Comparison of Composite Measure Remission Targets in Psoriatic Arthritis

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Short running head: Achieving remission in PsA

Abstract

Objective: To identify 1) which composite measure is the most stringent target of remission; and 2) which disease component target proves the most difficult to achieve in the different states of MDA, CPDAI, DAPSA and cDAPSA in patients with PsA.

Methods: 258 PsA patients were recruited. Disease remission was evaluated comparing 4 different composite measures and using remission cut-offs as previously proposed (VLDA (MDA 7/7), CPDAI ≤2, DAPSA ≤4, cDAPSA ≤4).

Results: Patients met VLDA criteria in 9.0% of visits, DAPSA remission in 19.8%, cDAPSA remission in 23.4% and CPDAI remission in 30.2%. Of 258 patients, MDA criteria (≥5/7) were fulfilled in 46.5%. Of those in MDA, VLDA criteria were reached in 25.0%. Patients met the pain VAS target in 57.5 % of visits when they were in MDA, 43.3% when in LDA (MDA 5-6/7) and 44.8% when in CPDAI remission. Multivariate regression analysis revealed that pain VAS was the least likely target to be achieved. Patients with inflammatory-type back pain had significantly higher pain scores; furthermore, a significant relationship was seen between BASDAI and pain VAS.

Conclusion: Based on our analysis, VLDA proved the most stringent target of disease remission in PsA compared to CPDAI, DAPSA and cDAPSA. The pain VAS target of ≤1.5 cm was the most difficult component to achieve. CPDAI ≤2 was found to be the least stringent remission target; however, measurements of axial involvement, which contributed to the elevated pain VAS score in patients not achieving VLDA, were only included as a domain in CPDAI.

INTRODUCTION

Psoriatic arthritis (PsA) is a multifaceted disease with variable inflammation of peripheral joints, spine, entheseal sites, whole digits or dactylitis together with skin and nail psoriasis (1). The heterogeneity of PsA, the recognition of severe phenotypes and the availability of effective but costly biologic therapies contribute to the need to accurately assess patients' overall disease activity and their response to treatment (2). It is recognized that patient's perspective and physician-centric evaluation are complementary and when combined they help to ensure a more reliable reflection of disease burden (3). In the past 10 years, a number of composite measurement tools have been developed to evaluate disease activity in PsA (4, 5). Psoriatic Arthritis Disease Activity Score (PASDAS) (6) was recommended as the composite measure to be used in clinical trials in 2017 by the Group for Research and Assessment of Psoriasis and Psoriatic Arthritis (GRAPPA) and Outcome Measures in Rheumatology (OMERACT) (5)and also most recently at the GRAPPA annual meeting in 2020. In view of the complexitiy of this measure, it is not proposed for routine care (5, 7). There is still no agreement on which composite measure should be recommended for routine clinical practice (4, 5, 7). Consensus has identified definitions of remission, as defined by either Very Low Disease Activity (VLDA) (Minimal Disease Activity (MDA) 7/7), Disease Activity index for PSoriatic Arthritis (DAPSA) ≤4 or clinical DAPSA (cDAPSA) ≤4, as appropriate targets of treatment (8, 9). As yet, there is no validated definition of remission using the Composite Psoriatic Disease Activity Index (CPDAI), however a cut-off score of ≤2 for CPDAI was proposed as being equivalent to VLDA (8). Previous studies have shown that VLDA is a more stringent measure of disease remission than either DAPSA or cDAPSA (7, 10-13), with pain and Patient Global Disease Activity-Visual Analogue Scores (PtGA-VAS) the least likely to be met in achieving MDA status (14). CPDAI was not included in these studies.

The aim of this study was to identify 1) which composite measure is the most stringent target of remission; and 2) which disease component target proves the most difficult to achieve in the different states of MDA, CPDAI, DAPSA and cDAPSA in patients with PsA.

