Health-related quality of life in early psoriatic arthritis compared with early rheumatoid arthritis and a general population

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ABSTRACT

Objective: Both psoriatic arthritis (PsA) and rheumatoid arthritis (RA) have a significant impact on quality of life, but few reports have compared the two diseases. The current study assessed health-related quality of life (HRQoL) in PsA at diagnosis and after five years compared with early rheumatoid arthritis (RA) and a matched general population.

Methods: Patients with early PsA and early RA included in two Swedish registries with HRQoL data measured by the Medical Outcomes Study Short Form 36 (SF-36) at baseline and at five years follow-up were included. Differences in SF-36 scores compared with the general population were calculated for each patient. Physical function, disease activity, the delay before diagnosis, pain, and general wellbeing were used as explanatory variables. Statistical tests included t-tests and univariate and multivariate linear regression.

Results: PsA (n = 166) and RA (n = 133) patients of both sexes had significantly reduced HRQoL at disease onset. After five years, PsA patients still had impairments in several domains of SF-36, whereas RA patients had an almost normalized HRQoL. The time from symptom onset to diagnosis, disease activity, and disability independently contributed to the reduced improvement in PsA.

Conclusion: Both early PsA and RA are characterized by severely reduced HRQoL. Despite more severe disease at inclusion, normalization of HRQoL is seen in patients with RA but not PsA. This may be due to delay in the diagnosis of PsA or more powerful interventions in RA. Earlier detection, lifestyle intervention, and more aggressive management strategies may be needed for PsA.

What is already known about this subject?

- The knowledge about quality of life has so far been scarce in patients with PsA but in a recent study substantial prevalence of depression and anxiety as well as elevated incidence of depression among patients with PsA were identified (Zusman EZ, Howren AM, Park JYE, et al. Semin Arthritis Rheum. 2020 Feb 13. pii: S0049-0172(20)30020-2. doi: 10.1016/j.semarthrit.2020.02.001. [Epub ahead of print]).

What does this study add?

- PsA and RA have similarly reduced health-related quality of life at disease onset
- RA substantially improves in measures of health-related quality of life while PsA improves much slower and to a much lower extent
- The disease burden of PsA may be worse than previously thought

How might this impact on clinical practice?

- Earlier detection, lifestyle intervention, tight disease control and more aggressive management strategies may be needed for PsA
Introduction

Psoriatic arthritis (PsA) is a chronic inflammatory disease affecting the peripheral and axial skeleton. PsA can be a severe and erosive disease with high rates of destruction in early years [1–3], with persistent joint inflammation associated with joint damage. PsA is associated with psoriasis (PsO), which has a reported prevalence of 2–4% in Northern Europe. Approximately 10–30% of PsO patients will develop PsA. This corresponds with the prevalence of 0.25% and 0.2% reported for PsA in southern Sweden [4] and western Norway [5]. The peak onset of PsA occurs between the age of 30 and 50 years, with an equal sex distribution [5], and, a short delay between symptom onset and initiation of treatment has been shown to predict a favorable clinical outcome in PsA [6,7]. Smoking [6], female sex [7], older age at onset [6], the number of swollen joints [8], elevated C-reactive protein (CRP) [9] or erythrocyte sedimentation rate (ESR) [10], and polyarthritic joint involvement [10] are some baseline variables that predict an unfavorable clinical outcome. There is also an increased prevalence of subclinical atherosclerosis, obesity, arterial hypertension, and myocardial infarction [11]. Studies have had conflicting results regarding mortality [12].

Rheumatoid arthritis (RA) affects mainly peripheral joints and, sometimes, also the cervical axial skeleton. The prevalence is approximately 0.5%, mainly affecting women with a sex ratio of 1:2 to 1:5 and is most prevalent in women over 65 years of age [13]. RA is also a systemic erosive disease with several co-morbidities compared with PsA.

Both PsA and RA significantly impact quality of life. Only a few reports have compared the two diseases [14–16], reporting a similar or less impact on quality of life from PsA compared with RA [16].

The aim of the current study was to evaluate the quality of life in a cohort of early PsA patients in Swedish routine care over a five-year period compared with a matched cohort of early RA patients and a matched general population.

