

Psoriatic arthritis Cardiovascular risk factors, health-related quality of life and effects of weight loss treatment

Akademisk avhandling

Som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligens försvaras i aulan (vån 3), Guldhedsgatan 10A, fredagen den 12 maj 2023, klockan 9.00.

av Anton Landgren

Fakultetsopponent:
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Avhandlingen baseras på följande delarbeten

- I. Landgren AJ, Bilberg A, Eliasson B, Larsson I, Dehlin M, Jacobsson LTH, Klingberg E. Cardiovascular risk factors are highly overrepresented in Swedish patients with psoriatic arthritis compared with the general population. *Scandinavian Journal of Rheumatology*, 2019;00:1–5.
- II. Landgren AJ, Dehlin M, Jacobsson L, Bergsten U, Klingberg E. Cardiovascular risk factors in gout, psoriatic arthritis, rheumatoid arthritis and ankylosing spondylitis: a cross-sectional survey of patients in Western Sweden. *RMD Open*, 2021;7:e001568.
- III. Landgren AJ, Klingberg E, Jacobsson LTH, Bergsten U, Dehlin M. Health-related quality of life in gout, psoriatic arthritis, rheumatoid arthritis and ankylosing spondylitis, results from a cross-sectional survey in Western Sweden. *Scandinavian Journal of Rheumatology*, 2023 Feb 6;1-13.
- IV. Landgren AJ, Jonsson CA, Bilberg A, Eliasson B, Torres L, Dehlin M, Jacobsson LTH, Gjertsson I, Larsson I, Klingberg E. Serum IL-23 significantly decreased in obese patients with psoriatic arthritis six months after a structured weight loss intervention. Submitted.

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Abstract

Background: Psoriatic arthritis (PsA) is an inflammatory rheumatic disease, characterized by arthritis, dactylitis, enthesitis and sometimes axial disease. PsA is associated with several comorbidities and reduced health-related quality of life (HRQoL), although less is known in relation to other common chronic rheumatic diseases. The increased secretion of cytokines and adipokines seen in obesity may be important in PsA. Weight loss has been shown to reduce disease activity, but the effects on cytokines and adipokines in PsA are unknown.

Objectives: Objectives corresponding to papers I-IV, were: To study the occurrence of cardiovascular risk factors (CVRFs) in PsA in comparison with general population (GP) controls (I) and in comparison with other inflammatory joint diseases (IJDs) (II), to compare HRQoL in PsA and other IJDs (III) and study the effects of weight loss on serum cytokines and adipokines in obese patients with PsA (IV).

Methods: I. PsA patients (n=982), 25-75 years old, were identified through the register at the Department of Rheumatology at Sahlgrenska University Hospital and sent a questionnaire regarding presence of CVRFs. Individuals from the National Swedish Public Health Survey were used as GP controls.

II-III. Individuals with PsA (n=1200), rheumatoid arthritis (RA) (n=1246), ankylosing spondylitis (AS) (n=1095) and gout (n=1589) were identified at three rheumatology clinics and 12 primary care centres (for patients with gout) in Western Sweden and sent a questionnaire regarding CVRFs and HRQoL, measured by RAND-36.

IV. Patients with PsA and body mass index (BMI) ≥ 33 kg/m² (n=41) and controls matched by sex, age and weight were included in a weight loss study. Serum levels of cytokines and adipokines were measured at baseline and at six months and related to Disease Activity in Psoriatic Arthritis (DAPSA) and the Disease Activity Score for 28 joints using C-reactive protein (DAS28CRP).

Results: I. Obesity (28.6% vs 16.3%, $p < 0.001$), hypertension (40.3% vs 24.1%, $p < 0.001$) and diabetes (10.5% vs 6.2%, $p < 0.001$) were more prevalent in PsA patients compared to GP controls.

II. Gout patients reported significantly more hypertension, hyperlipidaemia, diabetes, obesity and multiple CVRFs than PsA, RA and AS. In women, hypertension, obesity and multiple CVRFs were more common in PsA compared with RA and AS.

III. Gout patients reported better HRQoL than PsA, RA and AS. HRQoL was similar in PsA, RA and AS, but worse in physical domains compared with mental domains for all IJDs. Women reported worse HRQoL compared with men.

IV. Weight loss was associated with lowered serum levels of interleukin (IL)-23, median (interquartile range) 0.40 (0.17-0.54) ng/mL at baseline to 0.18 (0.10-0.30) ng/mL and leptin (both $p < 0.001$) at six months. Δ IL-23 positively correlated with Δ BMI ($r_s = 0.671$, $p < 0.001$) and Δ DAS28CRP ($r_s = 0.460$, $p = 0.005$).

Conclusions: PsA was associated with increased prevalence of CVRFs compared to the GP and in women with PsA compared to RA and AS. CVRFs were more common in gout compared with PsA, RA and AS. HRQoL was better in gout, whereas similar in PsA, RA and AS. Serum IL-23, an important cytokine in PsA, was significantly reduced after weight loss.

Keywords: cardiovascular, epidemiology, obesity, psoriatic arthritis