Patients with Psoriatic Arthritis Fulfilling the Minimal Disease Activity Criteria Do Not Have Swollen and Tender Joints, but Have Active Skin

Josefina Marin, María Laura Acosta Felquer, Leandro Ferreyra Garrot, Santiago Ruta, Javier Rosa, and Enrique R. Soriano

ABSTRACT. ***Objective.*** To evaluate components of the minimal disease activity (MDA) criteria in psoriatic arthritis (PsA).

Methods. In patients achieving and not achieving MDA, fulfillment of each of the 7 criteria was evaluated.

Results. Among 41 patients with MDA, 7.4% did not fulfill the tender/swollen joint count whereas 49% did not fulfill the skin criteria. Of the 42 patients not fulfilling MDA, 100%, 76.5%, and 65% did not fulfill the patient pain score, the patient's global assessment, and the Psoriasis Area and Severity Index (PASI), respectively.

Conclusion. A minority of patients with PsA fulfilling the MDA criteria presented active joints, but half had active skin. Visual analog scale scores and the PASI prevented patients from achieving MDA.
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Key Indexing Terms:
PSORIATIC ARTHRITIS
REMISSION
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OUTCOME MEASURES

Psoriatic arthritis (PsA) is an inflammatory disease that involves multiple domains, including skin, nails, peripheral joints, spine, and enthesis[1]. Different instruments have been used for disease evaluation, most focusing on individual characteristics and therefore not spanning the disease spectrum[2,3,4]. Remission criteria and activity indices used in rheumatoid arthritis are often applied to PsA[5,6,7].

From the Rheumatology Unit, Internal Medicine Service, Hospital Italiano de Buenos Aires; University Institute from Hospital Italiano de Buenos Aires; Fundación Dr. Pedro M. Catoggio para el Progreso de la Reumatología, Buenos Aires, Argentina.

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J. Marin, MD, Rheumatology Unit, Internal Medicine Service, Hospital Italiano de Buenos Aires, and the University Institute from Hospital Italiano de Buenos Aires; M.L. Acosta Felquer, MD, Rheumatology Unit, Internal Medicine Service, Hospital Italiano de Buenos Aires, and the University Institute from Hospital Italiano de Buenos Aires; L. Ferreyra Garrot, MD, Rheumatology Unit, Internal Medicine Service, Hospital Italiano de Buenos Aires, and the University Institute from Hospital Italiano de Buenos Aires; S. Ruta, MD, Rheumatology Unit, Internal Medicine Service, Hospital Italiano de Buenos Aires, and the University Institute from Hospital Italiano de Buenos Aires; J. Rosa, MD, Rheumatology Unit, Internal Medicine Service, Hospital Italiano de Buenos Aires, and the University Institute from Hospital Italiano de Buenos Aires, and Fundación Dr. Pedro M. Catoggio para el Progreso de la Reumatología; E.R. Soriano, MD, MSc, Rheumatology Unit, Internal Medicine Service, Hospital Italiano de Buenos Aires, and the University Institute from Hospital Italiano de Buenos Aires, and Fundación Dr. Pedro M. Catoggio para el Progreso de la Reumatología.

Address correspondence to Dr. E.R. Soriano, Juan D. Perón 4190 (C1181ACH), Sección Reumatología, Servicio de Clínica Médica, Hospital Italiano de Buenos Aires, Buenos Aires, Argentina. E-mail: enrique.soriano@hospitalitaliano.org.ar

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Minimal disease activity (MDA) for PsA is a composite measure created specifically for patients with PsA that encompasses many clinically important aspects of the disease: arthritis, psoriasis, enthesitis, pain, patient-assessed global disease activity, and physical function[8]. This index was initially evaluated in an observational study in which patients received standard care for PsA according to their clinical needs and were followed for a maximum of 5 years[9]. It provides an objective target for therapy in clinical trials[10,11,12,13,14,15,16], and some reports support the prognostic value of the PsA MDA criteria, because they have shown that patients achieving MDA are more likely to have a better radiologic outcome[10].

The PsA MDA criteria were used in the TICOPA (Tight Control of PsA) study, the only randomized study to date addressing whether treating to target using a prespecified target can improve outcome in PsA[13].

MDA is achieved if a patient fulfills 5/7 criteria[8]. In theory, a patient could be in MDA but still have several tender and/or swollen joints. On the other hand, it has been shown that there is some disconnection between joint and skin involvement in patients with PsA[7], and this might not be identified by categorical criteria such as the MDA.

The aim of our study was to analyze the function of the different components of MDA. In particular, we evaluated the number of patients fulfilling the MDA criteria who still have several tender/swollen joints, and evaluated the skin components of the score. We also analyzed the components of the MDA that contributed most to preventing patients from achieving MDA.

