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Marchesoni, A, Atzeni, F, Spadaro, A et al. (18 more authors) (2012) Identification of the Clinical Features Distinguishing Psoriatic Arthritis and Fibromyalgia. The Journal of Rheumatology, 39 (4). pp. 849-855. ISSN 0315-162X

https://doi.org/10.3899/jrheum.110893

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TITLE

IDENTIFICATION OF THE CLINICAL FEATURES DISTINGUISHING PSORIATIC ARTHRITIS AND FIBROMYALGIA

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Financial support

This work has been carried out using local resources only and did not receive any external support. None of the Authors has conflicts of interest regarding this work.

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Running footline: Psoriatic arthritis and fibromyalgia

Key words: Psoriatic arthritis; fibromyalgia; pain; enthesitis

ABSTRACT

Objective. The aim of this study was to identify the clinical features that can help to distinguish between psoriatic arthritis (PsA) and fibromyalgia (FM).

Methods. This multicentre cross-sectional study was carried out in ten Italian rheumatological centres between January and September 2009, and enrolled all of the consecutive PsA and FM patients who agreed to participate. All of the standard clinical and laboratory data for PsA and FM were collected from all of the patients, and their somatic symptoms, response to non-steroidal anti-inflammatory drugs (NSAIDs), self-evaluated pain, general health, disability and responses to the Fibromyalgia Impact Questionnaire were recorded. The data were statistically analysed by means of univariate and multivariate analyses, and receiver operating characteristic curves. Given the purpose of the study, the analysis concentrated on the clinical features shared by the two conditions.

Results. Two hundred and sixty-six PsA patients (mean age 51.7 years; disease duration 10.2 years) and 120 FM patients (mean age 50.2 years; disease duration 5.6 years) were evaluated. Univariate analysis showed that the FM patients had higher mean tender point and enthesitic scores, more somatic symptoms, and responded less to NSAIDs. Multivariate analysis showed that the presence of ≥6 FM-associated symptoms and ≥8 or more tender points were the best predictors of FM.

Conclusion. The shared clinical features of PsA and FM that had the greatest discriminating power for FM were the number of FM-associated symptoms and tender point count.

INTRODUCTION

Fibromyalgia (FM) is a common cause of chronic widespread pain (CWP) and often responsible for rheumatologic consultations. Its prevalence in the general adult general population is about 2%, but considerably different between males and females (about 0.5% *vs* about 3.5%) [1,2]. According to the 1990 ACR criteria [3], a diagnosis of FM requires the presence of CWP and tenderness in at least 11 out of 18 tender points when applying a pressure of 5 kg. A new set of criteria has recently been proposed by the ACR [4] that does not require a tender point examination but includes a subjective measure of the number of painful body regions and a somatic symptom severity scale. In association with CWP, somatic symptoms such as fatigue, headache, irritable bowel syndrome, sleep disturbances, paresthesias, muscle weakness, bladder dysfunction, depression, anxiety, Raynaud's phenomenon and many others are typical features of FM, and the constellation of symptoms is such that the disease is usually easily recognised by physicians. However, diagnostic difficulties may arise in case of CWP due to condition other than FM.

Psoriatic arthritis (PsA) is a chronic inflammatory musculoskeletal disorder belonging to the heterogeneous group of spondyloarthropathies (SpAs), and can affect up to 30% of patients with psoriasis [5]. It is a protean disease that involves the entheses, joints, tendons and bones of both the peripheral and axial skeleton. Enthesitis can be very difficult to diagnose because its symptoms and signs may be aspecific and relatively indistinguishable from those of FM. Patients with primary FM and psoriasis or FM associated with PsA and those with psoriatic polyenthesitis may have almost identical clinical features and are at risk of misdiagnosis and management errors.

The aim of this study was to identify which clinical features recorded during a standard rheumatological evaluation might help to distinguish PsA and FM.

