

EXTENDED REPORT

Psoriatic arthritis: performance of rheumatologists in daily practice

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Objectives: To assess, using standardised patients (SPs), how rheumatologists diagnose psoriatic arthritis, whether the diagnostic efficiency is influenced by specific characteristics of the rheumatologists, and to study the relationship with costs.

Methods: Twenty three rheumatologists were each visited by one of two SPs (one male, one female) presenting as a patient with psoriatic arthritis. SPs remained incognito for all meetings for the duration of the study. Immediately after the encounter, SPs completed case-specific checklists on the medical content of the encounter. Information on ordered laboratory and imaging tests was obtained from each hospital.

Results: Fourteen rheumatologists diagnosed psoriatic arthritis correctly. They inspected the skin for psoriatic lesions more often than those rheumatologists who established other diagnoses. Rheumatologists diagnosing psoriatic arthritis spent more on additional laboratory and imaging investigations. These were carried out after the diagnosis to confirm it and to record the extent and severity of the disease. No differences in type of practice, number of outpatients seen each week, working experience, or sex were found between rheumatologists who made the correct diagnosis and those who made other diagnoses. The correct diagnosis was more often missed by rheumatologists who saw the male SP, who presented with clear distal interphalangeal DIP joint arthritis only, causing confusion with osteoarthritis of the DIP joints.

Conclusion: There is a considerable amount of variation in the delivery of care among rheumatologists who see an SP with psoriatic arthritis. Rheumatologists focusing too much on the most prominent features (DIP joint arthritis) sometimes seem to forget “the hidden (skin) symptoms”.

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Psoriatic arthritis can be a diagnostic challenge to rheumatologists because it may resemble rheumatoid arthritis and osteoarthritis in its presentation. For a correct diagnosis demonstration of psoriatic skin lesions, which may be found not only at evident sites such as elbows or knees but may also be hidden at the scalp, the anal cleft, or the umbilicus, is important. Little is known about the diagnostic and management skills of rheumatologists in daily practice for patients presenting with psoriatic arthritis. Health authorities, the medical community, and society increasingly emphasise the need to obtain insight into the way doctors diagnose and treat medical conditions. The rheumatological community could use the information on daily practice behaviour to increase their diagnostic and therapeutic efficiency and possibly, also, to save resources. The information could additionally be used to develop guidelines to improve quality in the delivery of care and patient outcome. Consensus conferences and discussions on good clinical practice organised to develop guidelines have so far not resulted in changes of doctors' practice behaviour.¹ Guidelines tailored to real daily practice performance will probably be more effective.²

Medical conditions such as psoriatic arthritis may give rise to a substantial variation in clinical practice and use of diagnostic tests, and hence in costs. It is difficult to determine how doctors really perform in their meetings with patients because they may increase their efforts once they know they are being observed. The use of standardised patients (SPs)—real patients or healthy people who play the part of a patient in a consistent way in meetings with various doctors who are unaware of the simulation—has been advocated so that actual behaviour can be assessed unobtrusively.^{3,4}

This paper is part of a larger study that aims at assessing variation in rheumatologists' performance in daily practice for

eight different rheumatological disorders.⁵ The paper on all eight disorders will give only an aggregated overview. In contrast, the purpose of this report is to assess, using SPs, how rheumatologists diagnose psoriatic arthritis, whether the diagnostic efficiency is influenced by specific characteristics of the rheumatologists, and the relationship with costs. By selecting one case, data can be presented in detail giving individual rheumatologists the opportunity to compare their own policy for psoriatic arthritis with that of the other rheumatologists participating in the study.