Materials and methods

This prospective study was approved by the regional ethics committee in Uppsala, Sweden. Patients with early PsA from six Swedish rheumatology clinics were enrolled for long-term follow-up between November 1999 and December 2010. The population and detailed enrollment process have been described previously [7,17,18], as well as patient inclusion and exclusion criteria [7]. Symptom duration at inclusion was at most 2 years. Data collection at inclusion and at five years included assessment of skin and joint disease activity, biochemical markers, treatments, employment status, functional abilities, and health-related quality of life (HRQoL). Results from the five-year follow-up on clinical outcome [7], radiographic outcome [3], treatment and prediction data [19] have been reported previously.

Early PsA was defined according to Moll and Wright [20], and later according to the CASPArification Criteria for Psoriatic Arthritis (CASPAR) [21] with the first manifestation of arthritis, enthesitis, dactylitis, or spondyloarthrthesis less than two years before the first visit to the rheumatology clinic. The pattern of affected joints at registry inclusion was categorized as mono- and oligoarthritis (< 5 peripheral joints; MAOA), polyarthritis (≥ 5 peripheral joints; PA), axial (axial only or in combination with peripheral disease), distal interphalangeal in combination with other, and other joint patterns (including no active joint inflammation at presentation). Joint disease pattern is based on 66/68 joint count. The patients initially diagnosed according to Moll and Wright were retrospectively classified according to the CASPAr criteria [21].

Of 209 patients who completed the five-year follow-up, 25 were excluded for incomplete Medical Outcomes Study Short Form 36 (SF-36) questionnaires, and 18 for not fulfilling the CASPAr criteria. A total of 166 patients included in the registry between 1999 and 2007 remained in the analysis, 80 men (48%) and 86 women (52%).

Data for comparison with RA were obtained from the Swedish Early Rheumatoid Arthritis Study 2 (TIRA2) [22]. A total of 131 patients with sufficient SF-36 data at baseline or the five-year follow-up were included: 35 men (27%) and 96 women (73%). The RA patients were included in the TIRA2 registry between 2005 and 2008. Symptom duration at inclusion was at most 1 year.

Physical functional abilities were measured by the Health Assessment Questionnaire-Disability Index (HAQ-DI), covering eight aspects (dressing and grooming, arising, eating, walking, hygiene, reach, grip, and activities) with a score from 0 to 3; lower scores indicating better physical function [23]. In RA, values ≤ 0.5 are considered normal, an improvement of ≥ 0.22 is the minimal clinically important difference. Originally developed for RA, the index is now considered a generic tool. HAQ-DI has been shown to correlate with disability in both PsA [24] and RA [23]. HAQ-DI is a good predictor of productivity, morbidity, health care utilization, health care costs, and mortality rates [23], but has limited utility in assessing the dermatological effect of psoriasis.

Skin involvement and inflammation were evaluated by the Psoriasis Area and Severity Index (PASI) with assessment of four regions of the body (head, trunk, upper limb, and lower limb) and a score of 0 to 72; a higher score indicates more severe skin disease, and PASI > 10 has been suggested to be a severe disease [25].

The patients self-reported perceived pain, PsO skin disease severity, and global health (patient global assessment; PGA) using 100-mm visual analog scales (VAS), with 0 indicating the least and 100 the worst perceived pain, skin disease, or PGA.

Disease activity and therapeutic efficacy were evaluated by the Disease Activity Score using 28 joints (DAS28), which was originally developed for RA patients [26]. The score has been shown to be valid for PsA, even though DAS28 excludes many joints commonly affected in PsA, such as the DIP joints of the hands. Disease Activity in Psoriatic Arthritis (DAPSA), which was specifically designed for PsA, evaluates 68 joints and correlates well with the DAS28 [19,27].

HRQoL was assessed by the SF-36 [28], which has been validated for use in psoriatic arthritis and rheumatoid arthritis and for Swedish populations [29]. The 36-item questionnaire assesses eight domains of life quality: physical functioning (PF), role limitations resulting from physical problems (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role limitations resulting from emotional problems (RE), and mental health (MH). The scores from these domains can be calculated into a physical component summary (PCS) and mental component summary (MCS). The domains and component summaries in quality of life are scored from 0 (worst) to 100 (best).

SF-36 scores are dependent on age and sex. In the current study, differences from an age- and sex-adjusted general population were calculated in all domains for each patient for both baseline scores and the five-year follow-up scores using Swedish normative SF-36 data. Therefore, values obtained for each domain consist of the baseline difference from the normative data, the five-year difference from the normative data, and the difference in the change from the normative data. A negative difference indicates a worse HRQoL compared with the general population, and a positive difference in a change over five years indicates an improvement compared with the normative data.

