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Ocrelizumab-induced psoriasiform dermatitis in a patient with multiple sclerosis

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Abstract

Multiple Sclerosis (MS) is a chronic autoimmune disease that presents with a wide variety of sensory and motor deficiencies. New medications targeting B cells have been approved to treat MS, but the side effect profile has not been widely explored. Herein, we report a case of drug-induced psoriasiform dermatitis following ocrelizumab treatment. Physicians should be cognizant of this possible side effect in patients receiving treatment for MS.

Keywords: multiple sclerosis, ocrelizumab, psoriasiform dermatitis, drug-induced psoriasiform dermatitis

Introduction

Multiple sclerosis (MS) is a difficult to manage chronic autoimmune disease of the central nervous system [1]. Recent evidence suggests B cells may be important to the pathogenesis of MS. A new CD20 monoclonal antibody, ocrelizumab, was approved by the U.S. FDA in 2017 for treatment of MS [1]. In trials and practice, ocrelizumab appears to improve outcomes; however cutaneous side effects are not well documented. We describe a woman who developed drug-induced psoriasiform dermatitis following administration of ocrelizumab.

Case Synopsis

A 68-year-old woman with a past history of MS, presented to the dermatology clinic with a two week history of new itchy skin lesions. She was diagnosed with MS at age 45 and was treated with glatiramer 40mg injection three times weekly for ten years. In November 2016, she was diagnosed with trigeminal neuralgia, which was controlled with carbamazepine 200mg TID. In October, 2017, glatiramer was discontinued because of the patient's aversion to the high volume of injections. The patient had her first infusion of ocrelizumab 300mg IV October 16, 2017, and completed her induction therapy on October 30, 2017 with another infusion of ocrelizumab 300mg IV. She had no side effects during the treatment and

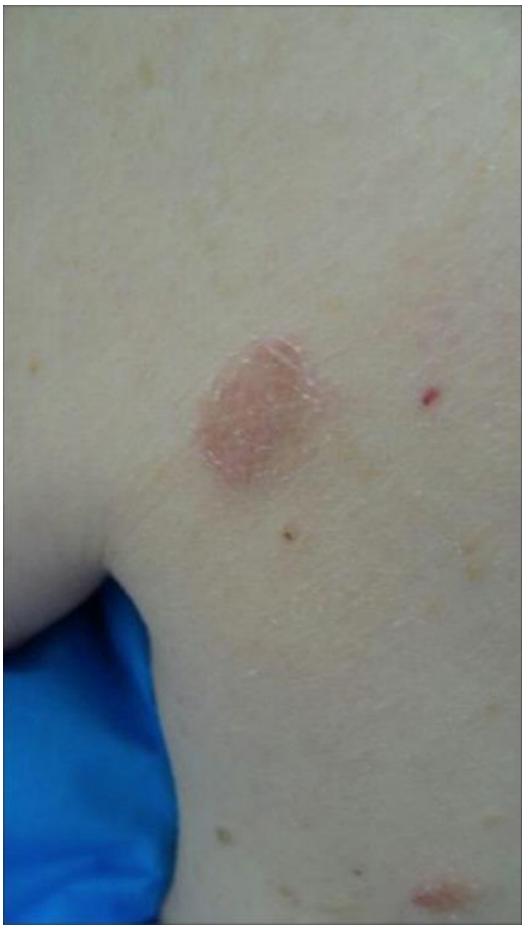

Figure 1. *Psoriasiform rash at presentation.*

responded with good control of her MS symptoms. Her next infusion was scheduled for 6 months later.

The patient presented with multiple well-demarcated, round red scaly plaques and brown patches on her back and bilateral arms that began two weeks prior to presentation in February 2018 (**Figure 1**). She had attempted to treat the lesions with topical terbinafine without success. A review of systems was negative.

Skin scraping examination with potassium hydroxide failed to demonstrate hyphae. A 4mm punch biopsy of a lesion on the back demonstrated psoriasiform epidermal hyperplasia with an infiltrate of multiple eosinophils, possibly indicating a drug-induced reaction (**Figure 2**). The patient was diagnosed with plaque-type drug-induced psoriasiform dermatitis and treated with clobetasol ointment twice daily to the lesions. The patient presented for follow-up two weeks later and demonstrated improvement. As the disease was mild, no recommendation was made to discontinue the next infusion of ocrelizumab.

