

Omalizumab efficacy in a girl with atopic eczema

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Atopic eczema (AE) is a chronic, relapsing form of skin inflammation characterized by a disturbance of the epidermal-barrier function, which culminates in dry skin, as well as by an IgE-mediated sensitization to food and environmental allergens (1). Elevated levels of serum IgE to environmental allergens are generally found in about 80% of patients with AE (2). Atopic eczema often precedes the occurrence of food allergy, allergic rhinitis, and asthma.

In the last few years, a number of studies have shown the efficacy of omalizumab in the treatment of AE either in monotherapy (3) or in combination with other therapies (e.g., topical steroids, tacrolimus, antihistamines, antileukotri-

enes, oral corticosteroids, and UV treatment) (4–7). In the aforementioned studies (4–7), some patients suffered only from AE (3, 5), while the great majority also suffered from asthma (4, 6, 7).

Omalizumab, (Xolair™; Novartis, Nürnberg, Germany) a recombinant humanized IgG1 monoclonal antibody is derived from the murine antibody MAE11. It specifically binds to the high-affinity FcεRI domain of free circulating IgE, and thus prevents binding of free serum IgE to mast cells and other effector cells.

We present the case of a 15-year-old girl with severe AE, according to the criteria of Hanifin and Rajka (8), as well as with rhinoconjunctivitis and asthma due to sensitization to *parietaria judaica*, birch, and hazel [a FEV₁ and a peak expiratory flow (PEF) lower than 70% of the predicted value]. At the time of the first evaluation, she was under treatment with budesonide/formoterol (100/6 µg twice daily), montelukast (10 mg daily), and desloratadine (5 mg daily). Our patient had a 6-year-long history of severe generalized AE, treated with a standard therapy (topical corticosteroids, topical pimecrolimus, systemic corticosteroids, UV treatment, and oral antihistamines), without long-lasting and satisfactory relief from symptoms. The

patient had also been treated with cyclosporine A, with a good clinical response. However, this therapy was withdrawn because of an increase in blood creatinine levels (from 0.8 to 1.9 g/l). Taking into account the literature data (4–6), and her total IgE, we decided to treat our patient with 300 mg of omalizumab subcutaneously for a month. The therapeutic protocol was approved by the institutional review board.

To evaluate the clinical efficacy of omalizumab therapy, we monitored the eczema area and severity index (EASI) (9), as well as the Scoring Atopic Dermatitis (SCORAD) (4), at each visit; moreover, a detailed photo documentation was taken. In addition, we monitored total and allergen-specific IgE serum levels, as well as inflammatory cells and cytokine expression in the peripheral blood before and after therapy (Table 1). The patient tolerated the eight omalizumab doses we administered.

In the first evaluation, the SCORAD was 55. After 2 months of therapy, the patient displayed a very good clinical response (SCORAD reduction of more than 50%), and after 5 months she showed a significant total SCORAD decrease of about 80% (Table 1). The EASI evaluation demonstrated reasonably good overall reliability (EASI score

Table 1. Atopic eczema (AE) scores, and clinical and laboratory test results

Time	EASI score	SCORAD	FEV1 % predicted	Erythrocyte sedimentation rate (mm/h)	Total IgE (kU/l)	Specific IgE to inhalant allergens (kU/l)			NK %	B-Lymph. %	Eosinoph. %	CD4 ⁺ /CD8 ⁺
						Hazel	rPar j2	rBet v1				
Baseline	44.0	55	< 70	12	107	5.9	10.6	6.8	9	9	13.3	3.18
May 2008	38.0	35	–	6	648	46.8	61.5	56.1	10	11	1.4	2.66
June 2008	33.0	28	–	6	450	38.3	55.2	45.3	11	11	6.0	n.p.
July 2008	22.0	22	–	5	387	35.3	45.2	30.3	8	14	1.4	2.66
September 2008	15.0	17	–	13	410	27.7	53.6	25.9	12	10	10.8	1.78
October 2008	8.0	10	–	22	362	27.9	55.8	28.2	10	7	8.0	1.78
November 2008	8.5	9	–	7	366	27.0	44.5	21.4	9	11	10.7	1.70
December 2008	8.0	9	90	5	318	18.5	49.9	15.5	10	5	7.9	2.04

at baseline was 44, after 5 months of therapy it was eight). Five months after the start-up of the therapy, total and allergen-specific IgE serum levels showed no reduction, while the CD4⁺/CD8⁺ antibodies ratio was lower (Table 1). The patient also experienced good relief of rhinoconjunctivitis and asthma symptoms (a FEV₁ and a PEF of about 90%).

We should emphasize that our patient experienced much improvement (1) in monotherapy, (2) with low-dose anti-IgE therapy, and (3) from the very beginning of the treatment. It is interesting to note that the patients with AE described in the study by Forman et al. (3), who successfully responded to omalizumab, had actually been treated during the first 4 weeks with topical steroids, oral prednisone, and oral antihistamines. Our study provides further support to the literature data which suggest that omalizumab might have a place in the treatment of AE, especially if the latter is refractory to the standard therapy and is associated with respiratory symptoms. In effect, a recent review (10) includes therapy with anti-IgE antibodies among AE therapeutic tools. Specifically, such antibodies have proved to be effective in a subgroup of AE patients, in whom an increase of the IgG/IgE ratio was observed after this therapy (11). Moreover, other biologicals, such as anti-CD20 antibodies and anti-CD11a antibodies, have been successfully used in the treatment of severe AE cases (10). Interestingly, treatment with anti-CD20 antibodies greatly reduces the number of B cells in the blood, while in our patient, no

significant reduction was observed. However, our results, as well as the clinical improvements, should be confirmed in controlled studies performed in large samples. At the time of writing this paper the patient was still under treatment.

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