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MATERIALS AND METHODS

Patients. Our study was conducted at the Hospital Italiano de Buenos Aires, Argentina. Consecutive patients with PsA (ClASsification for Psoriatic ARthritis criteria) > 18 years of age were included, and all components of the MDA score were assessed by a single experienced rheumatologist (JM). Clinical assessments included a 68 tender/66 swollen joint count (TJC/SJC) and tender entheseal points (Leeds Enthesitis Index 0–6)[17]. Skin assessment included the body surface area (BSA) and the Psoriasis Area and Severity Index (PASI). Patients completed self-reported questionnaires including the patient's global assessment (PtGA) of disease activity, patient pain score, and the Health Assessment Questionnaire (HAQ)[18].

Patients were classified as having MDA if they fulfilled 5/7 criteria [TJC 0–68 ≤ 1, SJC 0–66 ≤ 1, PASI ≤ 1 or BSA ≤ 3%, patient pain score [visual analog scale (VAS) 0–100] ≤ 15, PtGA (VAS 0–100) ≤ 20 mm, HAQ ≤ 0.5, and tender entheseal points 0–6 ≤ 1].

The study was conducted according to the Declaration of Helsinki and local regulations. Ethical approval for the study was obtained from the hospital's local ethics committee and informed consent was obtained from all patients.

Statistical analyses. Observed data from patients classified as having MDA (fulfilling 5/7 criteria) and from patients not having MDA were included in our analysis. Continuous data were expressed as mean and SD, and categorical variables as percentages. To compare continuous variables, independent sample Student t tests were performed. To analyze categorical data, the chi-square test was performed.

Percentage of patients having MDA with ≥ 2 tender and/or swollen joints was calculated.

For those patients who only fulfilled 4 out of 7 MDA criteria, we also calculated the percentage of patients not fulfilling each of the criteria.

RESULTS

Eighty-three patients were included. Patients' characteristics according to MDA status are shown in Table 1. There were no differences related to sex distribution, mean age, and median months of disease duration between patients fulfilling and not fulfilling the MDA criteria.

Table 1. Characteristics among patients fulfilling and not fulfilling the MDA criteria. Values are mean (SD) unless otherwise specified.

Characteristics	MDA, n = 41	No MDA, n = 42	p
Male, n (%)	23 (56)	21 (50)	0.578
Age, yrs	55.6 (13.6)	51.2 (14.3)	0.1528
Disease duration, mos, median (IQR)	36 (12–96)	31.5 (10–48)	0.3460
Pain, VAS mm	17.5 (20.1)	52.7 (20.1)	< 0.0001
Patient's global activity, VAS mm	14 (18.2)	47.2 (21.2)	< 0.0001
SJC	0.3 (0.6)	2.7 (2.6)	< 0.0001
TJC	0.3 (0.6)	1.8 (2.6)	0.0003
HAQ	0.15 (0.37)	0.43 (0.51)	0.0047
Tender entheseal points	0.0 (0)	0.15 (0.5)	0.0121
PASI	1.5 (2.2)	3.8 (4.8)	0.0074
BSA	4.5 (7.1)	11.5 (15.5)	0.0106
DAS28	2.3 (0.71)	3.7 (1.1)	< 0.0001
CPDAI	2.1 (1)	4 (1.9)	< 0.0001

MDA: minimal disease activity; IQR: interquartile range; VAS: visual analog scale; SJC: swollen joint count; TJC: tender joint count; HAQ: Health Assessment Questionnaire; PASI: Psoriasis Area and Severity Index; BSA: body surface area; DAS28: Disease Activity Score in 28 joints; CPDAI: Composite Psoriatic Disease Activity Index.

Ten patients (12%) fulfilled all 7/7 criteria, 13 (16%) fulfilled 6/7, and another 18 patients (22%) fulfilled 5. Among the 41 patients fulfilling the MDA criteria, only 1 (2.4%) showed more than 2 tender joints (3 tender joints), and 2 other patients each showed ≥ 2 swollen joints (1 patient with 2 swollen joints and 1 with 3 swollen joints). Altogether, 7.4% of patients fulfilling the MDA criteria did not satisfy the joint count criteria.

Interestingly, only half (51%) of patients fulfilling MDA fulfilled the skin criteria (PASI and BSA), and this percentage was not statistically different from that of patients not in MDA (36%, p = 0.154; Table 2). Among all 83 patients, 31 (37%) fulfilled both the PASI and BSA criteria, 37 (44.6%) fulfilled the PASI criteria alone, and 39 (47%) the BSA criteria alone. Among the 41 patients with MDA (defined with both skin criteria), 21 patients (51%) fulfilled the PASI and BSA criteria, and 22 (54%) and 27 (66%) the PASI criteria and the BSA criteria alone, respectively. Table 3 shows the function of the PASI and BSA criteria when the PASI or BSA criteria alone were used to define MDA. Among the other criteria, the one that was less frequently fulfilled in patients in MDA was the patient's pain score (56%; Table 2).

