Functional Impairment in Spondyloarthropathy and Fibromyalgia

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ABSTRACT. ***Objective.*** To compare the functional ability of patients with spondyloarthropathy (SpA) and fibromyalgia (FM) using the Bath Ankylosing Spondylitis Functional Index (BASFI), the Dougados Functional Index (DFI), and and the Health Assessment Questionnaire for Spondyloarthropathy (HAQ-S), to establish whether these indicators can differentiate between these patient groups, and to ascertain how well the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) functions in patients with FM.

Methods. Twenty-four patients with SpA and 70 with FM, all female, filled in 4 self-administered questionnaires: BASFI, DFI, HAQ-S, and the BASDAI; results were compared between the 2 groups.

Results. The decline in functional ability was similar in patients with SpA and FM when assessed by BASFI, but slightly greater in the SpA group when assessed by DFI and HAQ-S. BASDAI was significantly ($p = 0.018$) greater in the FM group.

Conclusion. An almost similar functional decline was observed in both SpA and FM patients when measured by the indices developed for patients with AS and SpA. The specificity of BASDAI in measuring disease activity in SpA was poor, as disease activity in FM was rated higher than in SpA. (J Rheumatol 2002;29:1415–9)

Key Indexing Terms:
SPONDYLOARTHROPATHY FIBROMYALGIA FUNCTION
ANKYLOSING SPONDYLITIS QUESTIONNAIRES

Ankylosing spondylitis (AS)[1] and other seronegative spondyloarthropathies (SpA)[2] involve spinal and extraspinal joints and entheses, frequently leading to decreasing mobility in the back and extremities. In the early stage of the disease these changes are mostly reversible, whereas in severe cases irreversible ossification of ligaments and joint capsules is common. These changes play an important role in the development of functional changes in patients with SpA. The Assessment in Ankylosing Spondylitis (ASAS) Working Group[3] has recommended for the assessment of functional changes either the Bath Ankylosing Spondylitis Functional Index (BASFI)[4] or the Dougados Functional Index (DFI)[5]. Both indices correlate equally well with disease activity and damage[6]. BASFI appears to be more responsive than DFI and the Health Assessment Questionnaire for Spondyloarthropathy (HAQ-S)[7] in assessing both impairment and deteriorated function[8]. An evaluation of the Finnish-language versions of these indices has been completed[9].

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Submitted July 3, 2001; revision accepted January 18, 2002.

Fibromyalgia (FM)[10] is a syndrome characterized by generalized pain and widespread tenderness on palpation in specific areas of the musculoskeletal system, including the cervical and lumbosacral areas. Patients with FM have neither joint destruction nor inflammation. They differ from patients with rheumatoid arthritis or AS in reporting continuous pain and higher levels of fatigue and pain intensity[11]. Patients with AS have rated their personal health state considerably higher than patients with FM[12]. Patients with FM have identified more problems than those with AS[13].

There are only a few studies comparing functional impairment between FM and SpA patients, and no comparison has been made of the standard spondylitis indices in SpA and FM patients.

We compared the functional ability of patients with SpA and patients with FM using the functional indices BASFI, DFI, and HAQ-S, and sought to establish whether these indicators can differentiate between these patient groups. We also sought to ascertain how the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI)[14,15] functions in patients with FM.

MATERIALS AND METHODS

We studied 2 groups of patients. The first group comprised 76 female patients with primary FM fulfilling the 1990 American College of Rheumatology criteria[10] (no patient had an inflammatory rheumatic disease) collected from consecutive inpatient courses of educational rehabilitation. Six patients were excluded by reason of more than one missing

item in some questionnaires (DFI, 5 patients; BASFI, 1 patient). The final FM group comprised 70 patients. Their demographic data are shown in Table 1.

The second group comprised patients with SpA. To adjust for gender, female patients only were entered from consecutive inpatient rehabilitation courses for SpA[1,2]. We found 26 patients in the basic SpA group, one of whom was excluded because of missing items in the HAQ-S questionnaire and one AS patient because of simultaneous FM. Thus the final SpA group consisted of 24 patients. Their diagnoses with spinal involvement were: 17 AS, 1 juvenile AS, 3 reactive arthritis, 2 enteroarthritis due to colitis ulcerosa, and 1 non-differentiated SpA. Their demographic data are shown in Table 1. The severity of the SpA was assessed by described methods[9]. Radiological changes in the sacroiliac joints varied evenly from grade 0 (4 patients) to grade 5 with ankylosis (5 patients), and in the lumbosacral spine from 0 (9 patients) to 4 (3 patients). The mean values of range of motion measurements indicated moderate changes: Schober S1 test 3.7 cm, total thoracolumbar flexion test (S1-C7) 6.6 cm, occiput to wall distance 2.3 cm, and chest expansion 3.5 cm. Some permanent inflammatory tissue damage was present in all cases. Their disease was generally fairly active; 25% of patients were using nonsteroidal antiinflammatory drugs only and 75% disease modifying antirheumatic drugs. One-third of the patients with SpA also had peripheral joint involvement, but none had endoprosthesis.

