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CASE REPORT

Successful combined treatment with omalizumab and tocilizumab in a case of chronic spontaneous urticaria and rheumatoid arthritis: A case report and literature review

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ABSTRACT

Omalizumab is a recombinant humanized monoclonal anti-IgE antibody used to treat uncontrolled chronic spontaneous urticaria (CSU). Sometimes patients with CSU also have other autoimmune conditions. Recent studies have demonstrated the safety and efficacy of a combination treatment with omalizumab and other biologics. Here, we report the first successful treatment with omalizumab for CSU and tocilizumab for rheumatoid arthritis. Since omalizumab is unlikely to cause severe immunosuppression, it may be a treatment option for CSU, even in patients treated with other biologics.

Keywords: Chronic Spontaneous Urticaria; Omalizumab; Rheumatoid Arthritis; Tocilizumab; Anti-IL-6 Receptor Antibody

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1. Introduction

Omalizumab is a recombinant humanized monoclonal anti-IgE antibody used for uncontrolled chronic spontaneous urticaria (CSU)[1]. Sometimes, patients with CSU also have other autoimmune conditions[1], and several authors have reported good, combined use of biologics for chronic inflammatory diseases[1–3]. In a case report, a combination of omalizumab and etanercept was successful, with no adverse events[3]. However, there have been no cases of coadministration of anti-IL-6 receptor antibody, such as tocilizumab. Herein, we report the first successful case of CSU combined with omalizumab and tocilizumab for rheumatoid arthritis (RA).

2. Case presentation

A 72-year-old woman was referred to our dermatology department because of uncontrolled CSU. She was prescribed several antihistamines, but her urticaria symptoms did not improve. She had been suffering from RA for many years and was successfully treated with intravenous tocilizumab (8 mg/kg/dose once every 8 weeks), which is an anti-IL6 receptor antibody. Upon initial examination, the patient had several urticarial lesions on her extremities. Blood tests, such as red and white blood cell counts, kidney function, liver function, and total IgE levels, were normal. We attempted changing the antihistamines, doubling the dose, and adding leukotriene receptor antagonists; however, she had a relapse of urticaria symptoms. About a year after

the first visit, we decided to treat her with 300 mg omalizumab subcutaneously every 4 weeks. She was still treated with tocilizumab for RA, and omalizumab was administered two weeks after tocilizumab. We avoided administering tocilizumab and omalizumab simultaneously, in order to determine which drug was causing the adverse reactions. The urticaria control test (UCT) was used to evaluate the effects of treatment. The UCT is a patient-reported outcome measure for patients with CSU. The patient answered four questions regarding urticaria symptoms over the last four weeks. The minimum and maximum UCT scores are 0 and 16, respectively, with over 12 points indicating good control[4]. In our case, the UCT score was 10 points at the start of omalizumab treatment. At the one-month follow up, the patient was asymptomatic (UCT = 16), and her RA was well-controlled. Although we extended the omalizumab interval to every eight weeks, the patient experienced no relapse. The antihistamines and leukotriene receptor antagonists were gradually reduced, and she was able to discontinue all oral medications 11 months after starting omalizumab. Owing to well-controlled urticaria symptoms, she stopped treatment with omalizumab after 12 doses without other medications for CSU. No adverse events were reported, and 12 months after treatment discontinuation, the patient remained urticaria-free.

3. Discussion

Recently, some authors have reported the combined use of biologics for various chronic inflammatory diseases[1–3,5]. According to one of these reports, the combined use of biologics may further increase the risk of infection because some biologics may cause immunosuppression[5]. Weinblatt *et al.* conducted a randomized placebo-controlled trial to investigate the efficacy and safety of abatacept (a selective co-stimulation modulator) in combination with etanercept (a selective anti-IL-1 agent) in patients with RA. They concluded that the combination of abatacept and etanercept increased side effects, including serious infections, with limited clinical effect[5].

However, several cases successfully treated with omalizumab and other biologics have been reported[1–3] (**Table 1**). In these cases, two or more biologics were used for each disease, as reported by Weinblatt *et al.*[5] Omalizumab is a recombinant humanized monoclonal anti-IgE antibody used to treat uncontrolled CSU[1]. The most commonly reported adverse events were gastrointestinal manifestations, headache, asthenia, myalgia, and injection-site reactions, and omalizumab is unlikely to cause severe immunosuppression[2,6]. A 64-year-old woman with RA and CSU was treated with a combination of etanercept and omalizumab. At the three-month follow up, the patient was almost asymptomatic (UAS7 = 7; UCT = 11) and experienced no adverse events[3]. In another case, a 21-year-old woman presented with RA and CSU. The patient was treated with adalimumab and omalizumab. She showed complete resolution of symptoms (UAS7 = 0) at 12 weeks, and no adverse events were reported[1]. Fougerousse *et al.* reported nine cases in which omalizumab was successfully combined with other biologic agents, resulting in psoriatic arthritis in six patients, inflammatory bowel disease in two patients, and RA in one patient. Four patients received etanercept, two patients received adalimumab, and two patients received infliximab. In eight of the nine patients, their symptoms improved to 0 points on the UAS7. The other patient had a 30% improvement in the UAS7. No apparent adverse events were associated with omalizumab[2].

4. Conclusion

To the best of our knowledge, this is the first report of successful combined treatment with omalizumab and an anti-IL-6 receptor antibody. Since omalizumab is unlikely to cause severe immunosuppression, it may be a treatment option for CSU, even in patients treated with other biologics.

Conflict of interest disclosure

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Table 1. Overview of cases using omalizumab and other biologics

Age/Sex	Biothrapy indication	Biothrapy type		Effect of omalizumab	Literature
21/F	RA	Adalimumab	TNFα	Complete resolution of symptoms (UAS7 = 0) in 12 weeks	[1]
64/F	RA	Etanercept	TNFα	Almost asymptomatic (UAS7 = 7; UCT = 11) in 3 months	[3]
28/F	Psoriasis	Secukinumab	IL-17A	Complete clinical response in eight patients (UAS7 = 0)	[5]
35/F	Psoriasis	Adalimumab	TNFα		
25/F	Psoriasis	Adalimumab	TNFα		
25/M	Ulcerative colitis	Adalimumab	TNFα		
21/F	Crohn's disease	Infliximab	TNFα	Partial response 30% improvement on UAS7 in one patient	
60/F	Psoriasis	Infliximab	TNFα		
29/M	Ankylosing spondylarthritis	Etanercept	TNFα		
51/M	Psoriasis	Etanercept	TNFα		
53/M	Psoriasis	Etanercept	TNFα		
35/F	Psoriasis	Tildrakizumab	IL-23 p19	Complete resolution of symptoms (UAS7 = 0) in 12 weeks	[7]

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