

# Improvement in Psoriasis During Rituximab Therapy for Mixed Cryoglobulinemia Type II

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*Rituximab is a B-cell depleting monoclonal antibody targeting CD20. Data concerning the behavior of psoriatic disease following rituximab therapy are extremely limited. In this report, the clinical course of a patient with established psoriasis who received rituximab therapy for vasculitis associated with mixed cryoglobulinemia (MC) type II is described. In addition to marked improvement in MC manifestations, modest improvement in psoriatic lesions also was observed following therapy. The literature concerning B-cell depletion in the setting of psoriatic disease is briefly reviewed.*

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## Case Report

A 64-year-old man with untreated chronic hepatitis C virus infection presented in 2000 with palpable purpura on the lower extremities. His history was notable for plaque psoriasis diagnosed 6 years prior and treated with topical corticosteroids. Biopsy of the lower extremity eruption revealed leukocytoclastic vasculitis. Laboratory studies established the diagnosis of mixed cryoglobulinemia (MC) type II with monoclonal IgM and polyclonal IgG. Therapy involving mycophenolate mofetil in combination

with varying doses of oral steroids was instituted with limited success. In 2006 the patient presented with abdominal pain and an intestinal biopsy revealed vasculitis. Rituximab therapy was commenced at a dosage of 1000 mg administered intravenously on days 0 and 14. B-cell depletion was achieved and the patient exhibited a rapid clinical response with complete resolution of abdominal pain and palpable purpura. Following relapses of cutaneous vasculitis, 3 additional cycles were administered during the subsequent 2 years, each with similar, highly satisfactory clinical efficacy. Since receiving rituximab, the patient consistently reported improvement in his psoriatic lesions with less irritation, redness, scale, and thickness. The patient's subjective improvement was corroborated by physical examination. The morphology of the psoriatic lesions evolved from moderate plaques prior to rituximab to thin, scaly, erythematous patches during and following treatment (Figure).

## Comment

Rituximab is a B-cell depleting monoclonal antibody targeting CD20. Originally developed for the treatment of lymphoma, a growing body of evidence now supports its utility for the treatment of cryoglobulinemic vasculitis.<sup>1,2</sup> We describe the use of rituximab for MC type II in a patient with preexisting psoriasis. While formal scoring was not conducted, the patient's psoriatic skin disease appeared to exhibit modest improvement and certainly did not deteriorate following therapy.

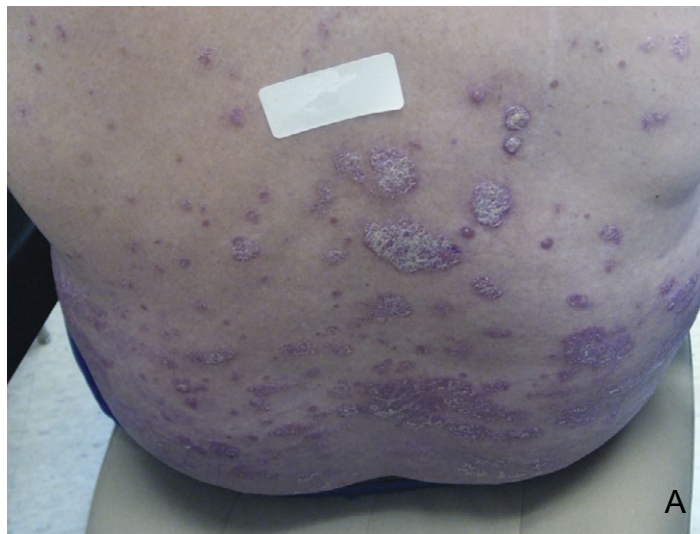
Psoriasis is largely considered a T-cell mediated disease. However, a potential role for B cells in its pathogenesis has been suggested by a number of researchers.<sup>3-8</sup> As early as 1994, the presence of increased B cell numbers in skin biopsies obtained from patients with psoriasis was noted, particularly

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Psoriatic lesions 3 months prior to the patient's fourth cycle of rituximab therapy (A) and 1 month posttherapy (B). (Image was altered to remove identifying information [A]; image was cropped and rotated 90° counterclockwise to improve ease of comparison [B].)