PATIENTS AND METHODS

Study design

This multicentre, cross-sectional study was carried out by 10 Italian tertiary rheumatological centres between January and September 2009: seven Centres specialised in PsA enrolled only PsA patients, two specialised in FM enrolled only FM patients, and one enrolled both PsA and FM patients. All of the patients were asked for their informed consent to participate to the study.

Inclusion and exclusion criteria, and clinical evaluation

The inclusion criteria were a diagnosis of PsA or FM according to the CASPAR [6] and 1990 ACR criteria [3], and patient consent to participate. All of the consecutive adult patients aged ≥18 years attending the clinics for routine examinations during the nine-month study period who met the inclusion criteria were enrolled. They were all receiving current standard levels of care for PsA and FM, and none was involved in any interventional research protocol at the time. In addition, eligible FM patients could not have a diagnosis or family history of PsA or psoriasis.

The study centres were provided with a paper or electronic case report form (CRF) prepared by the coordinating centre (the Department of Rheumatology of the G. Pini Orthopedic Institute in Milan) for anonymous data collection. The CRF included a patient history, self-assessment questionnaires, and the findings of physical examinations and laboratory investigations. The history included the time since the onset of the first symptom, the familial and personal history of psoriasis, the presence of inflammatory back pain (IBP) as defined by Calin's criteria [7], the history of nine FM-related conditions/symptoms (fatigue, headache, irritable bowel syndrome, sleep disturbances, paresthesias, anxiety, depression, and Raynaud's phenomenon) apparently not due to other underlying conditions, and graded responsiveness (very good, good, slight and

none) to non-steroidal anti-inflammatory drugs (NSAIDs). The questionnaires were the Italian versions of the Disability Index of the Health Assessment Questionnaire (HAQ) [8], the Fibromyalgia Impact Questionnaire (FIQ) [9], and the Leeds Disability Questionnaire (LDQ) [10]. The patients were also asked to self-assess their pain and general health using a 100-mm visual analogue scale (VAS). The physical examinations included routine anthropometry, swollen and tender 66/68 joint counts, the number of irreversibly damaged joints (defined as those with irreversible deformities and/or at least a 30% reduction in the normal range of movement due to anatomic changes), pressure on the sacro-iliac joints to elicit pain, tender point counts, the Maastricth Ankylosing Spondylitis Enthesitis Score (MASES) [11], the number of digits with dactylitis, the Psoriasis Activity and Severity Index (PASI) [12] for skin involvement, and the number of nails with psoriatic changes. The pattern of articular involvement was established using the cumulative number of affected joints, meaning all of the joints involved at the time of the study evaluation or documented by a competent examiner on a previous occasion. The erythrocyte sedimentation rate (ESR) (Westergren method) (n.v. <15 mm/h) and C-reactive protein (CRP) levels (n.v. <1 mg/dl) were the required laboratory tests. In order to reduce inter-observer variability in the tender point and entheseal site examinations, a DVD was distributed to all of the centres showing how to perform these examinations. We chose the MASES, rather than other more comprehensive enthesitis scores, because it was the instrument all of the investigators were most confident with. However, the following entheseal site was also examined: lateral and medial epicondyles, greater trochanters, quadriceps tendons, and plantar fascia insertions.

The enthesis involvement was also evaluated by ultrasonography (US) in a subgroup of 30 PsA and 30 FM patients, all from the coordinating centre. The Power Doppler Ultrasound (PDUS) investigation was performed by a rheumatologist with extensive experience in US, using a Logiq5 (General Electrics Medical Systems, Milwaukee, WI) machine equipped

with a broadband high-frequency (8-15 MHz) transducer, and adopting a standardized methodology [13]. The following entheseal sites were examined bilaterally: common extensor tendon at its insertion at the lateral humeral epicondyle, gluteus tendon at their insertion at the greater trochanter, quadriceps tendon at its insertion at the superior pole of the patella, patellar tendon at its proximal insertion at the inferior pole of the patella, patellar tendon at its distal insertion at the tibial tuberosity, Achilles tendon at its insertion at the calcaneus, plantar aponeurosis at its insertion at the calcaneus. According to the Outcome Measures in Rheumatology Clinical Trials (OMERACT) definitions of enthesopathy, the following changes were registered [14]: tendon hypoechogenicity at its bony insertion, tendon thickening at its bony insertion, intra-tendinous calcifications, enthesophytes, bony erosions, bony cortex irregularities, presence of Doppler signal at the bony insertion.

