



Covid-19 induced Sjogren syndrome: A phenomenon of molecular mimicry

Shivani Biswal, Mohinder Pal Singh Sawhney, Nidhi Yadav and Garima Singal

Department of Dermatology and STD and Department of ENT, SGT Medical College, Hospital and Research Institute, Chandu-Budhera, Gurugram, Haryana-122505, India

Corresponding author: Dr MPS Sawhney, email ID: drsawhney@live.com

ABSTRACT

Sjogren syndrome is an autoimmune disorder having both glandular and extraglandular involvement. It is characterized by dryness of mouth, dryness of eyes and joint involvement. COVID19 is responsible for triggering various autoimmune disorders including Sjogren's syndrome. Hence, we report a case Sjogren's syndrome in a 52 years old female patient, 10 days after COVID-19 infection. We feel it is a phenomenon of molecular mimicry due to the damage caused to the salivary and lacrimal glands by SARS CoV 2 virus, in a genetically predisposed individual having CD8 cytotoxic memory cells. To the best of our knowledge, this is first such case reported.

Key Words: *Sjogren's syndrome, COVID 19, SARS CoV 2 virus, Molecular mimicry.*

Received 12.10.2022

Revised 09.11.2022

Accepted 29.12.2022

INTRODUCTION

Sjogren's syndrome, an autoimmune disorder causes dry eyes and dry mouth as if affects the small salivary glands majorly. Extraglandular involvement is also seen involving joints, skin, lungs, GIT and renal system. Females are at a higher risk of developing Sjogren's syndrome than men. It may coexist with other autoimmune diseases like SLE.[1] COVID 19 infection was a global pandemic caused by SARS CoV 2 virus. Acute COVID is <3 months while long COVID is >3 months.[5] Autoimmune disorders are a manifestation of long COVID syndrome. Here, we report a case of Sjogren's syndrome induced by COVID19 infection.

CASE REPORT

52 year old female patient came to Dermatology OPD on 4th May 2022 with dryness of eyes with foreign body sensation, dryness of throat, dysphagia and pain over right knee joint associated with morning stiffness since last 3 months and swelling over left parotid region since last 8 days.

The patient developed right parotid swelling associated with low grade fever on 19th January 2022 which resolved on taking medication prescribed by a local physician. After 5 days the patient developed right parotid swelling associated with low grade fever which resolved on taking medication. After 5 days the patient developed submandibular swelling which resolved on medication within few days.

The patient was diagnosed COVID positive on 6th January 2022 and had low grade fever with chills, cough, cold and loss of smell. The patient was advised home isolation. The patient recovered within 14 days.

Patient did not have any history of similar illness or any other major illness. Family history was insignificant.

On examination patient had mildly tender left parotid swelling (Figure 1). Right knee joint was tender and warm without any effusion and with restricted mobility consistent with the clinical diagnosis of arthritis.

Schirmer's test was positive with 4 mm at 5 minutes in right eye and 2 mm at 5 minutes in left eye. ANA was positive. SS-A antibodies positive (++) and Ro-52 antibodies was strongly positive (+++).

To conclude the above findings in our patient with arthritis right knee, xerophthalmia, xerostomia, positive anti nuclear antibodies, positive SS-A and Ro52 autoantibodies a diagnosis of Sjogren's syndrome was made and was managed with oral steroids and tablet methotrexate.

DISCUSSION

Sjogren's syndrome is an autoimmune disease that affects salivary and lacrimal glands mainly leading to dry mouth and dry eyes respectively. It is also associated with myalgia, arthralgia, weight loss, fever and

most importantly fatigue. It is divided into two types: primary and secondary Sjogren's.^[1] Pathogenesis is not very well understood but it is suggested that environmental factors (viral and non-viral) trigger inflammation in genetically predisposed individuals. This leads to formation of autoantibodies that leads to production of cytokines (cytokine storm) ultimately leading to injury of the gland and decreased secretion from the gland.^[2] Revised criteria of international classification for diagnosing Sjögren's syndrome should include four out of six or three out of the four objective domains of the following and should include at least IV or VI.

I: Eye symptoms – any one of the mentioned:- 1) dry eyes > 3 months, b) gritty sensation in the eyes and c) necessity to use tear drops > 3 times a day.