SUBJECTS AND METHODS

Subjects

In the larger study, 16 incognito SPs presenting eight different roles resembling a rheumatic disease visited Dutch rheumatologists. One and a half years before the first SP entered the practice, 116 of all 127 Dutch rheumatologists were asked to participate. The remaining 11 rheumatologists participated in this study by developing the checklists that were used to register the visits of the SPs or in the preparative training sessions with the SPs. In addition, some of them searched among their own patients for people who were suitable and willing to be an SP in our project. Fifty seven (49%) of all invited rheumatologists gave written consent. For logistical reasons only 27 were selected for the incognito visits. Hospital boards of directors consented. Twenty three rheumatologists were visited by one

Abbreviations: DIP, distal interphalangeal; ESR, erythrocyte sedimentation rate; NSAIDs, non-steroidal anti-inflammatory drugs; SPs, standardised patients



Figure 1 Radiograph of the hands of the male patient

of the two SPs presenting with a case of psoriatic arthritis. The study protocol for this case did not allow follow up visits.

Case

The case was based on a real presentation on the outpatient ward of our hospital and was somewhat adjusted to the two real patients recruited to play the part. These patients were treated by two Dutch rheumatologists for psoriatic arthritis. They comprised a 55 year old male patient who had had swollen distal interphalangeal (DIP) joints for two years and psoriatic lesions at umbilicus, scalp, and anal cleft, and a 47 year old female patient with raised erythrocyte sedimentation rate (ESR), a history of DIP arthritis six months before, tendinitis,

and carpal tunnel surgery. She has psoriatic lesions at umbilicus, scalp, and anal cleft as well. Family history for psoriasis was positive, but negative for early onset osteoarthritis for both patients. Patients were told to present the joint problems, and not to mention the psoriatic lesions spontaneously. Whenever a rheumatologist ordered hand films, the radiograph for the female patient was completely normal, whereas the radiograph for the male patient showed abnormalities (fig 1). Although the two patients were not completely comparable, the main goal of the case—that is, finding the psoriatic lesions by a thorough physical examination and hence diagnosing psoriasis, was the same.

Training

The two SPs were trained together to play the part and score a checklist on the doctor's performance consistently. The SPs' presentations were judged to have sufficient face validity by four rheumatologists who participated in the training sessions. During the training sessions close attention was paid to a realistic presentation, and reliability in scoring the checklists was assessed.⁶

Checklists

Information on the content of the meeting with the rheumatologist was obtained by the predefined case-specific checklist completed by each SP after the consultation had taken place.⁶

A panel of 11 rheumatologists developed the checklist covering the whole consultation. It comprised 61 items, of which 22 related to medical history, 25 to physical examination, and 14 to management (table 1). Immediately after the consultation the SPs indicated whether the item had taken place or not. SPs had agreed to keep all information obtained during the visits confidential.

Costs for laboratory and imaging investigations

Information on ordered laboratory and imaging tests was obtained from each hospital. Costs for these tests were

Table 1 Checklist items

Medical history	Physical examination	Management
Onset of disease	Physical examination of internal organs	Told the patient he/she probably has psoriasis
Course of symptoms during the day	Inspection of hands	Told the patient he/she probably has psoriatic arthritis
Course of symptoms since onset	Inspection of feet	Told the patient he/she has osteoarthritis
Red or swollen joints	Palpation of hands, wrists	Explained the disorder psoriatic arthritis
Complaints in other joints	Palpation of ankles	Explained the disorder psoriasis
Squamous scalp skin	Palpation of feet	Prescribed drugs
Presence of psoriasis	Palpation of finger joints	If yes, what kind of drugs?
Presence of psoriasis in relatives	Tangential pressure on hands and asking for pain	Referral to dermatologist
Discoloration of hands and feet when using cold water	Active flexion of wrists	Ordered laboratory tests
Morning stiffness	Active extension of wrists	Ordered imaging tests
Presence of nail pits	Active abduction of forearm	Requested SP attended for follow up
Low back pain	Active adduction of forearm	Gave written information about the disease
Eye inflammation	Active flexion of fingers	Sufficiently discussed the prognosis of the disease
Intestinal complaints	Active extension of fingers	Drew attention to the society of patients with rheumatic diseases and mutual support groups
Oral ulceration	Spreading of fingers	
Current drug use	Active fist making	
Dietary habits	Passive examination of hands and wrists	
Alcoholic consumption	Muscle resistance tests of hands and wrists	
Aggravating factors	Squeeze doctor's fingers	
Ameliorating factors	Opposing thumb to fingers	
Influence of complaints on daily activities	Examination of other joints	
Family history	Inspection for skin abnormalities	
	Inspection for tofi	
	Inspection for psoriasis on specific locations	
	Scalp	
	Elbows	
	Umbilicus	
	Anal cleft	
	Knee	
	Inspection for noduli	

