Medical Case Reports and Therapeutic Studies [CRTS]

Volume 2021 Issue 02

Case Report

Omalizumab Treatment during SARS-CoV-2 Infection

Marisa Paulino*, Célia Costa, and Elisa Pedro

Immunoallergology department, Hospital de Santa Maria – Centro Hospitalar Universitário Lisboa Norte, Portugal

Received: November 11, 2021; **Accepted:** December 09, 2021; **Published:** December 27, 2021

Citation: Paulino M, Costa C, Pedro E (2021) Omalizumab Treatment during SARS-CoV-2 Infection. *Med Case Rep Ther Stud* 02(02): 57–58.

Introduction

COVID-19 pandemic affected millions of people worldwide since was first reported in December 2019 [1]. As the pandemic expanded around the world medical practice suffered substantial changes. Healthcare systems worldwide had to adapt to provide the best and safest care for patients. Those with severe allergic disease provide the major challenge as physicians may not feel confident with the use of biological agents in this setting.

Keywords: Omalizumab, COVID-19, Urticaria

Case Presentation

Omalizumab is a monoclonal antibody targeting IgE approved for the treatment of severe asthma and Chronic Spontaneous Urticaria (CSU) [2]. Reports have been published showing the safety of omalizumab administration during SARS-CoV-2 infection and some even hypothesize a protective role in it [3–5]. We report a case of a 45-year-old female with CSU treated with omalizumab that contracted COVID-19.

Urticaria symptoms began at 42 years-old, 1 year prior to the first appointment, initially with only symptomatic dermographism: wheeling and itching 5–10 minutes after scratching the skin or in areas of friction from clothes. After six months she had an episode of generalized maculopapular, itching lesions with individual duration of less than 24hours that worsened after sun exposure developing areas of angioedema. She recurred to her general practitioner that prescribed bilastine 20mg/day, topical corticosteroid and referred her to our urticaria Unit.

At first appointment she was medicated with bilastine 20mg/day maintaining daily wheals, with a weekly urticaria activity score (UAS7) 24–25 for the following 12 weeks. H_1-Antihistamine dosage was increased until a maximum dosage of 4/day was achieved. Skin prick tests for aeroallergens and food allergens were negative. Autologous Serum Skin Test (ASST) was negative. Blood workup was clear. The patient quality of life deteriorated further as the disease progressed with an increased absenteeism from work (health care assistant), strained personal and social relationships and reduced self-esteem.

After failure of the second line of treatment (H_1-Antihistamine 4/day), omalizumab was proposed. She started treatment in November 2019 with 300mg subcutaneously every 4 weeks at our day care unit. At first administration she was medicated with bilastine 20mg 4/day. The UAS7 was 21, Urticaria Control Test (UCT) was 7 and Dermatology Life Quality Index (DLQI) was 7. At the fourth administration she had her CSU controlled: UAS7 0, UCT 16 and DLQI 0, and reduced the dose of bilastine 20mg to 2/day.

Due to the COVID-19 pandemic, the patient chose not to take omalizumab in March 2020, imposing an 8-week interval between administrations. At that time, she reported only a slight increase in pruritus (UAS7 7). Omalizumab was resumed on April 28th. Triage was performed before administration excluding COVID-19 symptoms, fever or contact with infected individuals.

Her husband started exhibiting COVID-19 symptoms on May 3rd (fever, cough, dyspnea and diarrhea) and 1 day later she noticed anosmia and arthralgia, both were positive to SARS-CoV-2 (RT-PCR of nasopharyngeal

exudate) on May 5th. CSU was controlled and she reported only a slight increase in pruritus with the need for increasing H_1-Antihistamine dosage from 2 to 4/day. She maintained mild symptoms and tested negative after 3.5 weeks. Only anosmia persisted but with a slight improvement. As she was quarantined at the time, she was unable to attend treatment in May but maintained the scheduled treatments in June 23rd as CSU was controlled.

No worsening of CSU symptoms or increase in COVID-19 severity was observed in this case despite the administration of omalizumab in the week prior to SARS-CoV-2 infection.

As stated previously, some authors point to a possible protective role of omalizumab in SARS-CoV-2 infection. Some case reports have been published showing a good outcome in these patients. Criado et al [3] described a case of a 54-year-old female with COVID-19 and previously controlled CSU that worsened during the infection; she was treated with omalizumab showing improvement not only in CSU symptoms but in COVID-19 as well. Lommatzsch et al [4] also did not describe a case of a patient with severe asthma treated with omalizumab that exacerbated the disease nor had complications of COVID-19.

The possible protective effect lies on the basis that omalizumab was shown to downregulate high affinity IgE receptors on plasmacytoid cells and increase interferon production thus enhancing anti-viral immunity [6]. Furthermore, it has an inhibitory effect on inflammatory cells, such as mast cells and neutrophils, decreasing the release of proinflammatory cytokines that can be responsible for COVID-19 related complications [5,7].

The findings pointing to a protective role of omalizumab are however circumstantial and lack evidence. Despite that and as urticaria-like lesions and CSU exacerbation can occur in COVID-19, omalizumab can be considered as treatment to those refractory to first and second line treatment.

References

1. Zhang J jin, Dong X, Cao Y yuan, et al. (2020) Clinical characteristics of 140 patients infected with SARS-CoV-2 in Wuhan, China. *Allergy Eur J Allergy Clin Immunol* 75: 1730–1741. [View]
2. Zuberbier T, Aberer W, Asero R, et al. (2018) The EAACI/GA2LEN/EDF/WAO guideline for the definition,classification, diagnosis and management of urticaria. *Allergy Eur J Allergy Clin Immunol* 73: 1393–1414. [View]
3. Criado PR, Criado RFJ, Pincelli TP, Yoshimoto TA, Naufal GGA, Abdalla BMZ (2020) Chronic spontaneous urticaria exacerbation in a patient with COVID-19: rapid and excellent response to omalizumab. *Int J Dermatol* 59: 1294–1295. [View]
4. Lommatzsch M, Stoll P, Virchow JC (2020) COVID-19 in a patient with severe asthma treated with Omalizumab. *Allergy Eur J Allergy Clin Immunol* 75: 2705–2708. [View]
5. Abdelmaksoud A, Goldust M, Vestita M (2020) Omalizumab and COVID-19 treatment: Could it help? *Dermatol Ther* 33: e13792. [View]
6. Alizadeh Aghdam M, Knol EF, van den Elzen M, et al. (2020) Response of FcεRI-bearing leucocytes to omalizumab in chronic spontaneous urticaria. *Clin Exp Allergy* 50: 364–371. [View]
7. Kritas SK, Ronconi G, Caraffa A, Gallenga CE, Ross R, Conti P (2019) Mast cells contribute to coronavirus-induced inflammation: New anti-inflammatory strategy. *J Biol Regul Homeost Agents* 34: 9–14. [View]

***Corresponding author:** Marisa Paulino, Immunoallergology department, Hospital de Santa Maria – Centro Hospitalar Universitário Lisboa Norte, Portugal;

Email: marisapaulino.90@gmail.com