

Presentation of Benign Paroxysmal Positional Vertigo (BPPV) in COVID-19: A Case report

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Abstract

We present a 30 years old female healthcare worker with the complaint of positional vertigo after recovery from covid-19 infection. She had been in contact with COVID-19 affected patients in the past few months. Her symptoms started with headache and progressing to anosmia, myalgia and cough. She had lung involvement and her COVID-19 PCR test became positive. After 3 weeks from her symptom onset, she developed attacks of positional vertigo, consistent with BPPV. Diagnosis was made according to history and positive Dix-Hallpike maneuver. There are various explanations for the occurrence of BPPV after COVID-19 infection including viral involvement of inner ear structures. The report of this condition is very scarce in the literature.

Case presentation

We present a 30 years old female healthcare worker with the complaint of positional vertigo after recovery from covid-19 infection. She had been in contact with COVID-19 affected patients in the past few months. Her symptoms started with a tension type headache, radiating to the back of the eyes. The headache was non-positional without nausea, photophobia or phonophobia and neck stiffness. It was persistent for 48 hours and was followed by nasal congestion, anosmia, low grade fever, shortness of breath, dry cough and myalgia. Chest CT was performed and based on its findings, she was tested for SARS-CoV-2 and the results were positive for COVID-19. Due to her mild symptoms and an O2Sat of 94%, she was prescribed hydroxychloroquine and atazanavir for 5 days and was recommended to be quarantined at home. Her symptoms resolved partially. After 3 weeks from onset of symptoms she experienced an attack of severe vertigo upon getting out of bed in the morning, lasting several seconds. The vertigo was positional and exacerbated while her left ear was dependent. She reported paroxysmal vertigo during the day especially by moving from the sitting position to recumbent position with her left ear downward. Attacks were absent while maintaining her head in a still position. She didn't complain of hearing loss or disequilibrium. She didn't had a past history of vertigo and didn't use any medications. Upon the examination, Dix-Hallpike maneuver was performed, and was positive at the left side and accompanied by a nystagmus with the rapid component to the right. Other examinations, including finger to nose, heel too shin and tandem gait were normal. She experienced a mild recovery after taking betahistine. The vertigo and nausea resolved during the next week.

Discussion

We report the incidence of benign paroxysmal positional vertigo (BPPV) in a patient recovering from covid-19. BPPV is a condition defined as transient vertigo, brought on by changing head position and accompanied by nystagmus [1]. Fatigability, brief



duration and resolving of symptoms by returning to erect position support the diagnosis [2]. Diagnosis is made through medical history and Dix-Hallpike maneuver [1]. Pathogenesis of this condition is displacement of floating particles into semicircular canals [1, 2]. Idiopathic BPPV is considered to be the most common form of the disease [3], other common etiologies include head trauma and viral neurolabyrinthitis [1-3]. Various factors are associated with this condition, such as aging, migraine, Meniere's disease, idiopathic sudden sensorineural hearing loss and vitamin D deficiency [4-7]. Viral involvement of inner ear structures might serve as a causative factor for BPPV. In a case-control study by Hanci et al viral serology values were higher in BPPV patients compared to the control group, suggestive of a possible association between viral infections and BPPV [2]. Previous studies demonstrated the association of HSV-1 and some other viral agent with this condition and BPPV after viral infections is considered to be secondary to vestibular neuronitis and damage to inner ear structure due to inflammation [2, 3, 8].

It is noteworthy to mention the vestibulopathy due to Quinine-induced ototoxicity. Symptoms start when the patient is still taking the drug and its onset varies from one to twenty days after drug initiation, symptoms include vertigo and hearing loss [9]. the damage to the inner auditory structures is often permanent but in some cases symptoms improved in 2-14 days after cessation of the drug, even though the half-life of hydroxychloroquine is 23 days [10].

As mentioned, our patient experienced the positional vertigo nearly two weeks after taking the last dose of hydroxychloroquine. To our knowledge, there is no report of presenting Quinine-induced ototoxicity days after cessation of drug. Moreover, transient feature of symptoms supports the viral etiology for vertigo rather than drug toxic effect for our patient.

There are no previous studies regarding the association of COVID-19 disease and BPPV. Theoretically, as COVID-19 disease, is caused by a viral agent, it can be considered as an etiology for BPPV, but supportive in vitro and animal study is not available.

This study suggests further evaluations for investigating the role of SARS-CoV-2 virus in causing benign paroxysmal positional vertigo.

Conflict of interest

All authors declare no conflict of interest. This research did not receive any specific grant from any funding agencies in the public, commercial or not-for-profit sectors.

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