PATIENTS AND METHODS

Patients

Consecutive PsA patients attending our routine weekly spondyloarthropathy (SpA) clinic in Ireland were recruited between December 2014 and September 2016. In this cross-sectional study we have selected those patients, who were 18 years of age or older and fulfilled the ClASsification criteria for Psoriatic ARthritis (CASPAR) (15). Patients underwent musculoskeletal; Tender Joint Count (TJC) 68, Swollen Joint Count (SJC) 66 (16), Leeds Enthesitis Index (LEI) (17), a dactylitis digit count and skin (Psoriasis Area Severity Index (PASI), Body Surface Area (BSA)) assessments (18, 19). Laboratory

measures included C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) by the Westergren method. Several patient-reported outcome measures (PROMs) were obtained including Health Assessment Questionnaire-Disability Index (HAQ-DI) (20), Dermatology Life Quality Index (DLQI) (21), PtGA (22) and pain VAS. Spinal involvement was assessed using the Ankylosing Spondylitis Quality of Life questionnaire (ASQoL) (23) and the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) (24, 25). Inflammatory-type back pain was defined as back pain which is worse after rest or in the morning and which improves with exercise. All data was recorded directly into our freely available, web-based Measuring Outcome in PSoriatic Arthritis (MOPSA) tool (https://mopsa.ie). MOPSA automatically calculates composite scores, including CPDAI and MDA status (26). Written informed consent was not obtained from the patients since this was a non-interventional study and we were using the MOPSA tool to capture standard PsA clinical measurements as part of our weekly clinic. The study was granted Retrospective Chair Persons approval by the Ethics and Medical Research Committee of St. Vincent's University Hospital.

Disease remission

Disease remission was evaluated by 4 different composite measures, including DAPSA, cDAPSA, CPDAI and MDA (Supplementary Table 1). DAPSA is calculated as the sum of TJC, SJC, patient global disease activity VAS (cm), pain VAS (cm) and CRP (mg/dl) (27). A clinical version of DAPSA (cDAPSA) without CRP levels has also been calculated (27). A cut-off score for both DAPSA and cDAPSA of ≤4 was considered as remission as previously published (9). CPDAI is based on the GRAPPA grid and is calculated as the sum of the following five PsA domains (each domain is scored 0-3 giving a total of 0-15): peripheral arthritis (TJC68, SJC66, HAQ-DI); skin disease (PASI, DLQI); enthesitis (LEI, HAQ-DI); dactylitis (dactylitis digit count, HAQ-DI) and axial disease (BASDAI, ASQoL) (2). The previously proposed cut-off of CPDAI ≤2 was used as the definition of remission (8).

The disease state, MDA, was also assessed in our study. Patients were classified as being in MDA if they fulfilled ≥5/7 of the following criteria: TJC ≤1/68; SJC ≤1/66; PASI ≤1 or BSA ≤3; LEI ≤1; PtGA VAS ≤2 (cm); Pain VAS ≤1.5 (cm) and HAQ-DI ≤0.5 (28). Low Disease Activity (LDA) is one of the subsets of MDA, where patients meet 5/7 or 6/7 criteria (MDA 5-6/7). VLDA, equivalent to remission status, was considered present if patients met all of the MDA criteria (MDA 7/7) (8) (Supplementary Table 1).

Statistical analysis

Multiple comparisons between the 4 composite measures were calculated using the Tukey-Kramer's method. Pearson's correlation coefficient (r) was applied to determine the associations between the composite measures, including CPDAI, DAPSA and cDAPSA. Comparisons between groups were performed using Student's *t*-tests for normally distributed continuous data, Wilcoxon's rank sum test

for non-normally distributed data and Chi-squared tests for categorical data (Fisher's exact test for the number of each category ≤10). Logistic regression was used to determine the strength of associations of the different components of MDA with achieving VLDA and linear regression methods were applied to identify the relationship between the pain VAS target and the individual items of the 4 composite measures. P values of <0.05 were considered to be significant. All analyses were performed using the JMP 12 software (SAS Institute).