Table 2 Rheumatologists' background characteristics (n=23)

		Dutch rheumatologists (1997)
Age (years), mean	46 (SD 6.5, range 34–61)	46 (SD 7.0, range 34–62)
Working experience (years), median	12 (range 1–22)	*
Female	5	†
Male	18	
Teaching hospital	4	*
Non-teaching hospital	19	
Median number of outpatients each week (range)	111 (12–300)	*

*Information not available; †in 2001: women 54, men 116.

Table 3 Items showing most remarkable differences between 23 rheumatologists with the diagnosis psoriatic arthritis and the other diagnosis

	All rheumatologists (n=23) (%)	Rheumatologists with correct diagnosis (n=14) (%)	Rheumatologists with other diagnosis (n=9) (%)
Medical history			
Squamous scalp skin	14 (61)	11 (79)	3 (33)
Presence of psoriasis in relatives	13 (57)	9 (64)	4 (44)
Eye inflammation	8 (35)	4 (29)	4 (44)
Alcoholic consumption	15 (65)	8 (57)	7 (78)
Influence of complaints on daily activities	15 (65)	7 (50)	8 (89)
Physical examination			
Inspection for skin abnormalities	17 (74)	12 (86)	5 (56)
Inspection for psoriasis on specific locations	16 (70)	12 (86)	4 (44)
Knees/elbows	9 (39)	8 (57)	1 (11)
Scalp	13 (57)	10 (71)	3 (33)
Umbilicus	13 (57)	11 (79)	2 (22)
Anal cleft	7 (30)	5 (36)	2 (22)
Knee	–	–	–
Management			
Ordered laboratory tests	18 (78)	12 (86)	6 (67)
Ordered radiology tests	17 (74)	12 (86)	5 (56)
Requested SP for follow-up	18 (78)	13 (93)	5 (56)

calculated for each visit by adding the Dutch national fares for the ordered investigations. Costs are presented in euros.

Practice visits

Arrangements were made with the participating hospitals to keep the SPs incognito. Ordered studies such as laboratory tests and reports of radiological examinations as well as real radiographs were simulated and received by the rheumatologist in the usual way for that hospital. We assumed validity as long as the SPs stayed under cover. Rheumatologists were asked to complete a detection form when suspecting a patient of being an SP. A detailed description of the methods followed has been published elsewhere.⁷

Statistics

Different scores were calculated for each meeting. The total case score is the total number of items performed on the whole

checklist. Separate scores were calculated for the medical history, physical examination, and management sections of the checklist. All scores are presented as percentages of the maximum score possible. All data are presented as descriptive statistics. Because of the relatively small numbers of encounters, the study has not sufficient power to yield statistically significant differences. Owing to the enormous logistics involved, it was not feasible to increase the number of meetings.

RESULTS

Table 2 presents the rheumatologists' background characteristics. No encounters were unmasked by the rheumatologists. Two follow up visits took place, because the SP was asked to reattend to discuss the diagnosis, and this was critical for evaluation of the results. The information about this second visit was supplementary to the first visit, so a final score was calculated for both visits together.

