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Original article

Patients with psoriatic arthritis have worse quality of life than those with psoriasis alone

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Abstract

Objective. PsA is an inflammatory arthritis present in ~30% of people with psoriasis (PsC). Both conditions have a significant impact on quality of life (QoL). Our objective was to test the hypothesis that people with PsA have poorer QoL than patients with PsC because of the added burden of arthritis, age and comorbidities.

Methods. Consecutive patients with PsA (CASPAR criteria) and PsC were approached to participate in this study. Patients with PsC were examined by a rheumatologist using a standardized protocol to exclude PsA. Patients completed the HAQ, Medical Outcome Study 36-item Short Form Health Survey, Dermatology Life Quality Index (DLQI), EuroQoL 5 domains (EQ-5D) and Fatigue Severity Scale (FSS). Mean scores were compared and multivariate analyses were conducted to compare the QoL measures between the two patient groups.

Results. Two hundred and one patients with PsC and 201 patients with PsA were studied. A significant decrease in QoL for patients with PsA compared with those with PsC was identified by all questionnaires except for the DLQI. This skin-specific questionnaire revealed a lower QoL in patients with PsC. Multivariate analyses for each QoL measure confirmed the results of these analyses. After adjusting for age, sex, duration of PsC, comorbidities, DMARDs and biologic therapy, HAQ and DLQI were independently associated with PsA in a logistic regression.

Conclusion. Patients with PsA have a poorer QoL compared with those with PsC as measured by all questionnaires except the DLQI.

Key words: quality of life, patient-reported outcomes, comorbidities, psoriasis, psoriatic arthritis.

Introduction

Psoriasis (PsC) is a chronic inflammatory skin disease with a prevalence of 1–3% in the general population [1]. In its various forms, PsC is associated with a major impact on quality of life (QoL) [2]. PsC can be treated with a variety of agents, including topical CSs, topical vitamin D analogues, phototherapy, MTX, acetretin and ciclosporin and biologic therapies such as anti-TNF agents [3]. Body surface area affected by PsC, a measure of disease severity, had the greatest association with decreased QoL in one study [4]. Women and younger patients have an increased impairment in QoL compared with older men [4]. The results of a 1998 National Psoriasis Foundation Patient-Membership Survey showed that individuals with PsC believe that the disease has a profound emotional, social and physical impact on their QoL [2]. As well, many perceived the inefficacy of their treatments as a further impairment of their QoL [2].

PsA, an inflammatory musculoskeletal disease affecting the peripheral joints, axial skeleton and the entheses develops in up to 30% of patients with PsC [5]. The exact prevalence of PsA among patients with PsC is unknown. Estimates vary from 11% of patients with cutaneous PsC developing PsA to as high as 34% [6, 7]. PsA treatments include NSAIDs, SSZ, MTX, ciclosporin and anti-TNF agents [8]. Akin to PsC, PsA and its treatments are found to have a considerable impact on QoL. Consistent among past studies, the presence of PsA is strongly

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CLINICAL SCIENCE

associated with a decrease in QoL, especially with regards to an individual's physical health. Patients with PsA commonly report role limitations, emotional problems and bodily pain in QoL assessments [9].

While both PsC and PsA have been shown to have a major impact on an individual's perception of QoL, very few studies have compared the QoL of those with PsA with those who have cutaneous disease only. The aim of our study was to compare QoL and function among patients with PsA and those with PsC, all of whom were clinically evaluated to ascertain disease extent and severity.

Methods

Patient selection

The study was approved by the Research Ethics Board of the University Health Network and all patients gave informed consent to participate in the study. Patients with PsC were recruited into a longitudinal observational cohort initiated in January 2006 to determine the incidence of PsA among patients with PsC and to identify genetic and environmental factors for the development of PsA. PsC was confirmed by a dermatologist. All patients underwent an evaluation by a rheumatologist to exclude the presence of PsA. The standard protocol includes a complete history, physical examination, including a general physical assessment of peripheral joints for tenderness, swelling and deformities, and axial assessment. If there was suspicion of any musculoskeletal involvement, radiographs and laboratory tests were obtained. Patients were recruited from the Women's College Hospital Phototherapy Education and Research Centre and Dermatology Clinic, the Toronto Western Hospital Phototherapy Centre and Dermatology Clinic, as well as private dermatology offices.