in patients with concomitant joint disease.<sup>8</sup> In a 1999 study, Mahmoud et al<sup>3</sup> observed that infiltrating B cells outnumbered T cells in psoriatic plaque biopsies. In 2002, Gerhard et al<sup>5</sup> identified clonally related B-cell populations in psoriatic arthritis synovial tissue, suggesting selective and confined antigen specificity. In 2007, in a further study evaluating psoriatic arthritis synovial tissue, Cañete et al<sup>4</sup> described ectopic lymphoid neogenesis in patients with active disease, which decreased following clinically successful therapy. The therapeutic potential suggested by these observations was highlighted in subsequent reviews,<sup>6,7</sup> and notable improvement of psoriatic arthritis following rituximab therapy was described in a case report in 2008.<sup>9</sup>

Data from a study have supported the use of this agent as therapy for a number of inflammatory skin diseases, including autoimmune blistering disorders and atopic dermatitis.<sup>7</sup> No randomized controlled trials or series to date have evaluated its use for the treatment of psoriasis. The behavior of psoriasis following the use of this agent for other indications has been explicitly described in only 2 prior reports, both involving patients with non-Hodgkin lymphoma, according to a PubMed search of articles indexed for MEDLINE using the terms *rituxan/rituximab*, *psoriasis*, and *psoriatic arthritis*. In the first report, partial remission of established skin disease followed B-cell depletion.<sup>10</sup> In the second report, rituximab was implicated in the onset of new psoriasis during therapy.<sup>11</sup> In another case,

rituximab was successfully used to treat bullous pemphigoid in a patient with preexisting psoriasis.<sup>12</sup> The effect on skin psoriasis was not specifically described. However, the authors went on to report the subsequent successful use of etanercept to treat psoriasis in the same patient, clearly suggesting that numerous active psoriatic lesions remained despite B-cell depletion.<sup>12</sup>

### Conclusion

Our patient received rituximab for the treatment of MC type II. This B-cell depleting therapy also appeared to have attenuated his psoriasis. In our brief review of the literature, the use of rituximab for the treatment of psoriasis remains equivocal. Although rituximab is indicated for the treatment of non-Hodgkin lymphoma, chronic lymphocytic leukemia, and rheumatoid arthritis, our case and a brief review of the literature demonstrate that this agent should be considered for other indications in patients with psoriatic skin disease while the results of clinical trials are awaited.

### REFERENCES

1. Cheson BD, Leonard JP. Monoclonal antibody therapy for B-cell non-Hodgkin's lymphoma. *N Engl J Med*. 2008;359:613-626.
2. Ferri C, Mascia MT. Cryoglobulinemic vasculitis. *Curr Opin Rheumatol*. 2006;18:54-63.
3. Mahmoud F, Abul H, al Saleh Q, et al. Elevated B-lymphocyte levels in lesional tissue of non-arthritis psoriasis. *J Dermatol*. 1999;26:428-433.
4. Cañete JD, Santiago B, Cantaert T, et al. Ectopic lymphoid neogenesis in psoriatic arthritis. *Ann Rheum Dis*. 2007;66:720-726.
5. Gerhard N, Krenn V, Magalhães R, et al. IgVH-genes analysis from psoriatic arthritis shows involvement of antigen-activated synovial B-lymphocytes. *Z Rheumatol*. 2002;61:718-727.
6. Hueber AJ, McInnes IB. Immune regulation in psoriasis and psoriatic arthritis—recent developments. *Immunol Lett*. 2007;114:59-65.
7. Nagel A, Hertl M, Eming R. B-cell-directed therapy for inflammatory skin diseases. *J Invest Dermatol*. 2009;129:289-301.
8. Veale DJ, Barnes L, Rogers S, et al. Immunohistochemical markers for arthritis in psoriasis. *Ann Rheum Dis*. 1994;53:450-454.
9. Cohen JD. Successful treatment of psoriatic arthritis with rituximab. *Ann Rheum Dis*. 2008;67:1647-1648.
10. Singh F, Weinberg JM. Partial remission of psoriasis following rituximab therapy for non-Hodgkin lymphoma. *Cutis*. 2005;76:186-188.
11. Mielke F, Schneider-Obermeyer J, Dörner T. Onset of psoriasis with psoriatic arthropathy during rituximab treatment of non-Hodgkin lymphoma. *Ann Rheum Dis*. 2008;67:1056-1057.
12. Saraceno R, Citarella L, Spallone G, et al. A biological approach in a patient with psoriasis and bullous pemphigoid associated with losartan therapy. *Clin Exp Dermatol*. 2008;33:154-155.