Table 4 Mean (SD) scores on checklist as percentage of maximum score possible

Different checklist scores	All rheumatologists (SD) [range] (n=23)	Rheumatologists with correct diagnosis (n=14) (SD) [range]	Rheumatologists with other diagnosis (n=9) (SD) [range]
Total case score	52 (8.8) [35–68]	56 (6.8) [46–68]	47 (8.7) [35–60]
Medical history	64 (12) [35–68]	64 (13) [41–86]	64 (9.9) [55–86]
Physical examination	41 (15) [0–68]	44 (10) [24–68]	37 (20) [0–68]
Management	55 (22) [20–90]	69 (13) [50–90]	33 (13) [20–50]

Table 5 Use of resources: imaging tests and costs

	All rheumatologists (n=23)	Rheumatologists with correct diagnosis (n=14)	Rheumatologists with other diagnosis (n=9)
No imaging tests	6	2	4
x Ray examination of:			
Hands	8	4	4
Hands + feet	2	2	–
Hands + lumbar spine	1	1	–
Hands + pelvis	1	–	1
Hands + feet + SI joints	1	1	–
Hands + lumbar spine + SI joints	1	1	–
Hands + lumbar spine + pelvis	1	1	–
Hands + feet + lumbar spine + SI joints	1	1	–
Hands + feet + lumbar spine + SI joints + shoulders + knees	1	1	–
Total costs in euros			
Mean	120	164	52
Median	86	171	86
Range	0–479	0–479	0–123

Fourteen rheumatologists diagnosed psoriatic arthritis, five diagnosed osteoarthritis as the only disorder, one a combination of osteoarthritis and psoriasis, and three rheumatologists did not mention any diagnosis. Table 3 shows the most important differences in performance for those who made the correct diagnosis (psoriatic arthritis) and those who made another diagnosis. The cut off point for inclusion in the table was a difference in occurrence of at least 15%. In the following section the performance of the rheumatologists is described in more detail.

Description of rheumatologists' performances

The total case score for all rheumatologists ranged from 35% to 68% (table 4). The mean total case score for rheumatologists who diagnosed psoriatic arthritis was 56%, compared with 47% for those rheumatologists who made a different diagnosis. This difference was mainly caused by the difference in the management score.

All rheumatologists asked about the cause of the symptoms and all except one about arthritis in other joints, whereas 17/23 asked about the presence of psoriasis. Rheumatologists with the incorrect diagnosis less commonly asked about

Table 6 Use of resources: laboratory tests ordered by at least three rheumatologists and costs

Laboratory test	All rheumatologists (n=23)	Rheumatologists with correct diagnosis (n=14)	Rheumatologists with other diagnosis (n=9)
ESR	16	12	4
Creatinine	15	10	5
Haemoglobin	14	11	3
Leucocytes	13	11	2
ALT	10	9	1
AP	10	8	2
CRP	9	6	3
Thrombocytes	9	7	2
Erythrocytes	8	7	1
Mean cell volume	8	7	1
Differentiation	8	6	2
Rheumatoid factor	8	6	2
ANA/ANF	8	5	2
AST	7	6	1
TSH	7	5	2
Calcium	7	5	2
γ-GT	6	4	2
Glucose	5	3	2
LDH	3	3	–
Phosphate	3	2	1
Free T4	3	3	–
CK	3	2	1
Uric acid	3	2	1
Ferritin	3	1	2
HLA-B27	3	2	1
Total costs in euros			
Mean	33	46	13
Median	12	21	9
Range	0–163	0–163	0–51

ESR, Erythrocyte sedimentation rate; ALT, alanine aminotransferase; AP, alkaline phosphatase; CRP, C reactive protein; ANA/ANF, antinuclear antibody/antinuclear factor; AST, aspartate aminotransferase; TSH, thyroid stimulating hormone; γ-GT, γ-glutamyl transferase; LDH, lactate dehydrogenase; T4, thyroxine; CK, creatine kinase.

psoriatic lesions, but they asked more often about inflammation of the eyes and any influence of complaints on daily activities.

A physical examination of the internal organs, including auscultation of heart and lungs and an abdominal examination, was done by 13/23. In the opinion of the SPs 16/23 thoroughly inspected the patient's skin for psoriatic lesions. Twenty one of the 23 rheumatologists examined other joints as well. Rheumatologists who made the diagnosis psoriatic arthritis inspected the skin more often, especially at places specific for psoriasis.

