# Mortality in psoriatic arthritis

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**ABSTRACT**

*Psoriatic arthritis has been demonstrated to be a severe form of arthritis in a proportion of patients. Progression of joint damage has been noted even within the first 2 years of disease in almost half the patients. Polyarticular presentation, disease activity, and damage predict progression of joint damage. An increased mortality was reported from large studies of 428 and 680 patients with psoriatic arthritis. Cardiovascular-related disease is the most common cause of death, followed by respiratory diseases, cancer, and injuries and poisoning. Deaths from respiratory disease, cardiovascular disease, and injuries and poisoning were found to be higher than those in the general population. Predictors for mortality include a high sedimentation rate and radiological damage at presentation. Since disease activity is associated with progression of damage, and damage predicts mortality, it is important to treat patients aggressively to prevent these outcomes.*

## Introduction

Psoriatic arthritis is a chronic inflammatory arthritis associated with psoriasis (1). It affects men and women equally, most commonly in the 4th decade of life. The arthritis generally follows the onset of psoriasis by approximately 10 years, but about 15% of patients may present with the arthritis before the recognition of the psoriasis. In these cases the diagnosis of psoriatic arthritis is facilitated by the presence of the typical features of psoriatic arthritis, including an asymmetric distribution, the presence of inflammatory distal joint disease in more than 50% of patients, inflammatory spinal disease in about 50%, dactylitis in almost half, and enthesitis in more than 40% of patients. Nail lesions have been recognized as the only specific clinical feature that distinguishes patients with psoriasis destined to develop arthritis (2).

## Severity of psoriatic arthritis

Earlier reports of psoriatic arthritis suggested that it was a mild disease with a better prognosis than that of rheumatoid arthritis (3, 4), which was also thought to have a mild prognosis. However, more recent studies have demonstrated that patients with psoriatic arthritis have severe disease and their outcome is similar to that of patients with rheumatoid arthritis (5-8), which may have a severe prognosis. Of the first 220 patients enrolled in a longitudinal observational cohort at the University of Toronto, some 20% had more than 5 clinically damaged joints and 11% were markedly restricted in their functional ability (5). Kane *et al.* (6) demonstrated that the majority of patients with psoriatic arthritis develop erosive disease within 2 years of onset of symptoms, and McHugh *et al.* (7) noted progression of damage over 5 years of follow-up. Polyarticular presentation is a predictor for progression of both clinical and radiological damage (9, 10).

## Mortality risk in psoriatic arthritis

(Table I)

Coulton *et al.* (4) followed 40 patients hospitalized for psoriatic arthritis for a mean of 8 years. (range 3-17) and found that over that period of time none of the patients had died and only 3 patients (8%) had marked restriction of their functional capacity. In comparison to a study on the outcome of patients with rheumatoid arthritis the authors felt that the PsA patients were less disabled. Shbeeb *et al.* (11), at the Mayo Clinic identified 66 cases of psoriatic arthritis in an epidemiologic study in Olmstead County. They found the survival rate among these 66 patients with psoriatic arthritis to be similar to that in the general population. Alamanos *et al.* (12) identified 221 cases of psoriatic arthritis in their epidemiologic study in Northwest Greece. They report 4 deaths.

**Table I.** Recent mortality studies in psoriatic arthritis.

| Study | Reference | Year | Location | Number of patients | SMR (CI) | Comment |
|---|---|---|---|---|---|---|
| Coulton | 4 | 1989 | UK | 40 PsA | NA | No deaths occurred |
| McHugh | 7 | 2003 | Bath UK | 87 PsA | NA | Longitudinal observational cohort; 9 deaths occurred |
| Shbeeb | 11 | 2000 | Mayo Clinic | 66 Incident PsA | NA | Similar survival to the general population |
| Alamanos | 12 | 2003 | North-west Greece | 221 Incident PsA | NA | Four deaths occurred |
| Wong | 13 | 1997 | Canada | 428 PsA | 1.62 (1.21-2.12) | Longitudinal observational cohort |
| Gelfand | 14 | 2007 | UK | 3951 Severe psoriasis | 1.5 (1.32-1.71) | General practitioner data-base |
| Ali | 15 | 2007 | Canada | 680 PsA | 1.36 (1.12-1.64) | Longitudinal observational cohort |
| Mallbris | 16 | 2004 | Sweden | 8991 Severe psoriasis | 1.52 (1.44-1.60) | Cardiovascular mortality only |

Wong *et al*. (13) reported that patients with psoriatic arthritis had a mortality risk that was 1.62 (95% CI 1.21-2.12) compared to the general population, in a longitudinal observational cohort study conducted at the University of Toronto between 1978 and 1993. Of the 428 patients included in the study, 53 died. The Mayo Clinic study was based on an epidemiological database and may have missed patients with psoriatic arthritis and their outcome (11). Moreover, only 66 patients with psoriatic arthritis were identified in that study. The University of Toronto study was based on careful longitudinal follow-up of 428 patients with psoriatic arthritis and linkage with a provincial mortality database (13). A population study found a 1.5-fold higher risk of mortality among patients with severe psoriasis even when adjusted for other factors, including arthropathy (14).

Nine of the 87 patients followed for over 5 years by McHugh *et al*. (7) in Bath, England, died. All were elderly. There was no comparison with the general population.