RESULTS

Comparison of disease remission measures

CPDAI scores and data on MDA status were available in all patients (258 patients, 50.7±12.5 years, male 50.4%). We also measured cDAPSA, with DAPSA where CRP results were available. In total, data on disease remission using the 4 composite measures and previously proposed cut-offs (CPDAI≤2, DAPSA≤4, cDAPSA≤4 and VLDA (MDA 7/7)) was available in 222 patients. The mean age was 50.8±12.3 years with 52.3% male. Only 20 (9.0%) patients fulfilled VLDA criteria, while 44 patients (19.8%) were in DAPSA remission, 52 (23.4%) in cDAPSA remission and 67 patients (30.2%) in CPDAI remission (Table 1). All patients in VLDA (n=20) were also in cDAPSA remission, 19 (95.0%) in DAPSA remission and 16 (80.0%) in CPDAI remission. In contrast, only 43.2% of the patients in DAPSA remission, 38.5% in cDAPSA remission (data not shown) and 23.9% of the patients in CPDAI remission also met VLDA criteria (Supplementary Table 2). Percentages of patients achieving DAPSA, cDAPSA and VLDA remission targets were significantly higher in those with CPDAI≤2 (Supplementary Table 2).

Comparing the individual items of the composite measures, mean PtGA and pain VAS scores, both are not included in CPDAI, were significantly higher among patients in CPDAI remission compared to values in DAPSA, cDAPSA or VLDA remission. The mean score of HAQ-DI was significantly lower among patients in VLDA compared to those in CPDAI, DAPSA and cDAPSA remission. There were no other significant differences in the domain measures between the remission groups (Table 1).

As expected, there was a strong correlation between DAPSA remission and cDAPSA remission ($r=0.97$, $p<0.01$), but CPDAI remission did not correlate with DAPSA and cDAPSA remission ($r=0.15$, $p=0.04$ and $r=0.06$, $p<0.01$) (data not shown).

MDA status

Data from the 258 PsA patients were available for analysis as to which disease component target of MDA proved the most difficult to achieve. MDA criteria (≥5/7) were fulfilled in 120 patients (46.5%). Of those in MDA ≥5/7, there were 90 patients (75.0%) in LDA (5-6/7), while 30 patients (25.0%) met VLDA criteria (Table 2).

Disease component targets of MDA

The percentage of patients achieving the targets of TJC ≤1/68; PASI ≤1 or BSA ≤3; Pain VAS ≤1.5 cm; PtGA VAS ≤2 cm and HAQ-DI ≤0.5 was significantly lower in patients reaching LDA compared to those meeting VLDA criteria. The SJC and LEI targets however were not significantly different (Table 2).

Achievement of pain VAS target

Based on our results (Table 2), the pain VAS ≤1.5 cm target proved the most difficult to achieve, being met in 57.5% of patients with MDA ≥5/7 and in 43.3% of patients when they fulfilled LDA (MDA 5-6/7) criteria (27.1% with MDA 5/7; 61.9% with MDA 6/7). Logistic regression models also demonstrated that the pain VAS ≤1.5 cm target was the least likely component to be achieved (univariate analysis: OR (95% CI): 5.2 (2.95-10.62), p value: <0.01; and multivariate analysis: log OR: 12.0, p value: <0.01) (data not shown).

Achievement of MDA component targets in CPDAI, DAPSA and cDAPSA composite measures

As shown in Table 3, the pain VAS target of ≤1.5 cm was also the most difficult to reach in the CPDAI composite measure, being met in only 44.8% of patients in the remission group and in 20.0% of patients with CPDAI>2. In terms of DAPSA and cDAPSA composite measures, the skin domain (PASI or BSA) and HAQ-DI targets proved the most difficult to achieve in the remission groups. The pain VAS target was found to be the most difficult component to reach among patients not in remission, being met in only 14.0% of patients with DAPSA>4 and in 11.8% of those with cDAPSA>4 (Table 3). Interestingly, LEI ≤1 target was the least difficult component to meet in each composite measure.

Association between pain VAS and the presence of axial disease

The relationship between the pain VAS target and the individual components of MDA, in addition to data on DLQI, BASDAI, ASQoL, ESR, CRP and age were evaluated in the 222 patients using linear regression methods. Analysis demonstrated that BASDAI (β=0.43, p<0.01) had association with pain VAS (data not shown).

Disease domain components of the 4 different composite measures (MDA, CPDAI, DAPSA, cDAPSA) and fulfillment of the remission targets were compared in patients (n=222) based on the achievement of pain VAS target (pain VAS ≤1.5 cm (n=61) versus pain VAS >1.5 cm (n=161)). The mean HAQ-DI, BASDAI, ASQoL, PtGA VAS and TJC scores were significantly higher among patients not fulfilling the pain VAS target, furthermore the percentage of patients with inflammatory-type back pain was also significantly higher in those with pain VAS >1.5 cm (Table 4). Our results suggest therefore that residual back symptoms, in addition to the effect of peripheral arthritis, might be contributing to persistent pain in our patients. As shown in Table 4 the percentage of patients achieving remission criteria for the 4 different composite measures were significantly lower among patients not reaching the pain VAS target.

