

Omalizumab for the treatment of solar urticaria: many questions remain unresolved

Key words

Solar urticaria –
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To the Editors

Omalizumab (Xolair®), a humanized monoclonal antibody against human immunoglobulin E (IgE), was recently approved as an add-on therapy for chronic spontaneous urticaria (csU) refractory to treatment in patients aged 12 years and above. The dose in this indication is 300 mg subcutaneously every 4 weeks. This dose was administered to patients showing an inadequate response despite repeated systemic treatment with H1 and H2 antihistamines or leukotriene receptor antagonists. The urticaria activity score over 7 days (UAS7) in this group went down from 31.2 on average to ≤ 6 in 52 % and to 0 in 33 % within a 12-week period.

Although uncommon, light-induced – or solar – urticaria is a highly restrictive disease in which generally low doses of ultraviolet A (UVA), UVB, and/or visible light (VIS) are sufficient to elicit extensive urticaria and Quincke's edema on areas of skin exposed to light. Treatment and preventive modalities to date, such as UV hardening or hyposensitization,

systemic corticosteroids, antimalarials, cyclosporin A, plasmapheresis, immunoglobulins, and antihistamines, as well as the use of sunblocks and UVA-resistant film applied to windows, are often inadequately effective, associated with side effects, or unfeasible [2].

This prompted the administration of omalizumab for the management of solar urticaria in individual cases or case studies.

The background, courses, and outcomes of 15 cases published in the literature [3, 4, 5, 6, 7, 8, 9, 10, 11] were evaluated.

Treatment response was reported as good in 11 of the 15 patients (73 %), as partially successful in two patients, and completely unsuccessful in a further two patients (**Tab. 1**). Exposure to light failed to elicit urticaria in 10 patients and elicited only erythema in one patient. This success rate is in the range of those reported for csU.

Unfortunately, most authors failed to measure (or report) the minimal urticarial dose (MUD, or min-

Tab. 1: Patient characteristics, eliciting spectrum, effects on minimal urticarial dose, urticaria activity score over 7 days, and clinical response to omalizumab in nine patients with solar urticaria

No.	Age (sex)	IgE (kU/l)	Spectrum	Omalizumab (mg/month)	MUD improvement	UAS7-, clinical improvement	Reference
1	58 (F)	284	VIS?	150–450	n. d.	–38 to 0	[7]
2	43 (F)	1500	VIS?	150–300	n. d.	–31 to 0	[7]
3	49 (F)	980	VIS?	150–300	n. d.	–36 to 0	[7]
4	16 (M)	559	UVA + UVB	800	UVB: ×2*, UVA: 0*	n. d., symptomatic	[4]
5	52 (F)	22	UVA	150	UVA: ≥ ×4	n. d., symptom-free	[3]
6	24 (M)	77.1	UVA + VIS	150	UVA: 0, VIS: 0	n. d., symptomatic	[5]
7	64 (F)	12.6	UVA	150	UVA: 0	n. d., worsened	[6]
8	16 (F)	228	UVB	750–150	UVB: > 0	n. d., improved	[8]
9	6 (M)	2004	VIS	75–600	VIS: ≥ ×2	n. d., symptom-free	[9]
10, 11, 12	n. n.	n. n.	n. n.	150–300	n. n.	to 0	[10]
13	n. n.	n. n.	n. n.	150–450 (?)	n. n.	–30 to 90 %	[10]
14	29 (M)	322	UVA	300	UVA: > 2.5	n. d., symptom-free	[11]
15	55 (F)	22	UVA	300	UVA: > 5.5	n. d., symptom-free	[11]

IgE, immunoglobulin E; M, male; MUD, minimal urticarial dose; n. d., not done; n. n., not communicated; UAS7, urticaria activity score over 7 days; UVA, ultraviolet A; UVB, ultraviolet B; VIS, visible light; F, female

**Only residual erythema*

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imal wheeling dose, MWD) for UVA, UVB, and VIS at baseline and during treatment [4, 7, 8, 9, 10], making it difficult to quantify the individual therapeutic effects, particularly since photo-exposure is difficult to compare under field conditions. The only small-scale case series recorded no pathological reaction whatsoever on light testing during diagnostic work-up in any of the three patients [7], making the diagnosis at least questionable. A number of investigators used comparatively high UV doses for photo-challenge at baseline and following treatment [4, 6].

With regard to omalizumab dosage, some investigators used low doses calculated according to body weight and IgE level, in line with the approach used at the time for asthma treatment. These latter cases include the only cases for which treatment failure was reported. Some authors escalated the dose until a response was seen [7, 9, 10], while others began at high doses and reduced these once a response had been achieved [8, 9]. A number of studies failed to explicitly report whether or not add-on treatment measures, such as H1 antihistamines or sunblocks, had been used [3, 4, 5, 6, 8, 9, 10, 11].

Taking these results as a whole, the management of solar urticaria using omalizumab, irrespective of whether symptoms are elicited by UVA, UVB, and/or VIS, could represent a promising approach. However, a large case series using a standardized dose regimen (e.g., 300 mg per month, as with csU) and more precise determination of MUD for all symptom-triggering wavelength ranges at baseline and following therapy is required to better assess this hypothesis. Since cases are rare, this would be best achieved in a multicenter approach.

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Conflict of interest

Prof. Dr. Kowalzik is a clinical investigator for Novartis Pharma.

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