The coordinating centre collected the CRFs from all of the centres and controlled the quality of the data (asking for clarifications of any missing or doubtful data), created the final electronic database, cleaned the final data, and carried out the data analysis.

Statistical analysis

The descriptive statistics included the mean values and standard deviations (SD) of the continuous variables, and the percentages and proportions of the categorical variables.

The univariate analyses were made using Student's t test, the χ^2 test or Fisher's exact test, and Pearson's correlation test as appropriate. The multivariate logistic regression analysis yielded the odds ratios (ORs) and 95% confidence intervals (95% CIs) for the risk of having FM rather than PsA for each variable.

As the primary study objective was to identify which of the clinical parameters of PsA were more indicative of FM, only the FM-related features shared by both conditions were analysed in greater detail. Accordingly, in the case of tender point counts, MASES scores

and the presence of somatic symptoms (the most critical continuous variables discriminating the two conditions), the most sensitive and specific cut-off points in favour of FM were sought using receiver operating characteristic (ROC) curves. Similarly, the multivariate analysis only considered the clinical manifestations common to both conditions and most important for the differential diagnosis.

As the PsA patients belonging to the “enthesitis predominant” or oligoarticular subgroups and those without psoriasis could be the most difficult to distinguish from FM, we analysed them separately.

Given the small number of cases, no statistical analysis was performed for the PDUS data.

For all of the analyses, a p value of 0.05 was considered statistically significant. The data were analysed using SPSS© software for Windows© (release 12.0, SPSS Inc., Chicago, USA), version 17.0.

RESULTS

A total of 401 patients were enrolled but nine PsA patients were excluded because of missing data and six FM patients because of the presence of dactylitis, a feature too much indicative of SpA. Of the remaining 386 patients, 266 had PsA (125 females and 141 males) and 120 had FM (114 females and six males); the female/male ratio was 0.89 for PsA and 19 for FM. Mean age at study entry was 51.7 years (SD 12.8) in the PsA group, and 50.2 years (SD 10.7) in the FM group; the difference was not statistically significant. Mean disease duration was 10.2 years (SD 9.3) in the PsA group, and 5.6 years (SD 4.5) in the FM group. The differences in the gender ratios and disease duration were highly significant ($p < 0.001$) and inherent to the particular conditions. The mean body mass index (BMI) was 27.1 (SD 6.1) in the PsA patients and 24.4 (SD 3.6) in the FM patients ($p = 0.05$). Finally, the 30 PsA (13 females and 17 males) and 30 FM patients (all females) of the PDUS cohort had comparable mean age (51.6 ± 12.2 and 51.2 ± 11.6, respectively) and BMI (25.2 ± 5.3 and 24.9 ± 3.7, respectively).

Table 1 shows the clinical characteristics of the study population. As laid down by the protocol, none of the FM subjects had PsA or reported any personal or familial history of psoriasis. The mean PASI of the PsA patients was only 2.2 (SD 3.1), indicating good control of the skin disease. It is worth noting that 41 PsA patients (15.4%) had arthritis *sine psoriasis*. The predominant pattern of articular involvement in the PsA group was polyarthritis (150 patients, 56.8%), followed by oligoarthritis (67, 25.4%), axial involvement (30, 11.4%), and enthesitis (17, 6.4%). Two patients had missing subgroup classification data. Although almost 57% of the PsA patients were in the polyarthritis subset, the mean number of (SD) of swollen joints was only 1.8 (3.5). This discrepancy was probably due to the fact that virtually all of these patients were taking disease-modifying drugs and that about 30% of them were on TNF-α blockers.