We have compared domain scores between patients with and without inflammatory-type back pain to evaluate the impact of an ongoing axial disease. Unsurprisingly, BASDAI and ASQoL were

significantly higher among patients with back pain, but pain VAS and TJC scores were also significantly increased, supporting the association between spinal involvement and pain. The percentage of patients fulfilling VLDA, CPDAI and cDAPSA remission targets were significantly lower among patients with back pain (Table 5).

DISCUSSION

There is as yet no agreement as to which composite disease activity measure should be recommended in routine clinical practice (4). MDA 7/7 or VLDA has been proposed as an ideal treatment target, with MDA ≥5/7 as a feasible alternative (5). Consistent with data from previous studies, we have observed that VLDA is a more stringent measure of remission than DAPSA, cDAPSA or CPDAI (10, 11). Only 9.0% of patients met VLDA criteria, while 19.8% of patients were in DAPSA remission, 23.4% in cDAPSA remission and 30.2% in CPDAI remission. Our results are in keeping with the rates of remission using VLDA (9.0% vs. 13.1%) and DAPSA (19.8% vs. 23.1%) composite measures, reported by Hagège et al. (7). This recently published review and meta-analysis clearly demonstrated the heterogeneity in the prevalence of remission status depending on the composite measure and definition used (7). Based on our analysis, CPDAI appears to be the least stringent target of disease remission owing perhaps to the absence of pain and PtGA VAS in the CPDAI components. Interestingly, common components such as TJC, SJC, LEI and skin activity did not show significant difference between the remission groups. When patients met VLDA criteria (n=20), 16 (80.0%) were also in CPDAI remission; in contrast, only 23.9% of the patients in CPDAI remission also fulfilled VLDA criteria. It is noteworthy that CPDAI is the only composite tool which includes measures of axial involvement, though it does not contain pain and PtGA VAS, which may explain the modest overlap with VLDA. No correlation was detected between CPDAI and DAPSA or cDAPSA remission, suggesting that CPDAI reflects additional disease components other than peripheral arthritis (29). Previous analysis of data from the BioTRAC registry showed that PASI, pain and PtGA VAS scores were least likely to be met in patients achieving MDA (14). Based on our results, the pain VAS target of ≤1.5 cm is the most difficult component to achieve among patients both in MDA ≥5/7 (57.5%) and in LDA 5-6/7 (43.3%). In contrast to our data, Queiro et al. reported that more than 75.0% of patients in MDA achieved the pain VAS ≤15 criterion, while the PtGA VAS score ≤20 was reached by only 43.0% of them (30).

Interestingly, we have found that the pain VAS target of ≤1.5 cm was also the most difficult to achieve in CPDAI remission. Lubrano et al. demonstrated that residual disease activity (RDA) could persist even when patients fulfilled MDA ≥5/7 and criteria for DAPSA remission (≤4) (13). In agreement with our results, they found that VLDA is the most stringent composite measure and that residual skin criteria

(PASI>1 or BSA>3%) when in DAPSA remission and a pain VAS target of >15 when in MDA are the most frequent RDA components (13).

Evaluating the relationship between pain VAS target and the disease domain components of the 4 different composite measures, we have revealed a significant association between BASDAI and pain VAS; furthermore we have found that the presence of persistent back pain and features of spinal inflammation as reflected by BASDAI and ASQoL were significantly higher in those who did not achieve the pain VAS target. This suggests that residual back symptoms rather than other disease components (enthesitis, dactylitis, skin) may drive the elevated pain VAS score in patients not achieving VLDA. Queiro et al. presented significantly higher mean BASDAI score among patients not fulfilling the MDA (≥5/7) criteria (30), however Lubrano et al. found no association between the pain VAS domain and the presence of axial involvement (13). Based on our analysis, patients with inflammatory-type back pain had significantly higher pain VAS scores compared to those without back pain. The percentages of patients in VLDA, CPDAI and cDAPSA remission were significantly lower among patients with back pain and with pain VAS >1.5 cm. These results suggest that as the axial domain is not included in MDA, symptoms related to spinal inflammation may persist and contribute to ongoing levels of pain.