The relevant clinical data are shown in Table 1. Disease duration was clearly longer among patients with SpA; erythrocyte sedimentation rate (ESR) was also significantly higher versus FM, reflecting the inflammatory activity of SpA. Age and hemoglobin (Hb) levels did not differ significantly between the groups.

Patients filled in the BASFI, DFI, HAQ-S, and BASDAI; all questionnaires were self-administered questionnaires.

BASFI. The BASFI comprises 8 items on daily activities and 2 assessing the patient's ability to cope with everyday life. Each item is answered on a 10 cm horizontal visual analog scale (VAS). The total score ranges between 0 and 10, higher scores indicating more severe impairment.

DFI. The DFI consists of 20 items assessing ability to perform specific daily activities. In response to the question "Can you..." the questionnaire provides 3 answer categories: 0 (yes, with no difficulty), 1 (yes, but with difficulty), and 2 (no). The total score ranges from 0 to 40.

Table 1. Demographic data on the 2 female patient groups.

	SpA Patients, n = 24, Mean ± SD (range)	FM Patients, n = 70, Mean ± SD (range)
Age, yrs	49 ± 13 (24–68)	47 ± 8 (16–57)
Symptom duration, yrs	20 ± 13 (1–47)	10 ± 8 (1–40)
Years from diagnosis	8 ± 8 (0–29)	3 ± 2 (0–12)
ESR, mm/h	20 ± 17 (4–61)	10 ± 5 (2–27)
Hemoglobin, mg/l	128 ± 14 (111–163)	135 ± 9 (109–154)

HAQ. The HAQ-S is modified from the HAQ, with addition of 2 subscales, the first with 3 and the other with 2 questions. The total score ranges from 0 to 3.

BASDAI. The BASDAI consists of 6 questions on disease activity, including fatigue, back pain, joint pain, local tenderness, and quality and quantity of morning stiffness, as evaluated by VAS. The total score ranges from 0 to 100.

Missing values of items. One missing value of items was permitted in every questionnaire; if more were missed, the patient was excluded. Correction of the total score is done as well as possible for each questionnaire. In BASFI, HAQ-S, and BASDAI the mean value of the remaining items is used. Because the DFI uses the Likert scale, the mean cannot be used; therefore when one item is missing, missing value is replaced by the mode of the remaining items, to obtain a total score as close to optimal as possible. Single missing values were found mostly in item 4 of the DFI ("Can you get into a bath tub?"; FM 17/70 = 24% and SpA 3/24 = 13%), and in item 2 of the HAQ-S (about driving a car; FM 18/70 = 26% and SpA 6/24 = 25%). Otherwise the occasional value was missed in some items of the questionnaires (13% of FM and 12% of SpA patients).

Statistics were computed by SPSS[9]. Demographic data are given as mean, standard deviation (SD), and range. The medians with interquartile ranges (IQR) of variables are given. The median differences of variables between SpA and FM samples were estimated by the Hadges-Lehman method[16], and significance was calculated by nonparametric Mann-Whitney U test with Monte Carlo significance and 95% confidence interval (CI).

RESULTS

The median values and the IQR of the 4 indices and their median differences between SpA and FM groups are shown in Table 2. The self-evaluated functional capacity among patients with SpA was only slightly poorer than among FM patients. The difference was not statistically significant in the BASFI, but was within the limits of significance in the DFI and HAQ-S.

The index measuring disease activity (BASDAI) was greater among patients with FM, and the difference was statistically significant (Table 2). The higher the index value, the poorer the health situation was perceived.

Figure 1 indicates that the differences between SpA and FM groups are greater at the higher impairment levels. Using BASDAI, patients with FM have higher disease activity scores than patients with SpA throughout.

Table 2. Differences in the Bath Ankylosing Spondylitis Functional Index (BASFI), the Dougados Functional Index (DFI), the Health Assessment Questionnaire for Spondylarthropathy (HAQ-S), and the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) between patients with SpA and patients with FM (all female).