A number of the significant clinical differences between the two groups shown in Table 1 were expected and due to the intrinsic nature of the two diseases, but some were not. The proportion of patients with IBP and tenderness in the sacroiliac joints upon examination was similar in the two groups (about 35-40%), whereas the mean MASES was significantly higher in the FM patients. One hundred and sixteen PsA patients (43.6%) reported a “good” or “very good” response to NSAIDs therapy, against only 13 of the FM patients (3.1%) ($p<0.001$).

About 40% of the PsA patients complained of extra-articular pain, but only 6.9% had at least eleven tender points upon examination. All of the somatic manifestations were significantly much more frequent in the FM patients, but as many as about 66% of the PsA patients complained of fatigue.

As the MASES scores closely correlated with the tender point counts ($r = 0.688$, $p<0.001$), we investigated whether any of the MASES sites were significantly more frequently involved in one condition than the other. Univariate analysis showed that all of the sites were significantly more frequently involved in FM, but only the seventh rib and the anterior superior iliac spine remained significantly associated with FM at multivariate analysis ($p <0.001$).

The PDUS evaluation showed inflammatory changes (tendon hypoechogenicity, bony erosions, and PD signal in the enthesis) in 21 (70%) PsA patients but also in seven (21.3%) FM patients. Bony erosions were the only findings absolutely specific for PsA, but they were seen in only six (20%) patients. Ten entheseal sites per patient were examined both clinically and by PDUS. This comparison yielded very different results in the two conditions. Of the 300 examined sites in PsA patients, 25 were clinically positive and PDUS negative, 39 clinically negative and PDUS positive, and 18 positive by both methods. In FM patients, 112 sites were clinically positive and PDUS negative, 8 clinically negative and PDUS positive, and only 4 positive by both methods. Interestingly enough, in

these patients epicondyles and great trocanthers were responsible for almost all of clinical entheseal involvement; only four Achilles tendons, five quadriceps tendons, and no plantar fascia insertions were positive on clinical examination.

Given its efficacy in PsA, anti-tumour necrosis factor-α (TNFα) therapy may have been a confounder in 33% of the PsA patients. However, as extra-articular pain was similarly frequent in the patients on or off this therapy (44.9% and 39.6%), its impact on the clinical findings could have been limited.

Table 2 shows the laboratory findings and the mean results of the questionnaires and VAS. As expected, inflammatory indices were significantly higher in the PsA patients. The mean FIQ values were significantly higher in the FM patients, whereas the mean values of the two disability indices (HAQ and LDQ) were similar in the two groups.

As all of the somatic symptoms were significantly more frequent in the FM patients, we used logistic regression analysis to establish which were independently predictive of FM. The results showed that sleep disturbances, irritable bowel syndrome, Raynaud's phenomenon, and headache had the strongest ORs for FM (Tab. 3), whereas fatigue, stiffness, depression and anxiety did not discriminate between PsA and FM.

The ROC curves (Fig. 1) showed that the most sensitive and specific predictors of a diagnosis of FM was the presence of at least six somatic symptoms (sensitivity 93% and specificity 82%) and at least eight tender points (sensitivity 93% and specificity 82%), and a MASES score of $\geq$3 (sensitivity 68% and specificity 72%). The number of patients satisfying the cut-off values derived from the ROC analysis of each variable was obviously much higher in the FM group. However, 17.6% PsA patients had at least eight tender points (as against 92.7% of FM patients), 14.1% had at least six FM-related symptoms (as against 92.7% of FM patients), and 28.2% had a MASES score of $\geq$3 (as against 67.7% of FM patients).