There are a number of limitations of our study. Firstly, spinal involvement was assessed only on clinical grounds, we did not confirm routinely the presence of axial disease with plain X-ray or Magnetic Resonance Imaging. Secondly, we acknowledge that there are limitations to the axial measures included in this study, BASDAI and ASQoL. BASDAI includes a question on peripheral joint disease which may be a dominant feature in PsA patients. Our results show that BASDAI also reflects axial inflammation, which in measures other than CPDAI is otherwise ignored. Nevertheless, better measures of axial inflammation in PsA clearly need to be developed with a study to address this question being planned by the GRAPPA. Thirdly, we were unable to include the PASDAS, which would have been of interest. This was because of the cost of including the SF36, which is patent protected, in our MOPSA tool. Important to note that we do not yet know if there is a difference in long-term radiographic or functional outcome or in long-term quality of life between those in VLDA versus those in MDA and between the remission groups. There is a concern that treatment escalation in an effort to achieve remission may expose the patient to additional risk of adverse effects without providing benefit.

There are a number of strengths in this study including the large number of patients where appropriate data was recorded with novel results regarding the CPDAI composite measure. One of the features of the MOPSA tool is that it does not permit the user to go forward if data have not been captured meaning that there were no missing data points. A further strength is that this analysis was performed in a routine clinical setting and not in the setting of a randomised controlled trial where patients were selected on the basis of active peripheral joint inflammation. This demonstrates that collecting more

complete outcome data, using a tool such as MOPSA, is feasible in routine practice. It is noteworthy that patient burden (78% completed online PROMs in <10 minutes versus 64% for paper version) and physician time (7 minutes to complete 66SJC, 68TJC, LEI, dactylitic digit count, PASI and BSA) is more than compensated by being able to utilize MOPSA to demonstrate to patients using a spydergram the extent of their current disease and how that might influence treatment decisions (data not published). In conclusion, in a real-world clinical setting, VLDA proved to be the most stringent target of disease remission compared to DAPSA, cDAPSA and CPDAI composite measures. The pain VAS target of ≤1.5 cm was the most difficult component to achieve in patients undergoing treatment for their PsA. CPDAI ≤2 was found to be the least stringent remission criteria; however, measurements of axial involvement, which contributed to the elevated pain VAS score in patients not achieving VLDA, were only included as a domain in the CPDAI.

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Table Legends:

Table 1. Comparison of age, gender and the individual items of the composite measures between the remission groups (CPDAI ≤2, DAPSA ≤4, cDAPSA ≤4 and VLDA (MDA 7/7)).

Table 2. Comparison of the percentage of patients achieving the disease component targets in the different states of MDA.

Table 3. Achievement of MDA component targets in CPDAI, DAPSA and cDAPSA composite measures.

Table 4. Comparison of disease domain values of the 4 different composite measures between those patients who met or did not meet the pain VAS ≤1.5 cm target.

Table 5. Disease domain scores in patients with and without inflammatory-type back pain.

Supplementary Tables:

Supplementary Table 1. The individual disease domains of the composite measures (CPDAI, MDA, DAPSA, cDAPSA).

Supplementary Table 2. Patient and disease characteristics comparing between those in CPDAI remission versus those with CPDAI >2.

Table 1.