Statistical analysis

All statistical calculations were performed using IBM SPSS Statistics for Windows version 21.063. Significance levels were set at p < 0.05. Comparisons between two groups (PsA vs. RA, or different subgroups in each disease) were performed with independent t-tests. SF-36 scores were tested against general population values using the calculated difference in scores set against test value 0 in one-sample t-tests. Continuous variables were analyzed by linear regression.
Results

PsA and RA at baseline

At baseline, men with PsA were significantly younger, had significantly lower CRP, ESR, and HAQ-DI, and reported less pain than women (Table 1). No other significant sex differences were found. In contrast, no significant sex differences were found among the RA patients with the exception of HAQ-DI (Table 1).

Clinical comparison of the PsA and RA cohorts at baseline

Patients with PsA were significantly younger than patients with RA (Table 1), and this difference was most pronounced in men. The delay between symptom onset and inclusion in the registries was significantly shorter for RA patients. An age-adjusted analysis showed that the RA group had significantly higher DAS28 scores and swollen joint count than the PsA group, even when split by sex (Table 1). The ESR and HAQ-DI were higher in patients with RA, especially in men, whereas the tender joint count was significantly higher in women with RA. RA patients also reported higher PGA. No significant difference was found in patient-perceived pain.

Comparison of SF-36 in PsA vs. RA at baseline

Both PsA and RA patients had significantly reduced HRQoL, as indicated by lower scores in all SF-36 domains and component summaries compared with an age-adjusted general population (p < 0.05 for all domains for both diseases; Table 2). The reduced HRQoL had similar patterns in PsA and RA, with the RE domain and MCS being the only scores significantly reduced for RA compared with PsA (RE: −24.68±43.31 (PsA) vs. −36.69±42.7 (RA), p = 0.019; MCS: −5.24±11.89 (PsA) vs. −8.80±11.99 (RA), p = 0.014). The impaired HRQoL was less pronounced in men with PsA than in men with RA based on the SF domain (−12.43±21.08 (PsA) vs. −24.85±27.18 (RA), p = 0.020). In the other SF-36 domains and component scores, no significant differences were found between diseases in the deviation from the general population at baseline (Table 2).

SF-36 in PsA at the five-year follow-up

PsA patients still had significantly impaired HRQoL compared with the general population in all SF-36 scores, by group and by sex, except for MCS in men (Table 2, Fig. 1). Over five years, all domain and component scores for all patient subgroups had improved (Table 2, Fig 1), except for female patients in the GH domain (Table 2). However, the changes lacked significance for GH and MCS, and although the SF score significantly improved (p = 0.013), the change did not reach significance for either sex. Furthermore, females lacked a significant improvement in the RE domain (Table 2).

Linear regression analysis of PCS and MCS in PsA

In a univariate age-adjusted linear regression analysis, DAS28, HAQ, and PGA at baseline negatively correlated with PCS at the five-year follow-up (p = 0.006, p < 0.001, and p < 0.001, respectively; Table 3). In a multivariate analysis with delay of specialist care, DAS28, HAQ-DI, PGA, and age, there was an independent negative correlation between delay, HAQ-DI, and PGA (p = 0.038, p = 0.004, and p = 0.030, respectively) and PCS (Table 3). DAS28, HAQ-DI, and PGA negatively correlated with MCS at the five-year follow-up in a univariate analysis (p = 0.004, p < 0.001, and p = 0.001, respectively). In a multivariate analysis, only PGA independently correlated with MCS (p = 0.031; Table 3).
The importance of PsA joint patterns for HRQoL in PsA

Only PA and MAOA joint patterns were of large enough sample size to yield statistical power. In an analysis between the two, both for the whole groups and by sex, PA patients had more impaired HRQoL in most SF-36 domains at both inclusion and five years. PA patients also had a less favorable change over five years than MAOA patients in most SF-36 subscales. However, these differences only reached significance in GH (men: p = 0.036) and VT (all and men; p = 0.020 and 0.005) at baseline and in VT (all and women; p = 0.019 and 0.041), SF (all; p = 0.014), MH (all and women; p = 0.014 and 0.011), and MCS (all and women; p = 0.003 and 0.12) at the five-year follow-up (Data not shown).

