 | 13 |

CAUSE OF DEATH

During the course of the review 18 patients died, 10 men, 8 women. The cause of death in the 16 patients in whom it could be determined is shown in Table III. In one man death was attributed to a gastric haemorrhage due to immunosuppressive therapy for exfoliative psoriasis. In 2 patients immobility was thought to be a factor in the development of terminal bronchopneumonia.

Table II *Deterioration of joints radiologically*

| Joints | Right | | | Left | | |
|----------------|------------|-----------------------|--------------|------------|-----------------------|--------------|
| | Distal (%) | Indistinguishable (%) | Deformed (%) | Distal (%) | Indistinguishable (%) | Deformed (%) |
| DIP hands | — | 10 | — | 17 | 2 | 12 |
| PIP hands | 14 | 5 | 12 | 10 | 4 | 25 |
| MCP | 18 | 8 | 25 | 10 | 10 | 25 |
| Radiocarpal | — | — | — | — | 2 | 25 |
| Radioulnar | — | — | — | — | 4 | 37 |
| Intercarpal | 7 | 5 | 25 | 6 | 5 | 25 |
| Ulnar styloid | — | 4 | — | 3 | 7 | 20 |
| MTP | 14 | 12 | 25 | 14 | 12 | 37 |
| PIP toes | — | — | — | — | — | — |
| DIP hallux | 7 | 2 | 12 | 3 | 1 | 12 |
| DIP other toes | 13 | — | 12 | 10 | — | 12 |

Table III Cause of death in Leeds patients with psoriasis and arthritis

| Case no. | Sex | Age | Cause of death | Clinical features |
|----------|-----|-----|---|---|
| 1 | M | 64 | Bronchopneumonia | Psoriatic spondylitis |
| 2 | M | 29 | *Gastric haemorrhage (on immunosuppressive therapy) | Erythroderma |
| 3 | M | 57 | Myocardial infarction | Psoriatic arthritis of 'distal' pattern |
| 4 | F | 58 | *Uraemia, pyelonephritis, bronchopneumonia | Psoriatic arthritis of 'indistinguishable' pattern |
| 5 | M | 60 | Cerebral haemorrhage, hypertension | Psoriatic arthritis of 'indistinguishable' pattern |
| 6 | F | 68 | Carcinoma | Psoriatic arthritis of 'distal' pattern |
| 7 | F | 83 | Myocardial infarction | Psoriatic arthritis of 'indistinguishable' pattern |
| 8 | M | 65 | Myocardial infarction | Psoriasis + RA |
| 9 | M | 44 | Myocardial infarction | Pattern of arthritis nonspecific |
| 10 | M | 70 | Atherosclerosis | Psoriatic arthritis of 'mutilans' pattern |
| 11 | F | 52 | Spontaneous haemorrhage into thyroid tumour from motor car accident | Psoriatic arthritis of 'indistinguishable' pattern + ulcerative colitis |
| 12 | M | 69 | Bronchopneumonia | Psoriasis + RA |
| 13 | F | 80 | *Myocardial infarction | Psoriatic arthritis of 'indistinguishable' pattern |
| 14 | F | 71 | Carcinoma of liver | Psoriatic arthritis of 'indistinguishable' pattern |
| 15 | F | 66 | Myocardial infarction | Psoriasis + RA |
| 16 | F | 73 | *Left ventricular failure, ischaemic heart disease | Psoriasis + RA |

* Necropsy performed.

43.7% of the total and 37.5% of psoriatic arthritics died from ischaemic heart disease compared with the population mortality of 25.7%.

Discussion

In 168 patients with psoriasis and inflammatory arthropathy of whom 94 had been followed up for more than 10 years, the majority (79%) displayed an arthritis indistinguishable from rheumatoid arthritis, a small minority (5%) a severe deforming arthritis, and the remainder (16%) distal joint arthritis. There was a female preponderance except in the distal joint group in which there were more men. Men also had more severe clinical and radiographic involvement of the distal joints than the women and showed greater deterioration of these joints in the hands, as well as more marked radiographic deterioration in the MTP joints. The peak age of onset was about 40 years. The arthritis often began acutely with constitutional disturbances in the deforming group. An acute gout-like onset was common, as noted previously (Dawson and Tyson, 1938; Sherman, 1952; Barber, 1950).

The age of onset for psoriatic arthritis was similar to that of rheumatoid arthritis (Short, Bauer, and Reynolds, 1957), except that it was earlier in the deforming group. The wrists and elbows were rarely involved initially. In the distal joint group one-third had involvement of the distal joints first. The classical view that skin and joint changes commonly begin synchronously (Jeghers and Robinson, 1937) was not confirmed, being a feature of only about 10%. Psoriasis usually antedated the joint lesions, though followed them in 16%. In seronegative polyarthritis

careful watch should be kept for the development of such lesions and a careful family history taken to help diagnosis.

In the past it has been thought that psoriatic arthritis was a disabling disease carrying a bad prognosis for employment and every day activities (Fawcitt, 1950; Pillsbury, Shelley, and Kligman, 1956). We emphasize that this view is generally erroneous. Our patients were from a hospital population and therefore probably represent the more severely involved. Even so, less than 5% of the patients with inflammatory arthropathy were in the deforming group. Of the others, about one-third had lost no time from work at all, and 97% had managed with less than 12 months off throughout the entire period of their arthritis. Psoriatic patients may, of course, suffer socially from the effects of their skin disease, and it is important not to add to their burden by failing to reassure them that the disability from their arthritis is likely to be slight.

Observation over a period of years has suggested that apart from the deforming group there is little deterioration in the arthritis—clinically some 18% of the distal joint group showed deterioration and 11% of the indistinguishable group. This small amount of deterioration was confirmed radiographically.

Of the 18 patients who died, psoriatic arthritis or its treatment may have been a contributory factor in three. This contrasts with an earlier study (Reed and Wright, 1966) in which of 24 patients in the U.S.A.

corticosteroid therapy probably contributed to death in 14, aminopterin in one, and amyloidosis in one. The differences are probably due to selection factors in the patients reviewed and to variation in the policy about the use of steroids in the U.S.A. and U.K.

The group with arthritis indistinguishable from rheumatoid disease formed the largest body of patients with psoriatic arthritis. Some of these are undoubtedly coincident psoriasis and rheumatoid arthritis, representing the simultaneous occurrence of two common diseases (Wright, 1959). One of the purposes of this study was to ascertain whether the

absence of rheumatoid factor was a transient phenomenon and whether in fact the test will become positive later. In the indistinguishable group it was found that a total of 26% of patients were positive at some time or other, 16% being consistently positive, and in 10% the results fluctuating between positive and negative. This study suggests, therefore, that the majority of these patients are truly sero-negative.

We are grateful to Dr. P. H. N. Wood for invaluable help in tracing the death certificates of a number of these patients.

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