The logistic regression model, which included all of the variables that were common to the two conditions and most relevant to their differential diagnosis, showed that number of somatic symptoms and number of tender points was independent predictors of FM (Table 4). Using the cut-off values identified by the ROC analysis the same model yielded an OR of 14.73 (CI 3.61-60.09) for ≥6 somatic symptoms and 30.55 (CI 5.04-185.39) for ≥8 tender points,.

Finally, the analysis of the 17 patients of the “enthesitis predominant” subgroup, of the 67 with oligoarthritis, and of the 41 without psoriasis did not yield significant differences with the PsA group as a whole, with the exception of “extra-articular pain”, which was more frequent in the enthesitic subgroup (60% vs. 40.2%).

DISCUSSION

The main aim of this study was to identify the clinical features that can help to distinguish between PsA and FM. Although oligo-polyarthritis is the most common articular manifestation in PsA, extra-articular pain is frequent and its origin may be difficult to establish as it may be caused by enthesitis (a common feature of PsA) but also by FM. The prevalence of FM among PsA patients is unknown, although a study published many years ago [15] found tenderness in ten or more fibrositic sites in 24% of PsA patients as against 57% of patients with rheumatoid arthritis. In the absence of objective signs of inflammation at entheseal sites, it may be difficult to distinguish enthesitic and fibromyalgic pain clinically. The symptom overlap between the two conditions may lead to even more difficulty in patients with undiagnosed PsA characterized by enthesitis alone. Only about 6% of the PsA patients in our study population presented this disease pattern. The analysis of these patients, as well as of those with oligoarthritis and those without psoriasis, yielded results similar to those of the whole PsA population. With the limitation of the low number of patients, this finding might indicate that “enthesitis predominant” is a definite PsA subgroup, distinguishable from FM.

The results of this study suggest that the presence of $\geq$6 somatic manifestations and $\geq$8 tender points indicate the greatest probability of having FM. Raynaud’s phenomenon, sleep disturbances, irritable bowel syndrome and headache were the somatic disturbances with the highest individual ORs for FM, whereas fatigue, stiffness, anxiety and depression were not significantly associated with FM at multivariate analysis. In particular, fatigue (a typical symptom of FM) was also present in the majority of PsA patients (about 66%), a finding that is consistent with previously published data [16].

Although the presence of $\geq$8 tender points and $\geq$6 FM-related symptoms were strongly predictive of FM, they were respectively recorded in about 14% and 18% of our PsA patients. These may have been patients with secondary FM, but the collected data did not

allow this distinction. However, only about 7% of the PsA patients reached the cut-off point of 11 positive tender points considered diagnostic of FM by the 1990 ACR criteria [3].

It has been previously found that FM patients respond poorly to NSAIDs, and this has been used as a means of differentiating FM and spondyloarthritic-enthesitic patients [17]. However, as many as about 66% of our PsA patients did not respond well to NSAIDs and lack of response to NSAIDs was not independently associated with FM at multivariate analysis. Therefore, the discriminating usefulness of this parameter by itself seems to be limited.

Our findings showed that tender points and entheseal sites overlapped so much that median MASES values were significantly higher in the FM patients. The involvement of three or more entheseal sites proved to be the most sensitive and specific cut-off point for a diagnosis of FM, but significance was lost at multivariate analysis and about 30% of our PsA patients had three or more involved entheseal sites. Taken together, these data suggest that tenderness at entheseal sites by itself is not at all useful in distinguishing between the two conditions. We did not investigate swelling at these sites, which should be quite specific, but probably poorly sensitive, for inflammation. As the PDUS study, which was performed in a small cohort of patients (30 PsA and 30 FM), evaluated the main entheses of the limbs, of the sites included in the MASES only the Achilles tendons were investigated by this imaging technique. In contrast to the clinical findings, the PDUS evaluation showed that inflammatory changes in the entheseal sites were much more frequent in PsA patients than in FM patients. However, as these changes were also found in about 21% of the FM patients, they were not highy specific for PsA. The relatively low concordance rate between clinical and PDUS enthesitis in the PsA patients was an intriguing finding. Of the 82 sites involved according to at least one of the two methods, only 18 (22%) were positive at both. This result raises the issue of the definition of enthesitis. In this study it was defined as tenderness upon application of pressure at