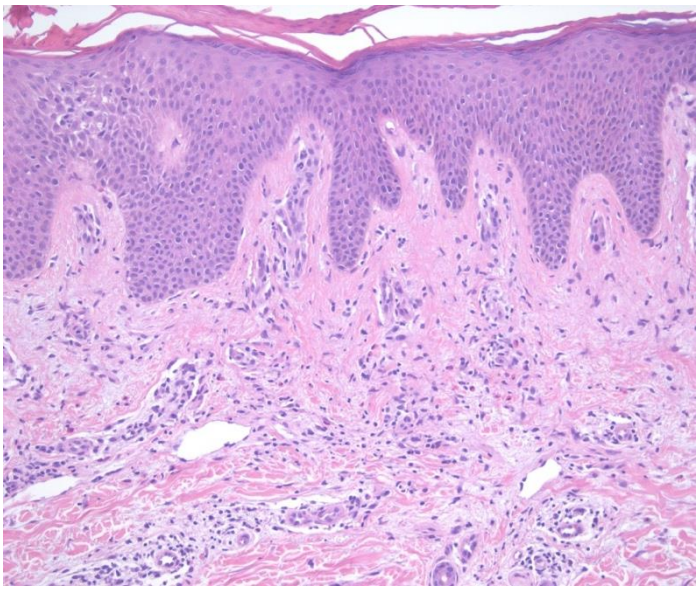

Figure 2. *Psoriasiform epidermal hyperplasia with dilated tortuous upper dermal blood capillaries and a sparse infiltrate with multiple eosinophils around the blood vessels superficially. H&E, 10×.*

Case Discussion

In the absence of drug-withdrawal, drug-induced psoriasiform dermatitis may be diagnosed by determining a history of drug treatments, establishing a temporal relationship between drug administration and the onset of symptoms, finding suggestive features on histologic examination, and excluding other possible triggering factors [2]. In our case, the patient developed a psoriasiform rash confirmed by biopsy 3.5 months after initiating ocrelizumab. This timeline of induction of the rash is consistent with previous data on rituximab. Additionally, the characteristic histologic findings and lack of other medications taken by the patient increase our diagnostic confidence. The patient scored five on the Naranjo adverse reaction probability scale, which is considered to be a "probable" adverse drug reaction [3]. The choice to discontinue a medication related to drug-induced psoriasiform dermatitis is clinical and based on the underlying condition and the availability of

Table 1. *Comparison of Rituximab and Ocrelizumab.*

Drug	Mechanism	Reported Regions of Psoriasiform Skin lesions
Rituximab	Chimeric monoclonal antibody targeting CD20 antigen on B lymphocytes [5]	1. Scalp 2. Knees/thighs 3. Elbows/arms/trunk/onycholysis 4. Scalp/extensor surfaces 5. Arms/thighs 6. Trunk/arms [5]
Ocrelizumab	Humanized monoclonal antibody targeting CD20 antigen on B lymphocytes [1]	1. (Our patient) Trunk/arms

alternative medications [2]. Ocrelizumab was not discontinued as the reaction was not severe and the drug was necessary for continued control of the patient's disease.

Carbamazepine has been anecdotally reported to cause drug-induced psoriasis; however, it typically occurs early in its administration and our patient was on a stable dose since 2016 [4].

Ocrelizumab has not been previously reported to induce psoriasiform dermatitis. However, there are reports of rituximab (a different CD20 inhibitor) induced psoriasis vulgaris and psoriatic arthritis, with disease onset at 10 days to six months following the second dose (**Table 1**), [5, 6]. Hypotheses for the pathophysiology of CD20 antibody-induced psoriasis include: disruption of a T cell and B cell regulatory homeostasis and/or increased susceptibility to bacterial/viral infections (known to trigger psoriasis) [5, 7].

Conclusion

We report a case of drug-induced psoriasiform dermatitis in a patient receiving ocrelizumab therapy. Future research should elucidate the mechanism by which ocrelizumab leads to a psoriasiform dermatitis because if the reaction is predictable, it may help to titrate the dose.

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