Index	p**	SpA (n = 24), Median (IQR)	FM (n = 70), Median (IQR)	Median Difference * (95% CI)
BASFI, 0–10	0.29	3.9 (1.7, 6.7)	3.0 (2.1, 4.5)	0.7 (–0.5 to 2.0)
DFI, 0–40	0.038	11 (5, 20.0)	7 (4, 13)	3 (0 to 7)
HAQ-S, 0–3	0.028	1.2 (0.5, 1.6)	0.8 (0.6, 1.0)	0.3 (0.0 to 0.6)
BASDAI, 0–100	0.018	48 (29, 60)	60 (44, 71)	–11 (–1 to –21)

* Estimated by Hadges-Lehman method[16] ** Mann–Whitney U with Monte Carlo significance. IQR: Interquartile range. CI: Confidence interval.

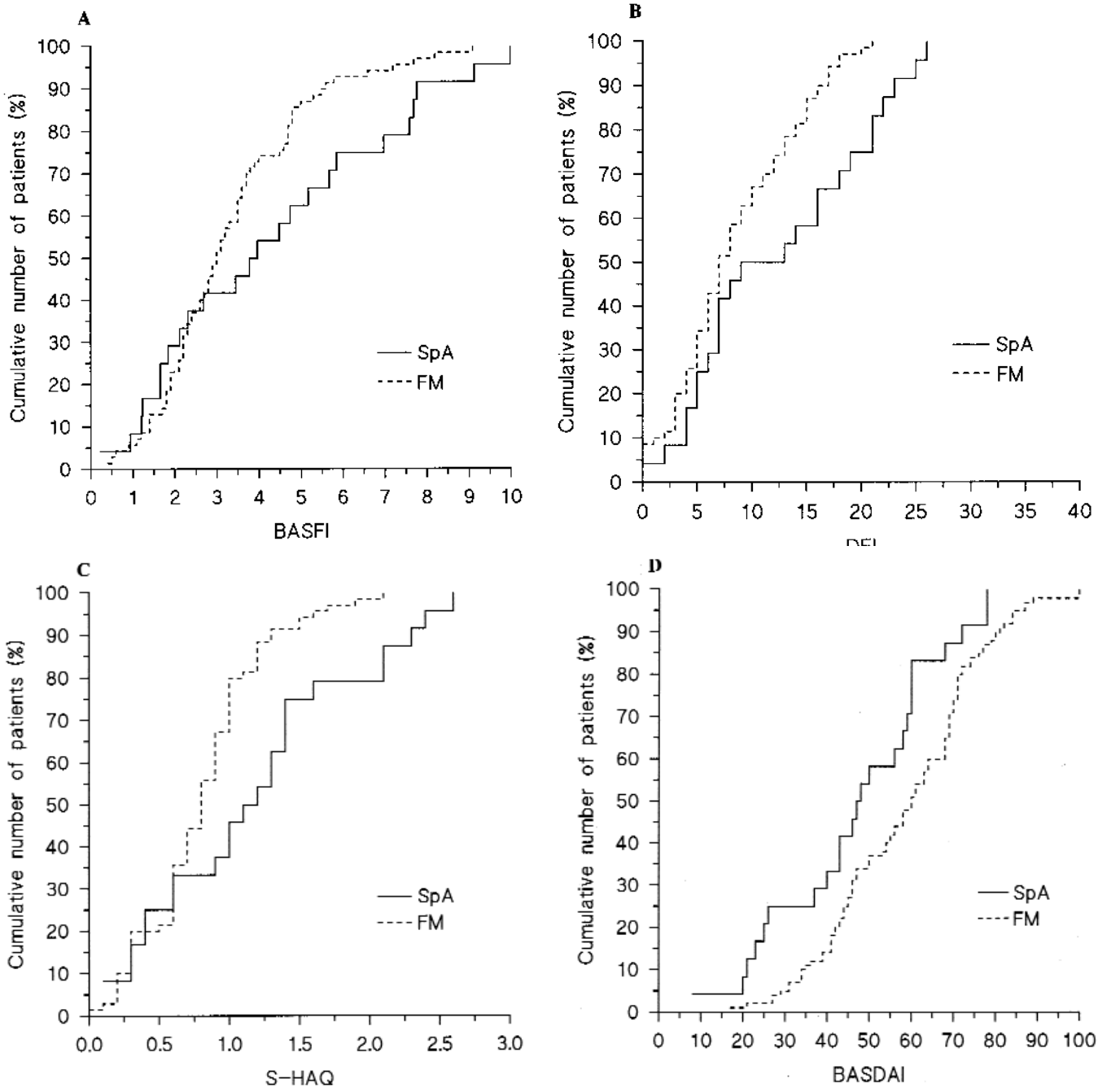

Figure 1. Scores from the Bath Ankylosing Spondylitis Functional Index (BASFI), the Dougados Functional Index (DFI), Health Assessment Questionnaire for Spondylarthropathy (S-HAQ), and the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) in patients with SpA and FM. A, B, and C. Differences between SpA and FM groups are greater at the higher impairment levels. D. Using BASDAI, patients with FM have higher disease activity scores than patients with SpA throughout.