enthesis enough to blanch the examining nail. Using this method, in the PDUS cohort 43 sites were positive but the 39 sites with inflammatory changes at PDUS were clinically silent. This finding suggests that enthesitis could be often asymptomatic but it also indicate that a more reliable definition of enthesitis is needed. Finally, in the FM patients of the PDUS cohort, on clinical examination some enthesis (epicondyles and great trocanthers) were involved in a high percentage of cases, whereas other entheses (quadriceps tendon, Achilles tendons, plantar fascia insertion) showed almost no involvement. This finding suggests that methods more comprehensive than MASES could be more useful to distinguish PsA and FM patients. However, in the whole study population Achilles tendon was not significantly more frequent in PsA patients, due to the infrequent involvement of this tendon in these patients (low sensitivity).

The mean self-assessed pain and FIQ scores were higher in the FM patients, but their ORs were not significant at multivariate analysis. The mean values of the two disability indices (HAQ and LDQ) and the patients' evaluation of general health were similar in the two groups and therefore do not distinguish the two conditions. IBP and tenderness in the sacroiliac joints were similarly frequent in the two groups; however, it is worth mentioning that sacro-iliac joint examinations are not consistently capable of identifying inflammatory involvement [18]. Finally, inflammatory joint involvement and abnormal acute-phase reactant values were absent or very rare in the FM patients but, as they are intrinsic characteristics of PsA, they cannot be used to identify which patients with known PsA also have FM.

To the best of our knowledge, this is the first study investigating how to differentiate FM and PsA patients. However, it is interesting to note that a small cohort study of only 33 patients [17] with extra-articular pain found that the significant differences in the clinical characteristics of SpAs and FM were similar to those found by us between PsA and FM.

In brief, our findings seem to indicate that somatic symptoms and tender point counts could be used in clinical practice to determine whether PsA patients have associated FM when they complain of extra-articular pain. In this situation, the likelihood of having FM is proportional to the number of positive features, and is very high in the case of ≥8 tender points and ≥6 FM-related symptoms. These findings may also be extended to help diagnose patients with psoriasis or undifferentiated SpAs with extra-articular pain, but this possibility needs to be evaluated by specifically-oriented studies.

This study has some limitations. The PsA group included patients with any PsA clinical pattern, not only those with had polyenthesitis; the extent to which our findings apply to these patients needs to be evaluated further. As mean disease duration in the PsA group was quite long, the results can only considered valid for patients with long-standing disease; patients with early PsA might be different. Tender point evaluations are highly examiner-dependent and subject to considerable inter-observer variability. We tried to minimise this by providing a DVD showing how to make the tender point count but did not check the way the examination was actually conducted; however, as this was a multicentre study, the large number of examiners may have compensated for the variability. Finally, as about one third of the PsA patients were taking anti-TNF therapy, all of the inflammatory features of these patients, including enthesitis and joint swelling, were profoundly modified. Obviously the results of this study were biased by this fact, but in a way consistent with what happens in daily practice.

In conclusion, it may be difficult to distinguish polyenthesitis and FM in patients with PsA and extra-articular pain, but our findings show that some of the clinical data that can be easily collected during a standard rheumatological visit can provide a differential diagnosis. These findings should be tested in a control population of PsA patients. PDUS and/or magnetic resonance of the entheses might provide further data on this topic [19, 20].

