

Sudden sensorineural hearing loss after Covid-19 infection

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Abstract

Covid-19 pandemic has taken the world by a storm, pushing the boundaries of human endurance and intellect. Caught at the horns of dilemma, humanity is still struggling with the management of the established symptoms not to mention the novel symptoms. In this regard, the novel symptoms must be highlighted to ensure proper and timely management. Viral aetiology has been an established entity for neurological deficits; hence, it would not be a huge leap to consider the correlation between Covid-19 and Sensorineural hearing loss (SNHL). Here, a case is being presented where the patient developed sudden sensorineural hearing loss after Covid-19 infection.

Keywords: Hearing loss, Sensorineural, Pandemic, Sudden hearing loss.

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Introduction

Covid-19 outbreak has affected almost every part of the world. Due to its rapid global spread, it was named "the first pandemic of the twenty-first century" by the WHO.¹ The aetiological agent for this pandemic, SARS-CoV-2, belongs to a large and highly pathogenic family of RNA virus, Coronaviridae. It commonly manifests as fever, cough, sore throat, headache, muscle pain, diarrhoea, and dyspnoea.² Taste and smell disturbances have been seen in many patients.^{3,4} Cases have been reported of other neurological manifestations, including facial paralysis and sudden sensorineural hearing loss.

Viral infections are known to be associated with sensorineural hearing loss, although, the mechanism and pathophysiology is not clearly understood. It is believed to be caused either by direct damage to the inner ear or by an inflammatory response.⁵

We report the case of a middle-aged female who was

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affected with Covid-19 and developed unilateral sudden sensorineural hearing loss during the course of the disease.

Case Report

A 35-year-old female, with no known comorbidity, presented to the ENT clinic at the Aga Khan University hospital, Karachi, on July 27, 2020, with the complaint of sudden onset of hearing impairment in the right ear with associated tinnitus for one week. There was no history of vertigo, headache, otalgia, otorrhoea or any history of trauma. She had developed low grade fever and myalgia two weeks back after which she was home isolated and her nasopharyngeal PCR swab was done which came out to be positive. After initial three days of fever and myalgia, she remained asymptomatic for the next 10 days and was confirmed negative on repeat test after 14 days of advised isolation. During the course of her illness, she felt a sudden decrease in hearing from her right ear. She had no history of any ototoxic medication during isolation.

On examination, bilateral auditory canals were normal and Rinnes was positive bilaterally, while Weber was lateralised to the left on audiological examination with 512 Hz tuning fork. Pure-tone Audiometric findings at different frequencies are presented in Figure 1.

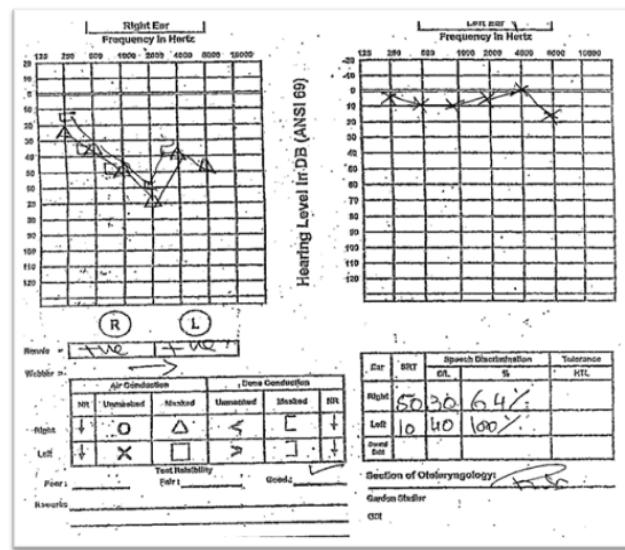


Figure-1: Findings of Audiometric evaluation of the patient at initial presentation

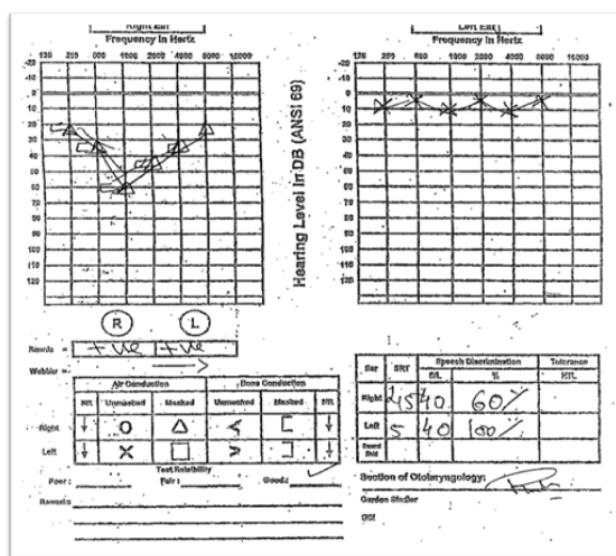


Figure-2: Audiometric evaluation after steroid therapy

The patient was started on oral Prednisolone for one week and tapered on subsequent week along with a proton pump inhibitor. Follow-up audiology was done after one week on August 3, 2020, which revealed improvement in hearing level at certain frequencies (Figure 2) and the patient was continued on oral Prednisolone with tapering doses. The patient's general condition remained stable and subjectively, she had improved hearing on subsequent follow-up visits.

A written consent was taken as a moral responsibility from her for use of information without disclosing any personal information for education and research purpose.

Discussion

SARS-CoV-2 emerged as a global pandemic affecting about 17 million people and resulting in more than 600,000 deaths across the world by August 1, 2020. Most of the patients affected by it usually presented with fever, myalgia, cough, and sore throat, and in more severe cases with respiratory failure. It has also been implicated to cause taste disturbance and hearing loss; cases have been reported with patients developing hearing impairment during the course of infection or as a complication after the initial infection resolves.

Many viral infections, including herpes and CMV, usually affect hearing by one of three mechanisms that include neuritis caused by viral involvement of the cochlear nerves, cochleitis due to viral involvement of the cochlea and peri-lymphatic tissues, and stress response resulting from the cross-reaction of the inner ear antigens to viral infections.⁶

The exact mechanism to result in sensorineural hearing loss after Covid infection is not clearly understood but it has been seen that Covid-19 infection has deleterious effects on cochlear hair cells which was evident from high pure-tone threshold and worsened TEOAE amplitudes in affected individuals.⁷

S. S. Rehman et al reported a similar case of a patient who developed sudden unilateral sensorineural hearing loss diagnosed on PTA during the course of Covid infection and was improved by intratympanic steroid injection on follow-up audiology.⁸

Similarly, Degen et al reported a case of a 60-year-old previously healthy man developing acute profound sensorineural loss bilaterally after Covid pneumonia with evident enhancement of cochlea seen on MRI.⁹

Conclusion

In conclusion, this case highlights that Covid-19 patients even with mild symptoms need to be investigated as they can develop sudden hearing loss and this needs to be addressed early in the course of the disease in order to prevent permanent hearing loss, as it could result in a lifelong disability affecting the quality of life. Multicentre data regarding the issue can prove to be beneficial in highlighting the pathology and prove to be significant in early control. Otorhinolaryngologists should be open to the possibility of the pathology and early management with steroids might prove beneficial.

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