

## Acute Tonsillitis in COVID-19 Patients: Case Report

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### Abstract

**Background:** Coronavirus and tonsillitis can have similar symptoms, such as fever and sore throat, digestive discomfort, and headache. However diagnosis could be little confused.

**Case Presentation:** A 33-year-old female patient presented with severe odynophagia last 3 days with generalized arthralgia and bone aches. On examination there was bilateral whitish pseudo-membranous follicular tonsillitis. tonsillar swab reported no bacterial growth or any evidence of fungal infection, superficial pseudo-membranous examined biopsy revealed acute inflammatory exudate. Real-time reverse transcription-polymerase chain reaction (rRT-PCR) proved SARS-CoV-2.

**Conclusions:** Our findings demonstrate that viral exposure to COVID-19 is possibly a key factor in the pathophysiology pseudo-membranous follicular tonsillitis and uses of antiviral and steroids maybe helps in control the infection.

**Keywords:** Acute; Tonsillitis; COVID-19; PCR

### Abbreviations

rRT-PCR: Real-time Reverse Transcription-Polymerase Chain Reaction; SARS-CoV: Severe Acute Respiratory Syndrome Coronavirus 2; WHO: World Health Organization; ESR: Erythrocyte Sedimentation Rate; DRP: C-Reactive Protein; NLR: Neutrophil to Lymphocyte Ratio; CT: Computerized Tomography; CNS: Central Nervous System; ACE-2: Angiotensin-converting Enzyme 2; RNA: Ribonucleic Acid

### Introduction

Acute tonsillitis is commonly caused by Epstein bar virus, adenoviruses, influenza and para-influenza viruses, rhinoviruses and coronaviruses [1].

Coronaviruses (CoVs) are well-known causes of severe infections; respiratory, enteric, and systemic, in humans and numerous animal hosts a severe acute respiratory syndrome caused by coronavirus2 (SARS-CoV-2). The first case was diagnosed in Wuhan, China, in 2019 and caused multiorgan manifestation [2].

SARS-CoV-2 infection is major global health emergency with many countries still experiencing an increase in cases and related fatalities [3].

Patients infected with SARS-CoV-2 presented with mild disease, and only 5% develop viral pneumonia and multiorgan failure [4].

Common manifestations of COVID-19 infection include respiratory symptoms, cough, fever, breathing difficulties and anosmia. Severe cases result in pneumonia, severe acute respiratory syndrome, kidney failure and even death. WHO recommendations to prevent infection spread include frequent hand washing, covering nose and mouth when sneezing and coughing, and avoiding close contact with anyone showing symptoms of respiratory symptoms such as coughing and sneezing [5].

The viral load of COVID-19 in the nasopharyngeal swab is known to be higher compared in the oropharyngeal swab; however, when a throat washing was performed, the result was otherwise. Hence, this should be further investigated for a better understanding of the mechanism [6].

Coronavirus and tonsillitis can have similar symptoms, such as fever and sore throat, digestive discomfort, and headache. However diagnosis could be little confused [7].

Since flu and mild coronavirus infections can cause similar symptoms, the only way to confidently differentiate between the two is by getting tested for coronavirus [8].

Infection by SARS-CoV-2 can result in excessive production of cytokines and chemokines (namely a cytokine storm), resulting in immune dysregulation and patient mortality [9].

Patients for COVID-19, with a minimal approach of screening through a routine rapid test (RT-PCR) [10].

COVID-19 found that a sore throat was reported by 30 percent of study participants. Another study of 99 people found that it was only reported in 5 percent of cases [11,12].

Tonsillitis is quite uncommon manifestation in COVID-19 patients, we report a case of acute tonsillitis in a COVID-19 infected patient.

### Ethics considerations

The local ethics committee approved the study. Written consent was obtained from the study participants and informed about the procedures to be done and the expected result. Also a written consent for study publication was obtained from them.

## Case Presentation

### Case 1

A 33-year-old female patient without history of chronic illnesses presented to our hospital with severe odynophagia last 3 days. She had mild watery bilateral nasal discharge, mild fever (not exceed 37.9°) with generalized arthralgia and bone aches. She reported referred otalgia without any cough or dyspnea. On examination there was bilateral whitish pseudo-membranous follicular tonsillitis (Figure 1) with tender cervical lymph nodes. She received amoxicillin clavulanic acid in last 3 days without any response. Total leucocyte count =6.060/cmm with within normal differential leucocyte count and no immature leucocyte. ESR 1<sup>st</sup> hour =11 and 2<sup>nd</sup> hour =27.