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TABLES AND FIGURES

TABLE 1. Clinical characteristics of the study population (n = 358)

Clinical Feature of PsA	**PsA (266 pts)**	**FM (120 pts)**	**P value**
Psoriasis, n. (%)	207 (77.8)	0 (0)	<0.001
Personal history of psoriasis, n. (%)	225 (85.6)	0 (0)	<0.001
Familial history of psoriasis, n. (%)	124 (46.6)	0 (0)	<0.001
Tender joint couns mean (SD)	5.0 (6.9)	0.1 (0.9)	<0.001
Swollen joint coumt, mean (SD)	1.8 (3.5)	0.0 (0.0)	<0.001
Damaged joint count, mean (SD)	1.2 (3.3)	0.0 (0.0)	<0.001
MASES, mean (SD)	1.9 (2.4)	4.2 (3.8)	<0.001
Dactylitis, n. (%)	101 (38.0)	0 (0)	<0.001
IBP, n. (%)	115 (43.2)	43 (35.8)	0.17
Tenderness in the sacroiliac joints, n. (%)	96 (36.1)	45 (37.5)	0.79
Good or very good response to NSAIDs, n.	116 (43.6)	13 (10.8)	<0.001
Anti-TNF-α therapy, n. (%)	89 (33.5)	0 (0)	<0.001
Clinical Features of FM			
Extra-articular pain, n. (%)	107 (40.2)	84 (70)	<0.001
Tender point count, mean (SD)	3.5 (3.9)	12.3 (3.9)	<0.001
Fatigue, n. (%)	175 (65.8)	120 (100)	<0.001
Headache, n. (%)	73 (27.4)	98 (81.7)	<0.001
Irritable bowel syndrome, n. (%)	56 (21.1)	100 (83.3)	<0.001
Sleep disturbances, n. pts (%)	94 (35.3)	110 (94.0)	<0.001
Paresthesias, n. (%)	94 (35.3)	102 (85.0)	<0.001
Stiffness, n. (%)	139 (52.3)	107 (89.2)	<0.001
Depression, n. (%)	65 (24.4)	80 (66.7)	<0.001
Anxiety, n (%)	124 (46.6)	93 (77.5)	<0.001
Raynaud’s phenomenon, n. (%)	13 (4.9)	68 (56.7)	<0.001

SD = standard deviation; F = female; M = male; IBP = inflammatory back pain

TABLE 2. Laboratory and questionnaire results

	PsA (266 pts)	**FM (120 pts)**	**P value**
Mean ESR, mm/h (SD)	19.2 (15.8)	11.3 (6.8)	<0.001
Mean CRP, mg/dL (SD)	1.5 (2.7)	0.3 (0.4)	<0.001
ESR >15 mm/h, n. (%)	118 (45.4)	27 (23.3)	<0.001
CPR >1 mg/dl, n. (%)	90 (35.0)	4 (3.5)	<0.001
VAS pain score, mean (SD)	38.3 (24.1)	58.1 (21.3)	<0.001
HAQ score, mean (SD)	0.7 (0.6)	0.7 (0.5)	0.92
VAS general health score, mean (SD)	55.4 (22.7)	58.7 (19.3)	0.14
FIQ score, mean (SD)	32.9 (21.0)	57.9 (20.0)	<0.001
LDQ score, mean (SD)	0.9 (2.7)	1.7 (3.3)	0.43

ESR = erythrocyte sedimentation rate; CRP = C-reactive protein; VAS = visual analogue scale; HAQ = Health Assessment Questionnaire; FIQ = Fibromyalgia Impact Questionnaire; LDQ = Leeds Disability Questionnaire

TABLE 3. Logistic regression of somatic symptoms indicating a risk of FM

Symptoms	**OR**	**95% CI**	**P value**
Extra-articular pain (yes *vs* no)	3.4	1.3-9.1	0.01
Fatigue (yes *vs* no)	1.2	0.4-2.2	0.67
Headache (yes *vs* no)	4.7	1.9-11.7	0.001
Irritable bowel syndrome (yes *vs* no)	9.8	3.9-24.4	<0.001
Sleep disturbances (yes *vs* no)	6.9	2.1-22.5	0.001
Paresthesias (yes *vs* no)	3.0	1.1-8.0	0.02
Stiffness (yes *vs* no)	2.3	0.8-7.0	0.13
Depression (yes *vs* no)	0.7	0.3-1.9	0.56
Anxiety (yes *vs* no)	0.5	0.2-1.6	0.28
Raynaud's phenomenon (yes *vs* no)	8.3	3.0-22.7	<0.001

