

Dactylitis in Psoriatic Arthritis: Prevalence and Response to Therapy in the Biologic Era

Dafna D. Gladman, Olga Ziouzina, Arane Thavaneswaran, and Vinod Chandran

ABSTRACT. Objective. To determine the prevalence of acute dactylitis in patients with psoriatic arthritis (PsA) and to compare the response of new acute dactylitis to treatment with traditional disease-modifying antirheumatic drug (DMARD) and anti-tumor necrosis factor- α (anti-TNF) agents in a longitudinal PsA cohort.

Methods. Patients with PsA followed at 6 months according to a standard protocol from January 2000 to January 2010 were included in our study. Acute dactylitis was defined as the presence of painful swelling of an entire digit. Response was defined as either complete resolution of dactylitis or > 50% improvement in the number of dactylitic digits. A multivariate generalized estimating equations analysis using a negative binomial model to account for repeated measures was conducted to determine predictors for response to treatment of dactylitis.

Results. Of the 752 patients seen in the clinic during this period, 294 had dactylitis in at least 1 visit, giving a prevalence of 39%. Patients with acute dactylitis and data available for response at 6 and 12 months ($n = 252$; 34% women, mean age 47 yrs, PsA duration 11 yrs) were included in the study on predictors of response to treatment. Multivariate analysis showed that treatment with anti-TNF agents was a significant predictor of improvement in dactylitis at 12 months (relative risk 0.528, 95% CI 0.283–0.985, $p = 0.045$).

Conclusion. The prevalence of dactylitis on at least 1 visit was 39%. Treatment was associated with improvement of dactylitis. Patients treated with biologics had better response to treatment compared with those treated with nonbiologic DMARD alone. (J Rheumatol First Release July 1 2013; doi:10.3899/jrheum.130163)

Key Indexing Terms:

SPONDYLOARTHRITIS
INFLAMMATION

DISEASE-MODIFYING ANTIRHEUMATIC DRUG
BIOLOGICS
DACTYLITIS

Dactylitis is defined as a uniform swelling of the whole digit that results from inflammation in the joints, tendons, and soft tissues and presents as a “sausage digit”¹. It is a common feature of psoriatic arthritis (PsA), occurring in

48% of the patients, and is one of the features of Classification for Psoriatic Arthritis (CASPAR) criteria^{2,3}. Dactylitis is associated with impaired function and is a marker of disease severity². Dactylitis may occur acutely, as a tender swollen digit, or chronically, as a swollen digit that is no longer tender⁴. Randomized clinical trials in PsA have shown remarkable response to treatment with biological agents, with improvement in the active joint count, psoriasis, quality of life, and function⁵. However, the data on significant improvement of dactylitis in randomized clinical trials have been sparse^{6,7,8}. There are data from uncontrolled trials suggesting improvement in dactylitis using other anti-tumor necrosis factor- α (anti-TNF) agents^{9,10,11}. Whether anti-TNF agents lead to better response in dactylitis than conventional disease-modifying antirheumatic drugs (DMARD) in clinical practice has not been assessed.

The objectives of our study were to determine the prevalence of acute dactylitis in patients with PsA and to compare the response of new acute dactylitis to treatment with traditional DMARD and anti-TNF agents in a longitudinal PsA cohort.

MATERIALS AND METHODS

Patients and assessments. Patients with PsA are followed at the University

From the University of Toronto; Toronto Western Research Institute; Psoriatic Arthritis Program, Centre for Prognosis Studies in the Rheumatic Diseases; University Health Network; Toronto Western Hospital, Toronto, Ontario; and University of Calgary, Division of Rheumatology, Department of Medicine, Calgary, Alberta, Canada.

Supported by a grant from the Krembil Foundation. Dr. Ziouzina was supported by a grant from Janssen Canada. Dr. Chandran was supported by the Canadian Institutes for Health Research New Emerging Grant.

D.D. Gladman, MD, FRCPC, Professor of Medicine, University of Toronto, Senior Scientist, Toronto Western Research Institute, Director, Psoriatic Arthritis Program, Centre for Prognosis Studies in the Rheumatic Diseases, University Health Network, Toronto Western Hospital; O. Ziouzina, MD, FRCPS, Clinical Lecturer, Division of Rheumatology, Department of Medicine, University of Calgary; A. Thavaneswaran, MMath, Research Associate, Psoriatic Arthritis Program, Centre for Prognosis Studies in the Rheumatic Diseases, University Health Network, Toronto Western Hospital; V. Chandran, MBBS, MD, DM, Assistant Professor, Psoriatic Arthritis Program, Centre for Prognosis Studies in the Rheumatic Diseases, Toronto Western Hospital.

Address correspondence to Dr. D.D. Gladman, Centre for Prognosis Studies in the Rheumatic Diseases, Toronto Western Hospital, 399 Bathurst, 1E-410B, Toronto, Ontario M5T 2S8, Canada.

E-mail: dafna.gladman@utoronto.ca

Accepted for publication April 19, 2013.

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of Toronto PsA clinic at the Toronto Western Hospital at 6 to 12-month intervals according to a common protocol¹². At each visit, patients are assessed clinically with a complete history and examination that includes actively inflamed and damaged joint counts, assessment of dactylitis (based on the presence of a uniform swelling of a whole digit), and enthesitis and spinal measures, as well as a detailed medication history. Patients who were followed at the PsA clinic from January 2000 to January 2010 were included in our study, because biologic agents became available in 2000. The Leeds Dactylitis Index has been used in the PsA clinic since 2008. However, in our study only the presence of acute dactylitis and the number of digits with dactylitis were considered.