**Figure 1:** Demonstrate bilateral whitish pseudo-membranous follicular tonsillitis.

CRP=24 mg/dL. D dimer, ferritin, and Neutrophil to lymphocyte ratio (NLR) was calculated by dividing the absolute neutrophil count by absolute lymphocyte count was normal. CT chest was normal and tonsillar swab reported no bacterial growth or any evidence of fungal infection, superficial pseudo-membranous examined biopsy revealed acute inflammatory exudate.

The diagnosis of COVID-19 real-time reverse transcription-polymerase chain reaction (rRT-PCR) proved SARS-CoV-2. Oxygen was usually 96% or higher.

She received Favipiravir 200 mg with Prednisolone 20 mg for 5 days (with tapering for the Prednisolone 5 mg each other day until withdrawal). Complete symptom resolution was reported after 5 days with disappearance for the pseudo-membranous follicular tonsillitis.

### Outcome and follow-up

The patient was recovered 5 days without other diseases/ complications were reported for one month and no symptoms of fever, sore throat, cough or dyspnea.

### Discussion

COVID-19 (coronavirus disease) was first discovered in Wuhan, China, in December 2019 with obscure characteristics of the disease [13].

Kadriyan, *et al.* 2021 suggests that the SARS-CoV-2 gene remains present in the tonsil and detritus specimen [14].

This was also supported by another study that was able to identify SARS-CoV-2 in the central nervous system (CNS) [15].

It has been identified that the ACE-2 receptor level in the tonsil is lower compared with lung, CNS and ileum, that is, 1/3, 1/4 and 1/5, respectively. Hence, it has been presumed that the presence of SARS-CoV-2 in the tonsil is asymptomatic or mild [16].

There has not been any study on the presence of SARS-CoV-2 in the tonsil and detritus from a clinical specimen and Nevertheless, the SARS-CoV-2 gene in the tonsil and detritus specimen of this patient post-tonsillectomy was detected. Whether or not the SARS-CoV-2 gene detected in the clinical specimen of this patient has the potential for transmission remains inconclusive [14].

Sore throat and pharyngeal inflammation are recognised manifestations of COVID-19, but a consistent association with acute tonsillitis has not been described. Acute tonsillitis may have a viral or bacterial aetiology, with acute bacterial tonsillitis often preceded by a viral infection [17].

Coronaviruses are not one of the known viral pathogens frequently contributing to acute tonsillitis where. The only comparable pre-COVID-19 presentation data comes from the UK Multicentre Audit of Quinsies [18].

Wollina, *et al.* 2020 reported Schamberg's disease has to be added to the list of nonspecific findings of SARS-CoV-2 infection that they report Schamberg's purpura sign with bilateral massive enlarged tonsils were noted in A 13-year-old girl that Reverse transcriptase polymerase chain reaction for SARS-CoV-2 was positive [19].

Mulchandani, *et al.* 2020 reported tonsillitis and Pharyngitis for the automatic mass-screening and early-detection of COVID-19 that can be administered without direct contact with the infectious patients, thereby reducing the burden on the medical and paramedical fraternity [20].

Anatomic barrier exerted by hypertrophic lymphoid tissue overwhelming respiratory epithelial viral binding sites and the real prevalence of SARS-CoV-2 infection among children is unknown and probably largely underestimated given the presumably high rate of asymptomatic carriers [21].

Malih, *et al.* 2020 reported case of COVID-19 in a 38-year-old male who had come to the primary health care clinic of Shahid Beheshti University of Medical Sciences, which specializes in the COVID-19 epidemic. He reported having fatigue, myalgia, fever, rash, and loss of taste and smell. The physical findings were maculopapular rash over his trunk, inguinal regions, and left arm, erythema of larynx with an aphthous lesion on left tonsil, he did not have a fever, and respiratory distress symptoms. There were no changes regarding COVID-19 in the spiral lung CT scan. However, the result of PCR for COVID-19 RNA was positive [22].

Acute management of tonsillitis with COVID-19 aims to reduce the proportion of patients that require admission and the use of antiviral and steroids in tonsillitis with effect of this treatment, and any concurrent analgesia, was dramatic.

### Conclusion

Our findings demonstrate that viral exposure to COVID-19 is possibly a key factor in the pathophysiology pseudo-membranous follicular tonsillitis and uses of antiviral and steroids maybe helps in control the infection.