Total number of patients: 222	**All**	**CPDAI≤2**	**DAPSA≤4**	**cDAPSA≤4**	**VLDA MDA 7/7**	**p value**
Number of patients (%)	222	67 (30.2%)	44 (19.8%)	52 (23.4%)	20 (9.0%)	
Mean age±SD	50.8±12.3	51.2±11.6	52.7±10.8	51.2±11.6	53.0±7.8	0.88
Gender (male, n (%))	116 (52.3)	23 (34.3)	18 (40.9)	18 (34.6)	6 (30.0)	0.83
TJC (0-68)	3.4±4.6	0.5±0.9	0.3±0.6	0.3±0.7	0.3±0.4	0.47
SJC (0-66)	1.2±3.3	0.1±0.3	0.1±0.4	0.1±0.4	0.1±0.2	0.94
LEI (0-6)	0.3±0.6	0	0	0	0	-
PASI (0-72)	2.8±3.5	1.6±2.2	2.0±2.8	2.1±2.8	1.0±1.5	0.34
BSA (0-100)	3.4±5.7	1.6±2.6	1.6±2.4	1.7±2.5	0.7±0.9	0.39
Dactylitis digit count (0-20)	0.2±0.7	0	0.1±0.3	0.1±0.3	0.1±0.2	0.08
BASDAI (0-10)	3.3±2.1	1.8±1.3	1.5±1.2	1.4±1.2	1.3±1.0	0.63
ASQoL (0-18)	4.9±5.0	1.8±3.3	1.8±3.4	1.6±3.2	1.3±2.4	0.97
HAQ-DI (0-3)	0.7±0.7	0.4±0.6	0.4±0.5	0.4±0.6	0.1±0.2	<0.01 *
DLQI (0-30)	3.0±4.6	1.6±2.7	1.4±2.3	1.4±2.2	0.9±1.0	0.62
Pain VAS (0-10)	3.6±2.7	2.2±2.0	0.8±1.0	0.8±1.0	0.4±0.5	<0.01 **
PtGA VAS (0-10)	3.5±2.6	2.0±1.8	0.7±0.7	0.8±0.9	0.8±0.8	<0.01 **
CRP (mg/L)	4.8±7.8	3.9±7.4	2.5±3.4	3.9±7.7	4.1±7.2	0.68
Inflammatory back pain, n (%)	120 (54.1)	18 (26.9)	19 (43.2)	21 (40.4)	6 (30.0)	0.24

Results are presented as mean±SD or number (percentage). Tukey-Kramer's method.

* VLDA versus DAPSA, cDAPSA and CPDAI, ** CPDAI versus DAPSA, cDAPSA and VLDA.

CPDAI: Composite Psoriatic Disease Activity Index; DAPSA: Disease Activity index for PSoriatic Arthritis; cDAPSA: clinical DAPSA; VLDA: Very Low Disease Activity (Minimal Disease Activity (MDA) 7/7); TJC: tender joint count; SJC: swollen joint count; LEI: Leeds Enthesitis Index; PASI: Psoriasis Area Severity Index; BSA: Body Surface Area; BASDAI: Bath Ankylosing Spondylitis Disease Activity Index; ASQoL: Ankylosing Spondylitis Quality of Life questionnaire; HAQ-DI: Health Assessment Questionnaire-Disability Index; DLQI: Dermatology Life Quality Index; PtGA VAS: Patient global disease activity by visual analogue score (VAS); CRP: C-reactive protein.

Table 2.

Total number of patients: 258	**All**	**Non-MDA**	**MDA ≥5/7**	**MDA 5/7**	**MDA 6/7**	**LDA 5-6/7**	**VLDA 7/7**	**LDA vs. VLDA p value**
No. of patients	258	138	120	48	42	90	30	
Gender, male %	50.4%	40.6%	61.7%	58.3%	59.5%	58.9%	70.0%	0.39
Mean age±SD	50.7±12.5	50.4±12.9	51.0±12.1	51.1±12.7	51.5±12.4	51.3±12.5	50.0±11.1	0.62*
TJC≤1/68	134 (51.9)	36 (26.1)	98 (81.7)	32 (66.7)	36 (85.7)	68 (75.6)	30 (100)	<0.01
SJC≤1/66	221 (85.7)	105 (76.1)	116 (96.7)	44 (91.7)	42 (100)	86 (95.6)	30 (100)	0.57
LEI≤1	227 (88.0)	107 (77.5)	120 (100)	48 (100)	42 (100)	90 (100)	30 (100)	1.00
PASI≤1 or BSA≤3	179 (69.4)	84 (60.9)	95 (79.2)	33 (68.8)	32 (76.2)	65 (72.2)	30 (100)	<0.01
Pain VAS≤1.5 cm	74 (28.7)	5 (3.6)	69 (57.5)	13 (27.1)	26 (61.9)	39 (43.3)	30 (100)	<0.01
PtGA VAS≤2 cm	116 (45.0)	15 (10.9)	101 (84.2)	30 (62.5)	41 (97.6)	71 (78.9)	30 (100)	<0.01
HAQ-DI≤0.5	134 (51.9)	31 (22.5)	103 (85.8)	40 (83.3)	33 (78.6)	73 (81.1)	30 (100)	<0.01

Unless otherwise stated, data are presented as number and (percentage) of patients.