Outcome. Acute dactylitis was defined as the presence of painful swelling of an entire digit. Response was defined as either complete resolution of dactylitis or > 50% improvement in the number of dactylitic digits.

Statistical analysis. The prevalence of dactylitis in this cohort was determined. Descriptive statistics of the demographic and disease characteristics of the patients in the study were obtained. The response of “acute dactylitis events” to therapy with DMARD was compared to that during treatment with anti-TNF agents at 6 and 12 months using chi-square analyses. A multivariate analysis with generalized estimating equations using a negative binomial model to account for repeated measures was conducted to compare response to treatment and determine predictors for response. The variables entered into the model were age, sex, duration of disease, treatment, and intraarticular steroid use where treatment was categorized as no treatment, biologics (\pm DMARD), and DMARD.

RESULTS

Of the 752 patients seen in the PsA clinic during this period, 294 had acute dactylitis identified in at least 1 visit, giving a prevalence of 39%. Two hundred fifty-two patients with acute dactylitis had complete data available for response at 6 and 12 months. These patients were included in the study on the predictors of response to treatment. Of the 252 patients, 34% were women, the mean age was 47 years, PsA duration 11 years, mean actively inflamed joint count 13.3,

mean damage joints 9.7, and Psoriasis Area and Severity Index score was 5.6 (Table 1).

At 6 months, 77.3% of the patients responded to therapy when taking biologics in comparison to 51.5% taking DMARD. Similarly, at 12 months, 87.2% of the patients responded to therapy when taking biologics in comparison to 69.9% taking DMARD.

Multivariate analysis showed that only treatment type (anti-TNF agents vs DMARD) was a significant predictor of response of dactylitis at 12 months, with a relative risk of 0.528 (95% CI 0.283–0.985, $p = 0.045$). There was a trend showing response at 6 months ($p = 0.061$; Table 2).

DISCUSSION

The prevalence of dactylitis in patients enrolled in the University of Toronto cohort during this decade was 39%. This is similar to the prevalence of dactylitis reported in other series^{2,13}. Because acute dactylitis is most likely to respond to therapy, we studied the effect of treatment in those with acute dactylitis, and included patients who had data available for both 6 and 12 months of treatment. This is the first study, to our knowledge, to compare response to therapy with conventional and biologic agents in PsA patients with dactylitis. Although this was not a randomized controlled trial, it did allow us to perform a comparison, because the information was collected prospectively. There were fewer events of new acute dactylitis in patients treated with anti-TNF agents in comparison to those treated with DMARD. Significantly more dactylitis events improved on treatment with anti-TNF agents compared to treatment with DMARD. While the specificity of the improvement in dactylitis might have been clearer had we included only patients who had isolated dactylitis, this would be an unusual situation because the number of patients who present only with dactylitis is low and would preclude drawing any conclusions. It should be noted, however, that the aim of our study was to evaluate the potential for improvement with traditional DMARD and anti-TNF agents on this particular aspect of the disease, in the context of the usual presentation of PsA.

The use of the Leeds Dactylitis Index might have provided a better measure of response¹, but it was not available for patients seen prior to 2008 and therefore could not be used in our study.

Table 1. Demographic and disease characteristics.

Variable	Frequency or Mean (SD)
Males	164 (66.1%)
Age at diagnosis of PsA, yrs	36.0 (12.4)
Age at first visit, yrs	46.7 (12.0)
Duration of PsA, yrs	10.5 (8.5)
Mean PASI score	5.6 (7.4)
Mean no. of active joints	13.3
Mean no. of damaged joints	9.7

PsA: psoriatic arthritis; PASI: Psoriasis Area and Severity Index.

Table 2. Multivariate analysis.

Variable	RR for Acuity	Time = 6 mos		p	Time = 12 mos		
		95% CI			95% CI	p	
Age	1.01	(0.98–1.03)		0.657	1.01	(0.98–1.05)	0.422
Sex	0.62	(0.35–1.10)		0.102	0.63	(0.312–1.29)	0.209
Duration of disease	0.98	(0.94–1.01)		0.153	0.975	(0.934–1.02)	0.259
Treatment	0.68	(0.45–1.02)		0.061	0.528	(0.283–0.985)	0.045
Intraarticular steroid use	1.01	(0.62–1.64)		0.962	0.885	(0.436–1.79)	0.734

It should be noted that conventional DMARD did help a large proportion of patients with acute dactylitis. This is in contrast to the reports of randomized clinical trials using conventional DMARD in the treatment of dactylitis. Helliwell summarized these reports⁶ and concluded that sulfasalazine provided a very low effect size of 0.2 and leflunomide provided a better effect size of 0.33, but the information was not provided in that report, and cyclosporine could not be assessed. Based on that literature review, the Group for Research and Assessment of Psoriasis and Psoriatic Arthritis (GRAPPA) recommended that for patients with dactylitis, anti-TNF agents should be used when the condition is considered moderate to severe¹⁴.

A randomized controlled trial comparing traditional DMARD and biologic agents for the treatment of dactylitis seems warranted to provide evidence for the treatment recommendations for dactylitis.

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