Patients with PsA attending the Psoriatic Arthritis Clinic at the Toronto Western Hospital have been enrolled in a longitudinal observational cohort since 1978. Only patients who have been followed since January 2006 were included in this study. PsA was defined as an inflammatory arthritis associated with PsC, and 99% of the patients fulfilled CASPAR criteria.

Clinical assessments

Patients with PsA were assessed according to a standard protocol that includes a detailed history and physical examination as well as laboratory and radiographic assessments [10]. PsC patients were clinically evaluated by a rheumatologist (L.E., V.C., D.D.G.) according to the same standardized protocol to confirm the diagnosis of PsC without arthritis. Only patients who have PsC without inflammatory arthritis were followed in the PsC cohort.

Questionnaires

Five questionnaires were completed by each patient. The HAQ is an instrument that measures function and was originally developed for patients with RA [11]. The HAQ asks questions about pain and the ability to perform the activities of daily living. The derived score ranges from 0 to 3, with higher numbers reflecting greater disability. The HAQ has been validated for patients with PsA and has been shown to be related to disease activity [9, 12–13]. A modified version of the HAQ that includes questions on PsC did not add any further information to the original HAQ in patients with PsA [14].

The Medical Outcome Study 36-item Short Form Health Survey (SF-36) was developed to assess functional health status and well-being across diverse populations and health care settings and thus is a generic QoL measure [15]. The SF-36 questionnaire consists of eight sections: physical function (PF), pain, vitality, social functioning, mental health, general health perception, role limitations due to physical problems and role limitation due to personal or emotional problems. It has been validated for PsA [16]. The SF-36 may be collapsed into two components: the physical component score (PCS) and the mental component score (MCS). Lower scores on the SF-36 and its components reflect decreased QoL.

The Dermatology Life Quality Index (DLQI) was developed to measure QoL in patients with skin conditions [17]. It has been validated for PsC [18]. Higher scores reflect a decreased QoL.

The EuroQoL 5 domains (EQ-5D) was developed by the EuroQoL group to determine QoL [19]. It is a generic instrument that has also been used as a health utility measure. It defines health in terms of mobility, self care, usual activities, pain/discomfort and anxiety/depression, with each dimension rated as no problem, some to moderate problem and extreme problem. The EQ-5D transforms the results into a utility score between 0 (worst health state) and 1 (best health state), with higher numbers representing better health [19].

The modified Fatigue Severity Scale (mFSS) includes nine items that inquire about the extent to which fatigue influences motivation, exercise, physical functioning, duties and responsibilities, work, family and social life. Respondents rate each item on a scale from 0 (not at all) to 10 (entirely), with an average overall score (0–10) being computed. Higher numbers reflect more severe fatigue [20].

The Functional Comorbidity Index (FCI) is a summary measure of an 18-item list of diagnoses [21]. The FCI is used to determine the physical aspect of health-related QoL [22]. The FCI was determined for both groups.

Statistical analysis

Descriptive statistics and correlations were completed to assess the differences between patients with PsC and those with PsA. Separate univariate and multivariate analyses were initially conducted to compare the two groups of patients with respect to QoL and functional capacity. A logistic regression model was then fit to compare all the QoL measures, while adjusting for age, sex, duration of PsC, the FCI score and the use of disease-modifying drugs (including DMARDs and biologics), to discriminate between the two patient groups.

TABLE 1 Demographics and disease characteristics

Feature	Mean (S.D.)		P-value
	PsC ($n = 201$)	PsA ($n = 201$)	
Sex: female, (%)	40.3	38.8	0.76
Age, years	46.8 (12.5)	51.7 (13.7)	0.0002
Age at onset PsC, years	30.2 (14.8)	27.1 (13.4)	0.03
Age at onset PsA, years	–	35.0 (12.5)	–
Disease duration (PsC), years	16.6 (14.3)	24.6 (12.2)	<0.0001
Disease duration (PsA), years	–	16.7 (11.7)	–
PASI	5.5 (6.0)	3.9 (4.5)	0.002
Actively inflamed joint count[a]	–	3.7(6.7)	–
Clinically deformed joint count[b]	–	14.2 (15.5)	–
Axial disease, %[c]	–	98 (50.3)	–

[a]Number of tender and/or swollen joints on a 68/66 joint count. [b]Number of joints with either limitation of range of movement greater than 20% of the range not related to the presence of joint effusion, the presence of joint deformities, subluxation, flail joints or ankylosis. [c]Axial disease based on New York criteria.