Eleven of 23 rheumatologists informed the patient at the first visit about the nature of the disease and four of them provided the SP with written educational materials on psoriatic arthritis. Six rheumatologists prescribed drugs (four prescribed non-steroidal anti-inflammatory drugs (NSAIDs), one acetaminophen, and one glucosamine). The last prescription was changed after the rheumatologist had seen the radiograph and the preliminary diagnosis of osteoarthritis was changed to psoriatic arthritis. Three of 14 rheumatologists who made the correct diagnosis prescribed NSAIDs, compared with 1/9 rheumatologists who made a diagnosis other than psoriatic arthritis.

Six of 14 rheumatologists who made the correct diagnosis referred the SP to a dermatologist for confirmation of psoriasis, compared with none of the rheumatologists who made a different diagnosis. They also more often requested the SPs to attend for follow up.

The number of rheumatologists who ordered radiographs differed, but most strikingly in the number and type of radiographs ordered. Rheumatologists who made an alternative diagnosis restricted the request to hand films only, except for one who also ordered a pelvic x ray examination. In contrast, the rheumatologists who diagnosed psoriatic arthritis asked for a wide range of films (table 5).

Laboratory tests were ordered by 12/14 rheumatologists who made the diagnosis psoriatic arthritis compared with 6/9 rheumatologists who made a different diagnosis. Table 6 presents the laboratory tests ordered by both groups. Large differences were seen, especially for the ESR, red blood count, and liver function tests. Rheumatologists with the correct diagnosis ordered more of these tests.

The median costs for imaging tests in euros for the "psoriatic arthritis" group was 171 compared with the median costs of the remaining rheumatologists of 86. Difference in costs also existed for laboratory investigations ordered during the first visit. The median costs for these tests for rheumatologists with the correct diagnosis were 21, and for the remaining rheumatologists 9. Figure 2 presents the costs for the additional investigations for each rheumatologist.

No difference in mean score of the whole checklist was seen for rheumatologists whether visited by the male or the female patient (mean for both female and male SP 53%). However, those rheumatologists who were visited by the female patient had a higher mean score for the medical history section (68% v 59%), but somewhat lower scores for physical examination (39% v 44%) and management (53% v 58%). Rheumatologists visited by the male patient less frequently asked about psoriasis among relatives, and less often inspected the umbilicus and anal cleft. More of them inspected the scalp. Six of 12 rheumatologists visited by the male patient diagnosed psoriatic arthritis compared with 8/11 of those visited by the female patient. Five rheumatologists diagnosed osteoarthritis for the male patient and none for the female patient. Striking differences in investigations requested were seen, especially in the radiographs ordered. Ten rheumatologists visited by the male patient ordered hand films alone and two ordered additional feet films, whereas 7/11 rheumatologists visited by the female patient ordered a large variety of radiographs. The median costs in euros spent by those rheumatologists visited by the male patient were 97 (laboratory 9, imaging 86) and for those visited by the female patient 209 (laboratory 29, imaging 200).

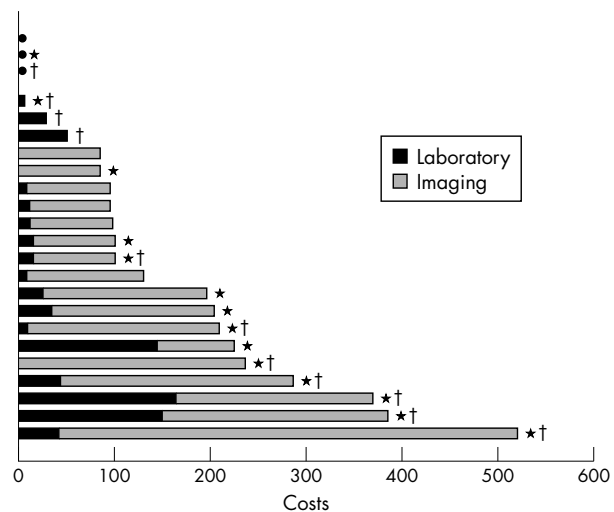


Figure 2 Rheumatologists' costs spent for additional investigations. Every bar represents one rheumatologist; three rheumatologists (black circles) did not order any additional investigations. *Rheumatologists who diagnosed psoriatic arthritis; †rheumatologists visited by a female patient.