Of those patients who did not reach MDA status, 17 (40.5%) fulfilled 4/7 criteria. Among those patients, the criteria more often unfulfilled were the patient pain score VAS ≤ 15 = 100%, PtGA VAS ≤ 20 mm = 76.5%, and PASI ≤ 1 = 65%. On the other hand, 29%, 18%, 6%, and 6% did not fulfill the TJC, HAQ, SJC, and entheseal tenderness criteria, respectively.

DISCUSSION

To our knowledge, ours is the first study aimed at evaluating the number of patients fulfilling the MDA criteria who still have several tender/swollen joints, and to analyze the components of the MDA that contribute most to preventing patients from achieving MDA. It is known that the number of inflamed and tender joints is an important predictor of joint damage because it is indicative of active joint disease[19]. In theory, a patient could have MDA, but still have several tender and/or swollen joints. We believe a clinical tool should not allow a patient to be categorized as in remission or low disease activity when there are several inflamed or tender joints. In agreement with this, only a minority (7.4%) of patients fulfilling the MDA criteria presented a clinically significant number of tender and/or swollen joints in our study.

A similar percentage of patients (8.8%) was left out of Haddad, *et al*'s study because, even fulfilling MDA, they had evidence of actively inflamed joints[20]. One important feature of our study was that almost half of the patients fulfilling MDA had active skin disease. One explanation might be that the cutoff values selected in the MDA criteria for skin involvement are too stringent for therapies currently available. Because we wanted to address the action of skin

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Table 2. Distribution of MDA components among patients fulfilling and not fulfilling the MDA criteria. Values are n (%) unless otherwise specified.

Characteristics	MDA, n = 41	No MDA, n = 42	p
≥ 2 swollen joint count	2 (4.9)	18 (43)	< 0.0001
Fulfilling SJC criteria	39 (95)	24 (57)	< 0.0001
Fulfilling TJC criteria	40 (97.6)	15 (35.7)	< 0.0001
Fulfilling skin criteria, PASI and BSA	21 (51)	15 (36)	0.154
Fulfilling pain score criteria	23 (56)	1 (2.4)	< 0.0001
Fulfilling disease activity criteria	34 (83)	7 (17)	< 0.0001
Fulfilling HAQ criteria	39 (95)	30 (71)	0.004
Fulfilling enthesitis criteria	41 (100)	34 (81)	0.003

MDA: minimal disease activity; SJC: swollen joint count; TJC: tender joint count; PASI: Psoriasis Area and Severity Index; BSA: body surface area; HAQ: Health Assessment Questionnaire.

disease, we decided to select stringent criteria, using the fulfillment of both the PASI and BSA criteria. Results were similar, however, if any 1 of those 2 criteria was selected. Nonetheless, as mentioned, almost half our patients had active skin despite fulfilling the MDA criteria. This is important because MDA may therefore not be useful as a treatment target in patients with extended skin involvement. Among patients not in MDA, the criteria more often not fulfilled were the patient pain score VAS ≤ 15, PtGA VAS ≤ 20 mm, and PASI ≤ 1. Only a minority of patients falling short of achieving MDA by 1 set of criteria did not fulfill the TJC, HAQ, SJC, and entheseal tenderness criteria.

The selection of the target is of crucial importance if a treat-to-target and tight control strategy are to be implemented. Acosta Felquer, *et al* evaluated the performance of different remission criteria and activity indices in PsA[5]. They found that there were differences not only in the percentage of patients classified as in remission by the different remission criteria, but also in which patients would be included in each category. Particularly, the Disease Activity Score in 28 joints and MDA seemed to be less stringent in PsA than the other indices[5]. In that sense, our study provides reassurance that almost all patients at MDA will have no swollen/tender joints, but also raises some concerns that the skin might not be well controlled if the MDA is used as the only target to treat patients with both joint and skin involvement.

Table 3. Skin involvement according to the PASI or BSA criteria. Values are n (%) unless otherwise specified.

Variable	Fulfilling PASI MDA	Not Fulfilling PASI MDA	Fulfilling BSA MDA	Not Fulfilling BSA MDA
Fulfilling PASI criteria	22 (54)	15 (36)	21 (57)	16 (43)
Fulfilling BSA criteria	27 (66)	12 (29)	27 (67.5)	12 (28)
Total, n	41	42	40	43

PASI: Psoriasis Area and Severity Index; BSA: body surface area; MDA: minimal disease activity.

Only a minority of patients fulfilling the MDA criteria present a clinically significant number of tender and/or swollen joints. However, the skin criteria were only fulfilled by half of patients with MDA. In patients who were close to fulfilling the MDA criteria, patient's VAS scores (pain and disease activity) and the PASI were the most frequent reasons to fall short of MDA status.

MDA seems to be a valuable tool to define low disease activity in patients with PsA, but the skin component requires further evaluation.

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