Results

Two hundred and one patients with PsC and an equal number with PsA participated in the study. The demographics and description of the patients can be seen in Table 1. Of note, the mean age of onset of PsC was 30.2 years, and 27.1 years in those with PsA. The duration of PsC among PsA patients was longer than that for those without joint disease (24.6 *vs* 16.6 years) ($P < 0.0001$). The mean Psoriasis Area Severity Index (PASI) score was greater in people with PsC. Those with PsC had a mean PASI of 5.5 compared with those with PsA who had a mean PASI of 3.9 ($P = 0.0025$).

Not surprisingly, patients with PsA had a mean HAQ score that was higher than that of patients with PsC (0.6 *vs* 0.1, $P < 0.0001$) (Table 2). Patients with PsA thus demonstrated greater disability than those with PsC only, likely reflecting the added functional disability due to the joint disease.

With regard to the SF-36, the physical component summary was higher in patients with PsC compared with those with PsA (49.7 *vs* 42.2, $P<0.0001$), reflecting better QoL in patients whose PsC is not complicated by arthritis. However, the mental summary appeared to be similar in both groups of patients (47.1 *vs* 46, $P =$ not significant).

PsA patients were found to a have lower EQ-5D than patients with PsC (0.8 *vs* 0.9, $P < 0.0001$), again reflecting a decreased QoL compared with patients with PsC. Patients with PsA had higher mFSSs than patients with PsC (4.3 *vs* 3.4, $P = 0.0007$), suggesting that patients with PsA experience more fatigue than patients with PsC.

The mean DLQI score in patients with PsC was higher than the mean of those with PsA (7.7 *vs* 4.5, $P < 0.0001$). This may be due to more severe skin disease in patients with PsC than those with PsA. In order to determine whether there was a correlation between the DLQI and the severity of PsC, we determined the correlation between the DLQI score and the PASI score. There was a fair correlation (Pearson's correlation of 0.38, $P < 0.0001$) between the DLQI and PASI overall, which was stronger in patients with PsA (0.49) than those with PsC (0.27). However, it should be noted that many of the PsC patients were recruited while receiving treatment for PsC and their PASI scores may reflect improvement from ongoing therapy.

The mean FCI score for PsC was 0.45, while for patients with PsA, it was 0.97, indicating a higher burden of comorbidity among patients with both cutaneous disease and arthritis. The score was significantly higher among patients with PsA with a $P < 0.0001$.

Among patients with PsA, there was a modest correlation between the number of actively inflamed joints and the HAQ, DLQI and the EQ-5D. Only the HAQ correlated with the number of damaged joints (Table 3). All the components of the SF-36 as well as the summary measures correlated with the actively inflamed joint count, but only the PF domain and the PCS correlated with the number of damaged joints.

When conducting the multivariate analysis between the two patient groups, controlling for age, sex, duration of PsC and the FCI score, a separate model was obtained for each questionnaire. After multivariate analysis, the results of the comparisons between the two patient groups remained similar to those obtained after univariate analyses for all of the questionnaire scores.

Further analysis using stepwise logistic regression included the scores for each questionnaire, as well as age, sex, duration of PsC, the FCI score, use of disease-modifying drugs (including DMARDs and biologics). After adjusting for age, sex, duration of PsC, comorbidities, DMARDs and biologic therapy, the HAQ and DLQI were independently associated with PsA. For a 0.1 unit increase in the HAQ score, the odds of a patient in the study having a diagnosis of PsA as opposed to PsC increased two times [odds ratio (OR) = 2.00; 95% confidence interval (CI) 1.33, 3.00; $P = 0.0003$)]. On the other hand, for each unit increase in the DLQI there was a lower likelihood that a patient would be diagnosed with PsA (OR 0.81; 95% CI 0.73, 0.91; $P = 0.0001$).

Table 2 QoL assessment scores

Questionnaire	Mean (S.D.) PsC ($n = 201$)	Mean (S.D.) PsA ($n = 201$)	*P*-value
HAQ (0–3)	0.1 (0.3)	0.6 (0.7)	<0.0001
SF-36			
Health	3.8 (0.8)	3.4 (1.1)	<0.0001
PCS (0–100)	49.7 (9.4)	42.2 (12.2)	<0.0001
MCS (0–100)	47.1 (10.3)	46.0 (12.1)	0.3269
PF	86.2 (20.2)	68.8 (29.1)	<0.0001
RP	76.7 (35.7)	61.3 (43.6)	0.0002
BP	78.9 (22.1)	61.8 (25.2)	<0.0001
GH	69.0 (18.7)	56.7 (24.1)	<0.0001
VT	61.2 (20.2)	52.4 (24.6)	0.0001
SF	81.6 (22.3)	74.4 (25.6)	0.003
RE	76.0 (36.6)	70.6 (40.8)	0.16
MH	72.4 (17.7)	69.7 (19.8)	0.17
EQ-5D	0.9 (0.1)	0.8 (0.2)	<0.0001
FSS (0–10)	3.4 (2.5)	4.3 (3.1)	0.0007
DLQI (0–30)	7.7 (6.1)	4.5 (5.0)	<0.0001