SF-36 in RA at the five-year follow-up

RA patients as a group differed significantly from the general population in all scores except SF, RE, MH, and MCS at the five-year follow-up (Table 2, Figure). When split by sex, men with RA did not differ significantly from the general population in any domain or component summary. In contrast, women differed significantly in all domains except RP, SF, RE, MH, and MCS. Over five years, an improvement was seen in all domains and component scores for all patient groups (Table 2, Figure). This was significant in all domains and component scores except for men in the GH domain.

Comparison of SF-36 in PsA and RA at the five-year follow-up

At five years, PsA patients had improved considerably less than RA patients (Table 2, Figure). PsA patients had significantly lower scores than RA patients in all SF-36 domains except RE, MH, and MCS, and women also had a significant difference in the RE domain. However, men only differed significantly in the BP domain (p = 0.029). No trend toward normalization of HRQoL at five years was shown in the PsA group, but a trend was shown for the RA group. PsA patients had less improvement than RA patients in the absolute values for all domains and component summaries -- both as whole groups and when analyzed by sex. The differences between the diseases in change over five years were significant in all domains and component summaries when compared by whole groups. When analyzed by sex, changes for men were significant only for BP and SF (p = 0.001 and p < 0.001, respectively). For women, the significance remained for all domains and component summaries except for the SF domain.

Discussion

In the current study, HRQoL in early PsA at baseline and after five years was compared with an early RA cohort and an age- and sex-adjusted general population. Both PsA and RA patients presented with a significant reduction in HRQoL in all SF-36 domains and component scores compared with an age- and sex-adjusted general Swedish population, without sex differences. After five years, PsA patients, but not RA patients, still had significantly reduced HRQoL in all SF-36 scores, even though they had improved significantly in HRQoL.

Similar to the results from the current study, impaired HRQoL in early PsA and early RA was reported previously [16] when comparisons were made between early PsA and early RA, as well as a general population, regarding HRQoL at baseline and after two years of treatment with etanercept. In that study, only absolute SF-36 scores were used without adjusting for age or sex, making direct comparisons impossible. In another study [30], evaluating the effect of Etanercept treatment, RA and PsA showed similarly reduced SF-36 scores at inclusion, more pronouncedly poor for RA. At the study endpoint, at 52 weeks' treatment with etanercept and methotrexate for RA and 24 weeks' treatment with etanercept for PsA, both diseases had
improved but RA still showed worse SF-36 scores than PsA in contrast to the current study.

In our study, the inferior HRQoL for both diseases lacked sex differences, in contrast to a previous study of HRQoL in early RA that reported better scores in PF, BP, and SF at inclusion for women compared with men [31], though with a reduced difference after six years. Another study on early RA reported improvement over three years in all domains except VT and GH [32]. Lower PCS and MCS in PsA compared with a general population were reported previously [33–35]. The current results indicate that both RA and PsA have a catch-up effect in HRQoL when under rheumatological specialist care, but that RA patients improve significantly more than PsA patients. However, previous studies using other outcome measures have not shown the same difference between PsA and RA. One study using the generic HRQoL tool EuroQol-5D as an outcome measure found no significant differences in HRQoL between PsA and RA in established disease with 10-year duration [15]. Another comparative study with a mean disease duration of 14.2 (PsA) and 12.6 years (RA) reported more role limitations in PsA patients due to emotional problems and bodily pain than in RA patients; however, RA patients reported lower vitality [14].

A longer time between onset of disease and first-time assessment by a rheumatological specialist correlated with lower HRQoL expressed as a lower PCS score at five years. This is in line with previous findings indicating that shorter symptom duration predicts a better clinical outcome [7]. The RA patients had a shorter initial delay and better outcome after five years regarding HRQoL, possibly due to more intensive intervention on the high disease burden at onset. The two cohorts in the current study were initiated during slightly different time periods: the PsA cohort between November 1999 and

Table 3
Linear regression analysis of variables’ effect on PCS and MCS in PsA patients at the 5-year follow-up.

