

Solar Urticaria Treated With Omalizumab

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PRACTICE POINTS

- Recurrent solar urticaria can be recalcitrant to treatment.
- Omalizumab may be an effective treatment option for solar urticaria, especially in patients with a concomitant asthma diagnosis.

To the Editor:

First documented in 1904,¹ solar urticaria is an IgE-induced condition that predominantly occurs in women aged 20 to 50 years. Worldwide prevalence and incidence information is lacking, but it is known to occur in up to 0.4% of urticaria cases.² Solar urticaria is characterized by pruritus of the skin with erythematous wheals and flares in reaction to sunlight exposure, even despite partial protection by barriers such as glass or clothing.^{2,3} It can have an acute or chronic presentation caused by visible or UV light wavelengths. Solar urticaria can lead to debilitating symptoms and psychological stressors that can severely impact a patient's well-being and also may be accompanied by conditions such as polymorphous light eruption, angioedema, or vasculitis.⁴ Standard treatments include first- and second-generation antihistamines, which are efficacious approximately 50% of the time, as well as phototherapy, which can be time consuming and a burden on patients who work or go to school full time.² Other possible treatment modalities include plasmapheresis, intravenous immunoglobulins, steroids, cyclosporine, and anti-IgE recombinant monoclonal antibody injections.^{5,6} We present the case of a patient who

was successfully treated with subcutaneous injections of omalizumab every 3 weeks to add to the growing number of case reports of treatment of solar urticaria.

A 30-year-old woman with Fitzpatrick skin type III and a 9-year history of solar urticaria was referred to the Department of Allergy and Immunology by her primary care physician. The patient reported that redness, swelling, and itching would occur on sun-exposed areas of the skin after approximately 10 minutes of exposure despite daily sunscreen application. She had been successfully treated with hydroxychloroquine 400 mg once daily after her first formal evaluation by dermatology 4 years prior to the current presentation. She subsequently self-discontinued treatment after 8 months of treatment due to resolution of symptoms. She noted the symptoms had returned upon relocating to Hawaii after living in the continental United States and Italy. Initially she was restarted on hydroxychloroquine 200 mg once daily and 4-times the recommended daily dose of second-generation antihistamines without relief. The hydroxychloroquine dosage subsequently was increased to 400 mg once daily, but her symptoms did not resolve.

On physical examination, sun-exposed areas of the skin showed marked macular erythema with discrete erythematous lines of demarcation observed between exposed and unexposed skin. The patient also reported concomitant pruritus, which antihistamines did not alleviate. A maximum 1-year course of cyclosporine 300 mg once daily initially was planned but was discontinued due to immediate onset of severe nausea and emesis after the first dose as well as continued outbreaks of urticaria for 1 month after incrementally increasing by 100 mg from a starting dose of 100 mg.

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After discussion with the dermatology department, a trial of omalizumab was started because the daily impact of a UV light sensitization course was not feasible with her work schedule, and serum IgE blood level was 560.4 µg/L (reference range, 0–1500 µg/L). The patient was started on a regimen of omalizumab 300 mg (subcutaneous injections) every 2 weeks with noted improvement after the third dose, with no urticarial symptoms after sun exposure. After 2 months, the dosage interval was increased to every 4 weeks given her level of improvement, but her symptoms recurred. The treatment regimen was then changed to every 3 weeks. The patient was symptom free for a period of 10 months on this regimen, followed by only 1 outbreak of erythema and urticaria, which occurred 1 day prior to a scheduled omalizumab injection. Symptoms have otherwise been well controlled to date on omalizumab.

Solar urticaria is a poorly understood phenomenon that has no clear prognostic indicators; therefore, diagnosis often is made based on the patient's history and physical examination. Further testing to confirm the diagnosis can be performed using specific wavelengths of UV light to determine which band of light affects patients most; however, the wavelength can change over time, leading to less clinical significance, and may decrease efficacy of phototherapy.² Solar urticaria has no clear predisposing factors, and treatments to date have been moderately successful. Exposure to sunlight is thought to initiate an alteration in a skin or serum chromophore or photoallergen, which then causes subsequent cross-linking and IgE-dependent release of histamine as well as other mediators such as cytokines, eicosanoids, and proteases with mast cell degranulation.⁷

Omalizumab is a recombinant humanized monoclonal IgG1 antibody targeting the methylated IgE Cε3 domain that initially was marketed toward controlling IgE-mediated moderate to severe asthma recalcitrant to standard treatments. It has since received approval from the US Food and Drug Administration for treatment of chronic idiopathic urticaria after first being noticed to serendipitously treat a patient with cold urticaria and asthma in 2006.^{4,7,8} It was then first documented to successfully treat solar urticaria in 2008.⁶ The safety profile of omalizumab makes it a more favorable choice when compared to other immunomodulating treatments, with the most serious adverse reaction being anaphylaxis, occurring in 0.2% of patients in a postmarketing study.⁹ It functions through binding to free IgE at a region necessary for IgE to bind at low- and high-affinity receptors but not to immunoglobulins already bound to cells, thus theoretically preventing activation of mast cells or basophils.¹⁰ It also has been suggested that low steady-state values are needed to see continued benefit from the drug,¹⁰ which may have been seen in our patient after having an outbreak just prior to receiving an injection;

however, prior reports have shown benefit unrelated to total IgE levels, with improvement after days to 4 months.^{4,10,11} One case report showed no response after 4 doses; it is unknown if this patient was tested for clinical improvement to omalizumab through further immunoglobulin analysis, but treatment response is important to consider when deciding on whether to use this drug in future patients.¹² It is unknown why some patients will respond to omalizumab, others will partially respond, and others will not respond, which can be ascertained either through quality-of-life improvement or lack thereof.

In our experience, omalizumab is a viable option to consider in patients with solar urticaria that is recalcitrant to standard treatments and elevated IgE levels for whom other treatments are either too time consuming or have side-effect profiles that are not tolerable to the patient. If the patient has concomitant asthma, there may be additional therapeutic benefit. Further research is needed with regard to a cost-benefit analysis of omalizumab and whether using such a costly drug outweighs the cost associated with time and resources utilized with repeat clinic visits if other standard treatments are not effective.¹³

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