## Bibliography

1. Windfuhr JP, et al. "Clinical practice guideline: Tonsillitis I. Diagnostics and nonsurgical management". *European Archives of Oto-Rhino-Laryngology* 273.4 (2016): 973-987.
2. Zahran AM, et al. "Differential alterations in peripheral lymphocyte subsets in COVID-19 patients: upregulation of double-positive and double-negative T cells". *Multidisciplinary Respiratory Medicine* 16.2 (2021): 758.
3. Abdelmaksoud AA, et al. "Olfactory Disturbances as Presenting Manifestation Among Egyptian Patients with COVID-19: Possible Role of Zinc". *Biological Trace Element Research* 199.11 (2021): 4101-4108.
4. Pohl MO, et al. "SARS-CoV-2 variants reveal features critical for replication in primary human cells". *PLoS Biology* 19.3 (2021): e3001006.
5. Struyf T, et al. "Signs and symptoms to determine if a patient presenting in primary care or hospital outpatient settings has COVID-19 disease". *Cochrane Database System Review* 7.7 (2020): CD013665.
6. Safiabadi Tali SH, et al. "Tools and Techniques for Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)/COVID-19 Detection". *Clinical Microbiology Review* 34.3 (2021): e00228-320.
7. Edwards MJ, et al. "ENT UK coronavirus disease 2019 adult tonsillitis and quinsy guidelines: translating guidance into practice". *Journal of Laryngology and Otology* 135.7 (2021): 579-583.
8. Al-Jabir A, et al. "Impact of the Coronavirus (COVID-19) pandemic on surgical practice - Part 1". *International Journal of Surgery* 79 (2020): 168-179.
9. Kaur S, et al. "The looming storm: Blood and cytokines in COVID-19". *Blood Review* 46 (2021): 100743.
10. Nagura-Ikeda M, et al. "Clinical Evaluation of Self-Collected Saliva by Quantitative Reverse Transcription-PCR (RT-qPCR), Direct RT-qPCR, Reverse Transcription-Loop-Mediated Isothermal Amplification, and a Rapid Antigen Test To Diagnose COVID-19". *Journal of Clinical Microbiology* 58.9 (2020): e01438-20.
11. El-Anwar MW, et al. "Analysis of Ear, Nose and Throat Manifestations in COVID-19 Patients". *International Archives of Otorhinolaryngology* 25.3 (2021): e343-e348.
12. Lima CMAO. "Information about the new coronavirus disease (COVID-19)". *Radiologia Brasileira* 53.2 (2020): V-VI.
13. Zhang J, et al. "Risk factors for disease severity, unimprovement, and mortality in COVID-19 patients in Wuhan, China". *Clinical Microbiology and Infection* 26.6 (2020): 767-772.
14. Kadriyan H, et al. "COVID-19 infection in the palatine tonsil tissue and detritus: the detection of the virus compartment with RT-PCR". *BMJ Case Report* 14.2 (2021): e239108.
15. Baig AM, et al. "Evidence of the COVID-19 virus targeting the CNS: tissue distribution, host-virus interaction, and proposed neurotropic mechanisms". *ACS Chemical Neuroscience* 11 (2020): 995-998.
16. Ziegler CGK, et al. "SARS-CoV-2 receptor ACE2 is an interferon-stimulated gene in human airway epithelial cells and is detected in specific cell subsets across tissues". *Cell* 181 (2020): 1016-1035.
17. Proenca-Modena JL, et al. "High rates of detection of respiratory viruses in tonsillar tissues from children with chronic adenotonsillar disease". *PLoS One* 7 (2012): e42136.
18. INTEGRATE, The UK ENT Trainee Research Collaborative. "Admission avoidance in tonsillitis and peritonsillar abscess: A prospective national audit during the initial peak of the COVID-19 pandemic". *Clinical Otolaryngology* 46.2 (2021): 363-372.
19. Wollina U. "Schamberg-like purpuric eruptions and tonsillitis in mild COVID-19". *Dermatologic Therapy* 33.4 (2020): e13766.
20. H Mulchandani, et al. "Tonsillitis based Early Diagnosis of COVID-19 for Mass-Screening using One-Shot Learning Framework". 2020 IEEE 17<sup>th</sup> India Council International Conference (INDICON) (2020): 1-6.
21. Torretta S, et al. "ENT management of children with adenotonsillar disease during COVID-19 pandemic. Ready to start again?" *International Journal of Pediatric Otorhinolaryngology* 138 (2020): 110145.
22. Malih N, et al. "Unexpected Presentation of COVID-19 in a 38-Year-Old Male Patient: A Case Report". *Case Report on Dermatology* 12 (2020): 124-131.