



## CASE REPORT

# Coronavirus Disease 2019 (COVID-19) in Two Hidradenitis Suppurativa Patients Who are Sisters Treated with Adalimumab

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## Abstract

**Introduction:** Adalimumab is an effective treatment for patients with moderate to severe HS. Here we aimed to present two sisters with HS who had coronavirus infection during the treatment of adalimumab

**Case report:** Two patients with hidradenitis suppurativa who were sisters has been diagnosed as HS with Hurley stage 2. We started for them adalimumab for older patient on 12th September 2019, for younger patient on 1st November 2019. Although coronavirus disease 2019 pandemic started on 11th March 2020 in Turkey, we haven't stopped adalimumab treatment. We learned that our patients had applied with some symptoms like severe cough, severe headache to the polyclinic for infectious diseases of our hospital and their RT-PCRs had been determined positive on 27th August 2020. They had continued to use adalimumab during their coronavirus disease 2019 treatment. They overcame coronavirus disease 2019 and now they continue to use adalimumab.

**Conclusion:** We reported the first cases of coronavirus disease 2019 infection in two patients with hidradenitis suppurativa treated with adalimumab. The outcome of these cases and data from currently available literature suggest that adalimumab can suppress the levels of TNF  $\alpha$  and so can prevent detrimental effects of COVID-19 infection.

**Keywords:** COVID-19; Hidradenitis Suppurativa; Biologic; Adalimumab; SARS-CoV-2

## Introduction

Hidradenitis suppurativa (HS) is an inflammatory skin disorder presenting of recurrent or chronic painful or suppurating lesions in the apocrine gland-bearing regions that often progress to scarring, sinus tract formations and suppuration [1-2]. Surveys show that this disease is diagnosed with the mean delay of 7.2 years [3]. There are different medical options for treating HS and adalimumab is one of them. Recommended usage of adalimumab is as 160 mg on week 0, 80 mg on week 2 and 40 mg weekly from week 4. Adalimumab is an effective and generally well tolerated treatment for patients with moderate to severe HS [4]. Here we aimed to present two sisters with HS who had coronavirus infection during the treatment of adalimumab.

## Case Report

Our first case 21 year-old female applied with pustular lesions and scars on her axillas and groins to dermatology outpatient clinic of İzmir Tepecik Training and Research Hospital and has been diagnosed as HS with Hurley stage 2 on 12<sup>th</sup> September 2019. Her sister 18 year old applied to dermatology outpatient clinic of our hospital and has been diagnosed as HS with Hurley stage 2 on 1st November 2019. We started adalimumab for our older patient on 23<sup>rd</sup> September 2019 and for our younger patient on 17<sup>th</sup> February 2020 because previous treatments were ineffective for both. Although coronavirus disease 2019 (COVID-19) pandemic started on 11<sup>th</sup> March 2020 in Turkey, we haven't stopped adalimumab treatments of our patients. We didn't observed any side effects about the treatment but we learned that our patients had applied with severe cough, severe headache, throat ache, loss of smell and taste, anorexia and weakness to the polyclinic for infectious diseases of our hospital and their RT-PCRs had been determined positive on 27<sup>th</sup> August 2020. D-dimer test of older patient was < 190  $\mu$ g/L and of younger patient was 220  $\mu$ g/L. These results were in normal range (0-440  $\mu$ g/L) and their chest BTs were normal too. C reactive protein (CRP) of older patient was 0.8 mg/dL and of younger patient was 0.2 mg/dL, these results were in normal range (0-5 mg/dL). They had been started favirapir and hydroxyklorokin for coronavirus disease treatment for five days. They had continued to use adalimumab for their HS disease during their COVID-19

treatment. After the 14-day quarantine period had been expired, their control RT-PCRs resulted as negative for COVID-19, meeting the criteria to be considered successfully healed. Now our patients continue to use adalimumab and are still in remission. We reminded them to pay attention to the use of masks and social distance.

## Discussion

In COVID-19 infection, inflammatory cytokines stimulate the activation of an effective immune response, later they can mediate the development of an exaggerated systemic inflammation. This cytokine storm is both ineffective toward the pathogen and detrimental for the body [5]. As the disease progresses and clinical conditions worsen, proinflammatory cytokines, such as interleukin-1 (IL-1), interleukin-6 (IL-6) and tumor necrosis factor  $\alpha$  (TNF  $\alpha$ ) increase markedly [6].

Anti-TNF $\alpha$  therapy, such as adalimumab, is used in the management of several inflammatory diseases such as psoriasis, hidradenitis suppurativa, rheumatoid arthritis, inflammatory bowel disease, and ankylosing spondylitis. Experimental researches suggest a potential rationale for use of anti-TNF therapy in viral pneumonia treatment. A single infusion of anti-TNF  $\alpha$  antibody can significantly reduce the amount of TNF in the blood, suggesting a possible anti-inflammatory benefit in COVID-19. In addition, anti-TNF  $\alpha$  may also induce the downregulation of angiotensin-converting enzyme – 2 (ACE2) expression and shedding. The potential role of anti-TNF $\alpha$  therapy warrants consideration and should be investigated as a potential therapy to prevent progression to more advanced stages [7].

Adalimumab is currently the only United States Food and Drug Administration (FDA)- approved drug for moderate to severe HS [8]. Nowadays, a study in China is evaluating adalimumab in COVID-19 treatment (ChiCTR2000030089) [7].

According to all literature adalimumab treatment may have been useful for these two sisters during their COVID-19 treatment. They might have a milder disease for the contribution of adalimumab to suppressing the cytokine storm.

In conclusion, we reported the first cases of COVID-19 infection in two patients with hidradenitis suppurativa treated with adalimumab. The outcome of these cases and data from currently available literature suggest that adalimumab can suppress the levels of TNF  $\alpha$  and so can prevent detrimental effects of COVID-19 infection. Further data are needed to support this hypothesis.

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