A recent analysis of mortality among 680 patients followed at the University of Toronto psoriatic arthritis clinic between 1978 and 2004 actually paints a brighter picture for patients with psoriatic arthritis (15). Over the last 4 decades there has been improved survival among patients with psoriatic arthritis.

**Table II.** Frequency of acute causes of death in reported series in psoriatic arthritis.

| Author (reference no.) | Wong (13) | McHugh (7) | Alamanos (12) | Ali (15) |
|---|---|---|---|---|
| Total no. of patients | 428 | 87 | 221 | 680 |
| Total no. of deaths | 53 | 9 | 4 | 106 |
| Cardiovascular | 28% | 55% | 50% | 25% |
| Respiratory | 21% | 11% | 25% | 10% |
| Cancer | 17% | 11% | 0 | 24% |
| Injuries/poisoning | 15% | 0 | 25% | 5% |
| Other known causes | 8% | 0 | 0 | 5% |
| Unknown | 11% | 11% | 0 | 25% |

**Table III.** Risk factors for mortality in psoriatic arthritis.

| Risk factor | Relative risk (Confidence interval) | *p*-value |
|---|---|---|
| Prior medication level | 1.83 (0.93, 3.60) | 0.079 |
| Radiological damage | 3.88 (1.32,11.35) | 0.0114 |
| ESR > 15 mm/hour | 3.77 (1.31, 10.83) | 0.013 |
| Nail changes | 0.33 (0.14-0.76) | 0.009 |

Modified from *Arthritis Rheum* 1998; 41: 1103 (ref. 26).

Whereas in the 1970s and 1980s, the mortality risk was 1.8, in more recent years the mortality risk has dropped, particularly for males, to an overall mortality risk of 1.36. Of interest, the numbers of years of life lost was calculated at 3 years, similar to the number reported for patients with severe psor-iasis (15). In this study, the mortality rates were adjusted for radiological damage, sedimentation rate, presence of hypertension, the number of actively inflamed joints, and smoking status at presentation to clinic.

## Causes of death in psoriatic arthritis (Table II)

Wong *et al*. (13) identified circulatory factors as a major cause of death among their patients with psoriatic arthritis. The leading cause of death among was myocardial infarction (28%). Other major causes of death included respiratory (21%), pneumonia (15%) or chronic obstructive pulmonary disease (6%), cancer (17%), and injuries or poisoning (15%). The risk of death from pulmonary disease was significantly higher

than in the general population, with a standardized mortality ratio of 5.05 overall, which was significant for both men and women. Injuries and poisoning were also significantly higher among male patients with psoriatic arthritis than in the general population, with a standardized mortality ration of 4.42. The overall mortality from circulatory diseases was also higher at 1.33.

Alamanos *et al*. identified 4 deaths among their 221 patients (10 were lost to follow-up). Causes of death were related to cardiovascular disease in two patients, military tuberculosis in one, and a car accident in the fourth patient. Causes of death were not identified in the Mayo Clinic study (11). Of the 9 patients who died in the Bath study (7), 5 died of cardiovascular causes.

Cardiovascular mortality was also increased among patients admitted for psoriasis in Sweden (16).

Patients with psoriasis and those with psoriatic arthritis are at increased risk of cardiovascular disease (17). Patients with psoriasis and psoriatic arthritis also demonstrate a higher cardiovascular risk profile (17, 18). Indeed, an association between psoriasis and the metabolic syndrome consisting of diabetes, hypertension and obesity has been noted (19, 20). Although an increased risk for malignancy has been reported by some investigators for patients with psoriasis (21-23), others have not found excess malignancies among patients with psoriasis (24). A recent study of 680 patients with psoriatic arthritis found no increased risk of malignancy (25).

**Risk factors for mortality in patients with psoriatic arthritis** (Table III)

Among patients with psoriasis, those with more severe disease are at increased risk for mortality whereas patients with mild psoriasis have the same risk as the general population (14). Similarly the risk factors for mortality among patients with psoriatic arthritis are related to disease severity (26). Thus, a high erythrocyte sedimentation rate and radiological damage were associated with an increased risk for death with relative risks (CI) of 3.49 (1.23, 9.94) and 3.03 (1.07, 8.62) respectively. There was an interaction between the presence of nail lesions and radiological damage. Similar factors have been associated with progression of joint damage, suggesting that disease activity and damage are associated with poor outcomes among patients with psoriatic arthritis. Of interest was the fact that when all variables which were significant in a univariate analysis in the study identifying risk factors for mortality were added to the model, nail lesions turned out to be protective (Table III). It was not clear what the biological mechanisms for that might be short of the fact that patients with nail lesions might have come to medical attention and received treatment.

## Summary

Psoriatic arthritis cannot be considered a mild disease. It can be very deforming and destructive and is associated with increased mortality risk. Causes of death are generally similar to those of the general population, although there is a slight increase in deaths due to pulmonary disease and injuries/poisoning in one series, and death occurs at a younger age than expected. Prior disease severity is predictive of early mortality among patients with psoriatic arthritis. Since disease activity is predictive of damage, and damage is associated with increased mortality, it is important to treat patients with psoriatic arthritis early and aggressively to attempt to prevent disease severity and mortality.

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