*By *t*-test; Chi-squared test otherwise.

MDA: Minimal Disease Activity; LDA: Low Disease Activity; VLDA: Very Low Disease Activity; TJC: tender joint count; SJC: swollen joint count; LEI: Leeds Enthesitis Index; PASI: Psoriasis Area Severity Index; BSA: Body Surface Area; PtGA VAS: Patient global disease activity by visual analogue score (VAS); HAQ-DI: Health Assessment Questionnaire-Disability Index.

Table 3.

Total number: 222	CPDAI ≤2	CPDAI >2	p value	DAPSA ≤4	DAPSA >4	p value	cDAPSA ≤4	cDAPSA >4	p value
No. of patients	67	155		44	178		52	170	
TJC≤1/68	60 (89.6)	46 (29.7)	<0.01 *	43 (97.7)	63 (35.4)	<0.01 *	50 (96.2)	56 (32.9)	<0.01 *
SJC≤1/66	67 (100)	122 (78.7)	<0.01 *	43 (97.7)	146 (82.0)	<0.01 *	51 (98.1)	138 (81.2)	<0.01 *
LEI≤1	67 (100)	133 (85.8)	<0.01 *	44 (100)	156 (87.6)	<0.01 *	52 (100)	148 (87.1)	<0.01 *
PASI≤1 or BSA≤3	53 (79.1)	100 (64.5)	0.03 †	34 (77.3)	119 (66.9)	0.21 *	40 (76.9)	113 (66.5)	0.14 †
Pain VAS≤1.5 cm	30 (44.8)	31 (20.0)	<0.01 †	36 (81.8)	25 (14.0)	<0.01 *	41 (78.8)	20 (11.8)	<0.01 †
PtGA VAS≤2 cm	46 (68.7)	51 (32.9)	<0.01 †	44 (100)	53 (29.8)	<0.01 *	51 (98.1)	46 (27.1)	<0.01 *
HAQ-DI≤0.5	50 (74.6)	62 (40.0)	<0.01 †	34 (77.3)	78 (43.8)	<0.01 *	40 (76.9)	72 (42.4)	<0.01 †

Results are presented as number and (percentage) of patients.

*By Fisher's exact test; †By Chi-squared test.

CPDAI: Composite Psoriatic Disease Activity Index; DAPSA: Disease Activity index for PSoriatic Arthritis; cDAPSA: clinical DAPSA; TJC: tender joint count; SJC: swollen joint count; LEI: Leeds Enthesitis Index; PASI: Psoriasis Area Severity Index; BSA: Body Surface Area; PtGA VAS: Patient global disease activity by visual analogue score (VAS); HAQ-DI: Health Assessment Questionnaire-Disability Index.

Table 4.

Total number of patients: 222	**Pain VAS ≤1.5 cm** n=61	**Pain VAS >1.5 cm** n=161	**p value**
Mean age±SD	50.5±10.6	50.9±13.0	NS
Gender (male, n (%))	39 (63.9)	77 (47.8)	0.03 *
TJC (0-68)	1.3±2.1	4.1±5.1	<0.01 **
SJC (0-66)	0.6±2.2	1.4±3.7	NS
Dactylitis digit count (0-20)	0.2±0.7	0.3±0.7	NS
LEI (0-6)	0.1±0.5	0.3±0.7	NS
PASI (0-72)	2.7±3.1	2.9±3.7	NS
BSA (0-100)	2.9±3.8	3.6±6.3	NS
CRP (mg/dl)	0.4±0.7	0.5±0.8	NS
DLQI (0-30)	2.0±2.7	3.3±5.1	NS
PtGA VAS (0-10)	1.7±2.2	4.2±2.4	<0.01 **
HAQ-DI (0-3)	0.4±0.6	0.9±0.7	<0.01 **
BASDAI (0-10)	1.5±1.2	3.8±1.9	<0.01 **
ASQoL (0-18)	1.5±2.5	6.0±5.1	<0.01 **
Inflammatory back pain, n (%)	23 (37.7)	97 (60.2)	<0.01 *
DAPSA≤4, n (%)	36 (59.0)	8 (5.0)	<0.01***
cDAPSA≤4, n (%)	41 (67.2)	11 (6.8)	<0.01*
CPDAI≤2, n (%)	30 (49.2)	37 (23.0)	<0.01 *
VLDA, n (%)	20 (32.8)	0 (0)	<0.01***

Unless otherwise stated (n (%): number and (percentage) of patients), data are presented as mean±SD.