SF-36: Medical Outcome Study 36-item Short Form Health Survey; RP: role physicial; BP: bodily pain; GH: general health; VT: vitality; SF: social function; RE: role emotional; MH: mental health.

Table 3 Correlation between measures of disease activity and damage and QoL and function measures

Variables	Correlation with active joint count	*P*-values	Correlation with damaged joint count	*P*-values
HAQ	0.44	<0.0001	0.32	<0.0001
DLQI	0.26	0.0002	0.06	0.42
EQ-5D	−0.41	<0.0001	−0.14	0.06
FSS	0.37	<0.0001	0.09	0.21
SF-36				
Health	−0.37	<0.0001	−0.09	0.20
PF	−0.36	<0.0001	−0.22	0.002
RP	−0.33	<0.0001	−0.15	0.03
BP	−0.48	<0.0001	−0.10	0.16
GH	−0.34	<0.0001	−0.08	0.28
VT	−0.39	<0.0001	−0.05	0.50
SF	−0.42	<0.0001	−0.09	0.21
RE	−0.37	<0.0001	−0.13	0.06
PCS	−0.36	<0.0001	−0.23	0.001
MCS	−0.34	<0.0001	−0.006	0.93

Discussion

Cutaneous PsC and PsA both have an impact on the QoL experienced by people with these disorders. Our study confirms our hypothesis that patients with PsA have more functional disability and reduced QoL compared with patients with PsC without arthritis. The only measure that found a greater decrease in QoL in patients with PsC alone (PsC) was the DLQI, a skin-specific instrument, determining the effect of skin disease on QoL. The results did not change when models controlling for age, gender, disease duration and FCI score were used. Thus the added burden was not related to the presence of other comorbidities. After adjusting for age, sex, duration of PsC, comorbidities, DMARDs and biologic therapy, the HAQ and DLQI were independently associated with PsA.

Several papers have studied this issue, with conflicting results. Two studies demonstrated that people with PsA have a decreased QoL compared with those with PsC alone [23–24]. Of note, these studies did not use the same survey instruments. The former used the DLQI and the SF-36, while the latter used a PsC-specific Psoriasis Disability Index and a Psoriasis Life Stress Inventory. The 2005 Spring US National Psoriasis Foundation Quality of Life study compared the self-reported disease histories of 140 patients with PsA with those of 278 patients with cutaneous PsC only [25]. No significant difference in overall QoL between these two groups was found. Multiple limitations are cited by the authors, including diagnosing both PsC and PsA in the absence of standard diagnostic criteria. Cutaneous severity was diagnosed by body surface area alone. It was felt that the survey instruments used may not have adequately allowed the PsA patients to document the effect of their arthritis on their QoL [25].

A study from Sweden found that the extent of skin and joint disease related to higher scores, reflecting a poorer QoL [26]. Our results support this study, as we have shown that PsA places an added burden on the diminished QoL caused by the cutaneous disease.

Our study is unique in that both groups of patients came from the same centre, patients' diagnoses were confirmed

by dermatologists and rheumatologists and patients with PsC were confirmed not to have PsA.

The relationship between skin severity and DLQI was recently reported. Ninety-two patients were studied and a weak correlation between PsC severity and DLQI was detected (0.27) [27]. We found a somewhat stronger correlation in our 201 patients with a correlation coefficient of 0.38.

In summary, using multiple questionnaires to assess QoL, we have found that patients with PsA have a decreased QoL and function compared with those with cutaneous PsC alone. The difference in the QoL burden between those with and without arthritis was not found to be related to other comorbidities. Thus it is important to identify the presence of PsA among patients with PsC in order to treat them appropriately and prevent the added burden on these patients.

Rheumatology key messages

- PsA patients have a decreased QoL and function compared with those with cutaneous PsC alone.
- The QoL burden was not related to other comorbidities in PsA.
- It is important to identify the presence of PsA among patients with PsC.

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