OR = odds ratio; 95% CI = 95% confidence interval

TABLE 4. Multivariate logistic regression including the main variables possibly associated with FM, and shared by both conditions

Feature	OR	95% CI	P value
Female gender	0.23	0.02-2.54	0.23
FIQ score	0.98	0.94-1.02	0.26
Pain score (VAS)	0.99	0.95-1.02	0.51
Somatic symptoms	3.25	1.96-5.38	0.000
MASES	0.78	0.63-0.98	0.03
Tender points	1.63	1.31-2.03	0.000
No response to NSAIDs	1.99	0.40-9.87	0.39

OR = odds Ratio; 95% CI = 95% confidence interval;VAS = visual analogue scale; FIQ = Fibromyalgia Impact Questionnaire; MASES = Maastricht Ankylosing Spondylitis Enthesitis Score

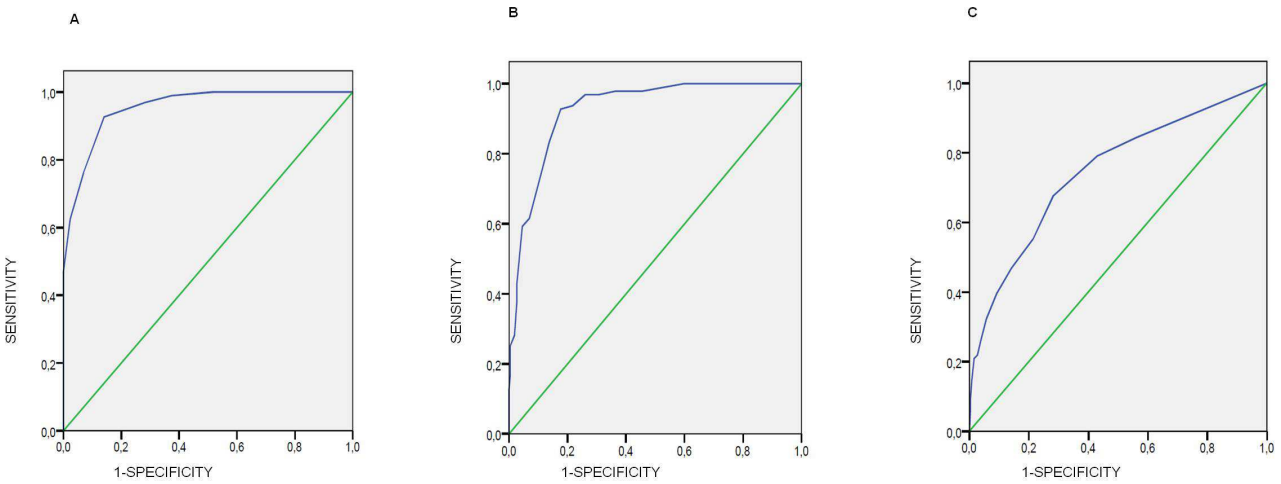

FIGURE 1 Receiver-operating characteristic curves of sensitivity and specificity of somatic symptoms, tender point count, and Maastricht Ankylosing Spondylitis Enthesitis Score (MASES; fibromyalgia vs psoriatic arthritis).

Panel A. Somatic symptoms, area under the curve (AUC) 0.95, 95% CI 0.93–0.97, p <0.001.

Panel B. Tender point count, AUC 0.92, 95% CI 0.9–0.95, p < 0.001.

Panel C. MASES, AUC 0.74, 95% CI 0.68–0.8, p < 0.001.