DISCUSSION

The indices tested here have been developed for use in clinical and scientific work in patients with AS and SpA. They have been found useful for this task; however, it would be beneficial if they could also be used with other musculoskeletal diseases, such as FM. Cases of SpA may be complicated by secondary FM, and SpA indices might also be able to handle these. It is a philosophical question whether an index should be able to differentiate functional decline caused by organic factors from decline caused by FM. It should be clear what kind of decline is measured by these indices. We therefore collected 2 groups of patients to evaluate these instruments in a clinical situation.

There are typically more women than men among

patients with FM, and more men than women among patients with SpA, a situation reflected in our rehabilitation courses. In our rehabilitation courses for both genders, men tend to drive more often than women (i.e., in Finland) (unpublished data), which influences the results of HAQ-S. We therefore sought to adjust for gender in the series and thus included only female patients in the study. The female patients with SpA nonetheless showed typical variation in active inflammation, medical treatment, permanent changes, and decline in spinal mobility, making the group suitable to represent SpA patients in general. Moreover, the age distribution between the FM and SpA groups was similar, making the groups suitable for comparison.

One problem in the use of self-evaluating indices is missing values. Not all the female patients drove a car, and this reduced the value of HAQ-S, because there remained only one additional subscale with 3 questions in comparison to the ordinary HAQ. Seven patients (6 from the FM group) were excluded for having more than one missing value.

According to the results obtained with the functional indices, the SpA group had a decline in functional ability, as might reasonably be expected. An almost identical decline was found in the FM group, which is more than would have been assumed, but this is in accord with the clinical experience with these patients. FM patients seem to experience functional impairment as severe as that of patients with SpA. This is in keeping with reports that discordance between self-report questionnaires and observed functional disability is a feature most striking in FM[17]. However, SpA patient function was slightly poorer when assessed by DFI and HAQ-S, which may demonstrate the better specificity for SpA of these indices versus the BASFI.

Based on a multivariant questionnaire together with the Epworth Sleepiness Scale, the Rimons' Brief Depressive Scale, and Arthritis Impact Measurement Scales, FM patients have been found to experience more psychosocial problems and to feel impairment equally or more than patients with rheumatoid arthritis[18]. In our study, the decline in functional ability in patients with FM and SpA was largely similar when assessed by the indices. Some questionnaires have been reported to be feasible in AS and FM patients[12,13]. The indices tested here may be valuable in eliciting functional impairment in SpA and FM patients, but they cannot differentiate the reason for the decline. We did not evaluate sensitivity to change as was done in the problem elicitation technique (PET) questionnaire study[13], where PET was much more sensitive to change in AS than in FM patients. It is unlikely that self-administered questionnaires are a sufficiently objective measure of impairment to serve as a basis for important institutional decisions (e.g., disability pensions).

Inflammation, as assessed by laboratory tests and by the need for antirheumatic drugs, was common among our patients with SpA; their ESR values were higher and Hb values lower than in FM patients, as expected. Moreover, the BASDAI was developed to evaluate disease activity in AS. It was interesting to note, however, that scores for the BASDAI (developed for inflammatory disease) were significantly greater in the FM group (non-inflammatory disease) than in the SpA group. The BASDAI includes questions on fatigue, stiffness, tenderness, and pain. The pain threshold has been reported to be high in AS, and significantly higher than in osteoarthritis[19]. This may also be true in general in SpA. Mengshoel and Førre have demonstrated that FM patients report more pain and fatigue than those with AS[11], findings which are in accordance with our observation of high BASDAI values in FM. Because BASDAI is based on the patient's experience of symptoms, which may be similar in both FM and SpA, it does not measure inflammation, but symptoms. Thus the ability of BASDAI to specifically assess inflammatory disease activity in SpA was poor.

Our present results are based on self-administered instruments, reflecting the symptoms of the patients. The symptoms are caused by organic changes more often in SpA than in FM. It is thus likely that objective clinical measures would have shown other types of differences between the 2 disease groups; the aim of this study, however, was to test self-administered indices.

In conclusion, a similar decline in function is found in both SpA and FM patients when evaluated by the self-administered questionnaires. BASDAI was greater in FM. In all the indices tested problems arise when SpA patients with secondary FM are evaluated. Such patients should be excluded or this limitation must be borne in mind when the indices are used for clinical or scientific purposes.

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