| Variable | PCS 5 year univariate age adjusted | PCS 5 year multivariate | MCS 5 year univariate age adjusted | MCS 5 year multivariate |
|----------|----------------------------------|------------------------|-----------------------------------|-------------------------|
|          | B (SE) R2 adj. n p               | B (SE) R2 adj. n p     | B (SE) R2 adj. n p                | B (SE) R2 adj. n p      |
| Delay (months) | –0.214(0.137) 0.009 157 0.120 | –0.277 (0.132) 0.161 138 | 0.018 –0.062 (0.156) –0.012 0.693 | –0.083 (0.157) 0.098 0.597 |
| DAS28    | –1.932 (0.690) 0.047 139 0.006 | 0.801 (0.892) 0.371 | –2.330 (0.795) 0.046 0.004 0.351 (1.064) 0.742 |
| HAQ-DI   | –7.999 (1.542) 0.047 139 0.006 | <0.001 5.996 (2.037) | 0.004 –6.800 (1.886) 0.068 <0.001 | –4.629 (2.430) 0.059 |
| PGA      | –0.132 (0.033) 0.087 158 <0.001 | <0.001 0.089 (0.045) | 0.030 –0.136 (0.039) 0.064 0.001 | –0.117 (0.054) 0.031 |
| Age      | 0.060 (0.060) <0.001 161 0.313 | 0.010 (0.062) 0.140 | 0.042 (0.070) –0.003 0.457 | 0.035 (0.073) 0.636 |

DAS28: Disease Activity Score using 28 joints, HAQ-DI: Health Assessment Questionnaire-Disability Index, MCS: Mental component summary, PCS: Physical component summary, PGA: Patient reported global health assessment.
December 2010, with most patients recruited during the first half of that decade, and the RA cohort between 2005 and 2008. Thus, the first anti-TNF treatment was available for early RA, but not for early PsA, which may have influenced the outcome. Although both diseases have a significantly reduced HRQoL compared with a general population at onset, the slow but substantial radiographic changes in PsA, compared with the often more rapid and dramatic changes in RA, may also influence treatment intensity. In an analysis of 72 patients with full sets of hand and foot radiographs in the SwePsA cohort [3], only eight had a score > 10 using the Wassenberg [36] scoring system. In a previous analysis of treatment in the SwePsA cohort, 23 of 198 patients were treated with TNF-inhibitors at the five-year follow-up, but none at inclusion [19].

The PsA and RA cohorts were followed without predefined treatment regimens, but the RA-patients had a more structured follow-up compared to the PsA-patients. This observational setting results is the main limitation of the current study, not allowing for taking treatment of PsA and RA into consideration when comparing longitudinal changes in HRQoL. The discrepancies between RA and PsA at the five-year follow-up may have been due to more aggressive intervention provoked by the disease severity in RA.

The patient sample size was too small to draw any conclusions regarding how different joint patterns affect HRQoL or to evaluate axial disease.

There are limitations to our study. One of the limitations is the measurement of activity, where we used DAS28. DAS28 does not account for all the joints that may be involved in PsA and may not accurately reflect disease activity, especially in patients with MOAO. Anyhow, DAS28 does correlate to DAPSA and since DAS28 is used in the measurement of RA disease activity, it was possible for us to compare patients with PsA and RA which was the main object in this study.

We did not have any patients with psoriasis without arthritic disease, which is another limitation. Furthermore, we did not analyze psoriasis as a specific entity in the PsA group since it is difficult to separate the two disease manifestations in a PsA cohort and its impact on HRQoL. It would be of great interest to compare psoriatic populations, with and without arthritis in a future study. In this study we wanted to compare the two rheumatic diseases, PsA and RA, which is of clinical interest in a rheumatic context.

In conclusion, the current study showed that patients with early PsA and early RA had an almost equally low HRQoL at disease onset compared with an age- and sex-adjusted general population. After five years, RA patients exhibited significant improvement, almost normalizing their HRQoL. In patients with PsA, an improvement was seen in most SF-36 scores, but they still had significantly lower HRQoL than a general population with lower scores in all SF-36 domains except MCS for men. The reasons for the persistently impaired HRQoL in PsA are unclear. Aggressive intervention provoked by the disease severity in RA and a long delay from symptom onset until rheumatological care, high disability, and PGA scores at disease onset had independent negative effects on HRQoL after five years of disease. Earlier detection and more aggressive lifestyle and medical interventions may prevent long-term low HRQoL.

Contributors

Study design: GA, TH, PL, UL, ET. Acquisition of data: GA, TH, PL, UL, IT, ET. Statistical analysis and interpretation of data. LA, ET. Manuscript: MG, GA, LA, TH, PL, UL, IT, ET.

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Ethical improvement

The project was approved by The Regional Ethics Committee of Uppsala University, Sweden. Participants have given the informed consent before participating in the study.

Declaration of Competing Interest

In addition to academic research at Lund University, ET has been employee of Janssen Cilag since 2015. MG has received consultancy fees from AbbVie, Novartis and Pfizer (unrelated to the present work). There are no other conflict interests.

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