Decreased prevalence of atopic features in patients with psoriatic arthritis, but not in psoriasis vulgaris

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Background: The prevalence of atopic disorders is reduced in patients with various autoinflammatory diseases but, to our knowledge, this association has not been studied in psoriasis vulgaris or psoriatic arthritis (PSA).

Objective: Prevalence of hay fever, asthma, and sensitization to common aeroallergens was compared in patients with psoriasis vulgaris to patients with PSA and control subjects; we also investigated whether atopy influences the arthritis activity and severity scores in patients with PSA.

Methods: In a cross-sectional cohort study design, the differences in patient-reported lifetime prevalence of atopic disorders and serum IgE directed against common aeroallergens were compared. The effect of atopy on arthritis severity was assessed using the 28-joint Disease Activity Score and Health Assessment Questionnaire. Logistic regression models were used to calculate crude and adjusted odds ratios with 95% confidence intervals (CI) for presence of atopy.

Results: A total of 168 patients with PSA, 133 patients with psoriasis vulgaris, and 147 control subjects were included. The lifetime prevalence of hay fever did not differ across groups. Patients with PSA were less likely to have had asthma than control subjects (adjusted odds ratio 0.20; 95% CI 0.04-0.92) and they were less likely to be sensitized (adjusted odds ratio 0.50; 95% CI 0.25-0.99). Health Assessment Questionnaire-visual analog scales for pain and for patient global score were significantly reduced by sensitization to common aeroallergens (beta-coefficients −0.54 [95% CI −0.84 to −0.25] and −18.4 [95% CI −28.5 to −8.25], respectively.)

Limitations: This was a cross-sectional, small-numbered study.

Conclusion: Atopy may protect against development of PSA and diminish its severity. (J Am Acad Dermatol 2013;68:270-7.)

Key words: asthma; atopy; hay fever; lifetime prevalence; psoriasis vulgaris; psoriatic arthritis.

Psoriasis vulgaris (PSO) is a common inflammatory skin disorder affecting around 2% of the Western population.[1] Approximately 11% (the estimates go up to 24%) of patients with PSO also have psoriatic arthritis (PSA).[2] It remains controversial whether PSO and PSA are part of the same disease process or merely embody a strong association between 2 distinct entities with overlap in genetic susceptibility loci.[3] Despite the enormous differences in clinical manifestations, the inflammation in both diseases is concerted by T-helper (Th)-17 and Th-1 cells.[4] Although Th-17 and Th-1 cells in cutaneous and arthropathic psoriasis may work synergistically to produce the inflammation seen in these disorders, type-2 Th cells have been shown to antagonize the inflammation caused by these cells on a cytokine level.[5,6]

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Th-2 cells are important players in inflammation seen in atopic disorders.[7]

Atopy is a hereditary predisposition to allergic sensitization, ie, development of IgE antibodies directed against various allergens. Clinically, it is a risk factor for the development of atopic dermatitis, hay fever, and atopic asthma.

There is a multitude of epidemiologic studies that have shown lower prevalences of atopic disorders in patients with Th-1-mediated diseases.[8] These observational studies have shown that in rheumatoid arthritis (RA), which is a Th-1-driven disease, patients have lower prevalences of atopic disorders compared with control subjects. Moreover, hay fever may ameliorate the symptoms of RA.[9-11] These data suggest the existence of mutual exclusion or antagonism between atopic and autoinflammatory/autoimmune disorders, where Th-2-driven atopy protects against Th-1-driven disorders. To our knowledge, the association between atopic disorders and PSA and the effect of atopy on PSA severity have not been studied yet.

CAPSULE SUMMARY

- The prevalence of atopic disorders is diminished in rheumatoid arthritis.
- The prevalence of atopic disorders is also diminished in patients with psoriatic arthritis.
- Atopy may be a risk determinant and a severity predictor for psoriatic arthritis.

The objective of this study was to compare the prevalence of clinical and serologic manifestations of atopy in patients with PSA versus patients with PSO and healthy control subjects. We hypothesized that the prevalence of atopic disorders is lower in patients with PSO and PSA and that atopic patients with PSA have less severe disease.

METHODS

Study population

Study participants were recruited from March 2009 until February 2011 in The Netherlands. Patients with PSA were recruited from the Department of Rheumatology at Maxima Medical Center in Eindhoven. Patients with PSO and control subjects were recruited from the Department of Dermatology at Erasmus Medical Center in Rotterdam. All participating patients provided written informed consent. PSA diagnosis was confirmed by a certified rheumatologist and all patients fulfilled the Classification Criteria for Psoriatic Arthritis (CASPAR).[12] All patients with PSO were given a diagnosis of PSO by certified dermatologists and had no history or signs of inflammatory arthritis. The control group consisted of individuals with varicose veins who did not have either PSO or PSA. Only control subjects who had been referred for phlebological consultation by a general practitioner were included to avoid inclusion of atopic patients with concurrent varicosities referred by dermatologists.

Patient-reported atopic disease

Directly after inclusion, patients were given a questionnaire comprising questions from the European Community Respiratory Health Survey and International Study of Asthma and Allergies in Children protocol.[13,14] This questionnaire provided data on patient's self-reported symptomatology of atopic disorders (ie, contact dermatitis, hay fever, and asthma) during their lifetime. Participants were considered to have asthma if they positively answered the question "Have you ever been diagnosed with asthma by a doctor?" and if the answer to question "How old were you when you were diagnosed with asthma?" was younger than 25 years. For diagnosis of hay fever, patients had to answer affirmatively to "Have you ever had hay fever?" and have it before the age of 30 years. We have left atopic dermatitis out of further analysis because of the clinical similarities with PSO.

Total IgE levels and sensitization to common aeroallergens

As an objective marker of atopy IgE directed toward common aeroallergens together with total serum IgE was preferred to skin-prick testing because of expenses and time consumption. Venous blood was drawn from all participants and centrifuged to separate serum. All serum samples were frozen at −80°C and were later analyzed simultaneously as a batch. The sensitization analyses were performed at the clinical laboratory of the Erasmus Medical Center according to manufacturer's protocol (Phadia AB, Uppsala, Sweden). Levels of total IgE and specific IgE directed to inhalant allergens (cat and dog dander, birch pollen, grass pollen, house dust mite, and herb pollen) were determined. Levels of serum IgE higher than 100 kU/L were considered increased.[15] Patients were sensitized to aeroallergens if the serum value of IgE directed against aforementioned allergens was more than 0.35 kU/L.[16] The results of total serum IgE analyses were not available for 3 patients with PSO and 1 with PSA because of loss of samples.