Rheumatologists who made the correct diagnosis had a median working experience of 12 years and saw a median of 110 outpatients each week, which is about the same as those who made another diagnosis. Four of five female rheumatologists and 10/18 male rheumatologists made the correct diagnosis. Two of four rheumatologists working in a teaching hospital and 12/19 working in a non-teaching hospital diagnosed psoriatic arthritis correctly.

DISCUSSION

Detailed information was obtained about the real daily clinical practice behaviour of 23 Dutch rheumatologists. The validity of the data was assured because the SPs remained incognito for all meetings with the rheumatologists during the study. Reliability of the "patients" in performing their role and in scoring of the checklist was sufficient and has been reported extensively elsewhere.⁷

The results on the checklist items showed a considerable amount of variation in performance between rheumatologists, and only a few items were performed by all of them. The checklist is process oriented and used in a non-normative way. The variation in scores among rheumatologists reflects a difference in the number of items performed during the consultation. Higher checklist scores do not of themselves mean that these rheumatologists are of a higher standard. A large variety of imaging tests and laboratory tests were ordered. As a consequence, costs for these investigations varied enormously among rheumatologists.

Rheumatologists who diagnosed psoriatic arthritis had higher scores on the checklist than rheumatologists who made another diagnosis because the checklists were tailored to diagnose psoriatic arthritis. The main difference was that the rheumatologists diagnosing psoriatic arthritis inspected the skin at locations specific for psoriatic lesions twice as often as the other rheumatologists, who did not seem to pay attention to these locations. Most of the rheumatologists who did not establish the correct diagnosis told the patients that they had osteoarthritis. In our opinion, this differential diagnosis is, to some extent, understandable because both patients presented with DIP joint problems and in the male patient this was the only presenting symptom. The male SP visited all five rheumatologists who diagnosed osteoarthritis. They based their diagnosis of osteoarthritis solely on the clinical presentation of the complaints, because radiographs and

laboratory tests were ordered only after the diagnosis. Hand films of the male patient (fig 1) do not show any osteophytes or other specific clues for osteoarthritis, but loss of cartilage, formation of cysts, and erosions can clearly be seen. Although the radiological picture is not completely specific for the diagnosis psoriatic arthritis, we think that the combination of complaints, a positive family history for psoriasis and negative for osteoarthritis, does merit the diagnosis psoriatic arthritis for this 55 year old male patient. One rheumatologist who was visited by the male patient and who strongly requested him to attend for a follow up visit to discuss the results of the hand films changed her initial diagnosis from osteoarthritis to psoriatic arthritis. We think that the rheumatologists should have noticed the psoriatic lesions and at least mentioned psoriasis as a separate diagnosis from osteoarthritis. Therefore, when a patient presents with DIP joint swelling, inspection for hidden skin signs is critical.

Rheumatologists who made the diagnosis psoriatic arthritis spent more on additional laboratory and imaging tests. Almost all rheumatologists made the diagnosis at their first meeting with the patient. Therefore, these investigations were carried out to confirm the diagnosis or establish the extent and severity of the disease, and not primarily for diagnostic purposes.

To summarise, there is a considerable amount of variation in practice performance among rheumatologists visited by an SP presenting psoriatic arthritis. Rheumatologists focusing on striking features, in this case the DIP joint arthritis, sometimes seem to forget the "hidden (skin) symptoms". Rheumatologists making the correct diagnosis spend more on laboratory and imaging tests, which are not primarily intended for diagnostic purposes but to record the extent and severity of the disease. These detailed data on real practice performance on psoriatic arthritis should assist discussions about appropriateness of care and the development of general

guidelines. The results can be used as a needs assessment tool for targeted continuing medical education programmes whenever performance is substandard.

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