*By Chi-squared test; ** By Wilcoxon's rank sum test; ***By Fisher's exact test.

Pain VAS: pain visual analogue score; TJC: tender joint count; SJC: swollen joint count; LEI: Leeds Enthesitis Index; PASI: Psoriasis Area Severity Index; BSA: Body Surface Area; CRP: C-reactive protein; DLQI: Dermatology Life Quality Index; PtGA VAS: Patient global disease activity by VAS; HAQ-DI: Health Assessment Questionnaire-Disability Index; BASDAI: Bath Ankylosing Spondylitis Disease Activity Index; ASQoL: Ankylosing Spondylitis Quality of Life questionnaire; DAPSA: Disease Activity index for PSoriatic Arthritis; cDAPSA: clinical DAPSA; CPDAI: Composite Psoriatic Disease Activity Index; VLDA: Very Low Disease Activity (Minimal Disease Activity (MDA) 7/7); NS: Not Significant.

Table 5.

Total number of patients: 222	**No back pain**	**Inflammatory-type back pain**	**p value**
	n=102	n=120	
Mean age±SD	50.8±12.7	50.8±12.1	NS
Gender (male, n (%))	59 (57.8)	57 (47.5)	NS
TJC (0-68)	2.2±3.5	4.4±5.2	<0.01 *
SJC (0-66)	0.9±2.7	1.4±3.8	NS
Dactylitis digit count (0-20)	0.2±0.7	0.3±0.6	NS
LEI (0-6)	0.3±0.6	0.3±0.7	NS
PASI (0-72)	3.0±3.9	2.7±3.3	NS
BSA (0-100)	3.9±6.9	2.9±4.5	NS
CRP (mg/L)	5.0±7.8	4.7±7.8	NS
DLQI (0-30)	3.0±4.7	2.9±4.6	NS
Pain VAS (0-10)	3.1±2.8	4.0±2.6	<0.01 *
PtGA VAS (0-10)	3.2±2.6	2.9±4.5	0.05 **
HAQ-DI (0-3)	0.6±0.8	0.8±0.7	NS
BASDAI (0-10)	1.9±1.5	3.5±2.0	<0.01 *
ASQoL (0-18)	2.9±4.8	5.3±5.0	<0.01 *
DAPSA≤4, n (%)	25 (24.5)	19 (15.8)	NS
cDAPSA≤4, n (%)	31 (30.4)	21 (17.5)	0.02 ***
CPDAI≤2, n (%)	49 (48.0)	18 (15.0)	<0.01***
VLDA, n (%)	14 (13.7)	6 (5.0)	0.03****

Unless otherwise stated (n (%): number and (percentage) of patients), data are presented as mean±SD.

*By Wilcoxon's rank sum test; **By *t*-test; ***By Chi-squared test; ****By Fisher's exact test.

TJC: tender joint count; SJC: swollen joint count; LEI: Leeds Enthesitis Index; PASI: Psoriasis Area Severity Index; BSA: Body Surface Area; CRP: C-reactive protein; DLQI: Dermatology Life Quality Index; PtGA VAS: Patient global disease activity by visual analogue score (VAS); HAQ-DI: Health Assessment Questionnaire-Disability Index; BASDAI: Bath Ankylosing Spondylitis Disease Activity Index; ASQoL: Ankylosing Spondylitis Quality of Life questionnaire; DAPSA: Disease Activity index for PSoriatic Arthritis; cDAPSA: clinical DAPSA; CPDAI: Composite Psoriatic Disease Activity Index; VLDA: Very Low Disease Activity (Minimal Disease Activity (MDA) 7/7); NS: Not Significant.