II: Oral symptoms – should have at least one of the following:- a) dry mouth >3 months, b) recurrent episodes of swollen salivary glands and c) unable to swallow dry food

III: Ocular signs– at least one of the following:- a) Schirmer's test positive with ≤ 5 mm in 5 minutes and b) Rose Bengal score of >4 mm

IV: Histopathology – from minor salivary glands, focal lymphocytic sialoadenitis

V: Salivary gland – positive result in any of the tests:- a) salivary flow (≤ 1.5 ml in 15 minutes) from an unstimulated salivary gland, b) Parotid sialography showing diffuse sialectasis and c) Salivary scintigraphy demonstrating delayed uptake, reduced concentration and/or delayed excretion of tracer

VI: Autoantibodies – positive Ro (SSA) or La (SSB), or both.

Objective domains are III, IV, V and VI. Our patient met criteria I, II, III and VI hence confirming the diagnosis of Sjogren's syndrome.

Steroids, hydroxychloroquine, methotrexate, azathioprine and rituximab are effective treatment options. Sjogren's syndrome shows a high risk of developing lymphomas.^[1] We treated our patient with oral corticosteroids and methotrexate with good response.

COVID19 is caused by enveloped single stranded RNA SARS COV 2 virus. It targets the respiratory system and the mode of transmission occurs via droplets and fomites. The virus produces inflammatory response by recruitment of T helper cells in the tissue that release interferon gamma, IL-2, and IL-12. These can lead to cytokine storm resulting in organ damage and multiple organ failure in severe disease.^[3]

Long COVID or post COVID syndrome is persistence of symptoms beyond more than 3 months. There is significant proof that exposure to the SARS-CoV-2 virus causes the emergence of autoimmune disorders like Sjogren syndrome, SLE, rheumatoid arthritis, celiac disease. In some studies autoimmune disease like sjogren syndrome, SLE and rheumatoid arthritis are considered as long COVID syndrome.^[4] COVID 19 infection leads to loss of self-tolerance and deranged immune system, the pathogenesis of which is similar to that of autoimmune diseases.^[5]

In our case the patient never had any history of Sjogren's syndrome and developed it after 10 days of COVID 19. We feel it is a phenomenon of molecular mimicry due to the damage to the salivary and lacrimal glands caused by SARS Cov 2 virus, in a genetically predisposed individual having CD8 cytotoxic memory cells. To the best of our knowledge, this is first such case reported.

Figure 1. Left parotid swelling



CONCLUSION

Onset of autoimmune disease in cases of long COVID has been described. We describe here one such case of Sjogren's syndrome which developed 10 days after onset of COVID infection. We feel it is a phenomenon of molecular mimicry due to the damage to the salivary and lacrimal glands caused by SARS

Cov 2 virus, in a genetically predisposed individual having CD8 cytotoxic memory cells. To the best of our knowledge, this is first such case reported.

REFERENCES

1. Thorne I, Sutcliffe N. Sjögren's syndrome. *Br J Hosp Med (Lond)* 2017;78:438-42.
2. García-Carrasco M, Fuentes-Alexandro S, Escárcega RO, Salgado G, Riebeling C, Cervera R. Pathophysiology of Sjögren's syndrome. *Arch Med Res* 2006;37:921-32.
3. Rahman S, Montero MTV, Rowe K, Kirton R, Kunik F Jr. Epidemiology, pathogenesis, clinical presentations, diagnosis and treatment of COVID-19: A review of current evidence. *Expert Rev Clin Pharmacol* 2021;14:601-21.
4. Yong SJ. Long COVID or post-COVID-19 syndrome: Putative pathophysiology, risk factors, and treatments. *Infect Dis (Lond)* 2021;53:737-54.
5. Liu Y, Sawalha AH, Lu Q. COVID-19 and autoimmune diseases. *Curr Opin Rheumatol* 2021;33:155-62.

CITATION OF THIS ARTICLE

Shivani Biswal, Mohinder Pal Singh Sawhney, Nidhi Yadav, Garima Singal: Covid-19 induced Sjogren syndrome: A phenomenon of molecular mimicry. *Bull. Env. Pharmacol. Life Sci.*, Spl Issue [5: 2022: 70-72.