

Bell's palsy: A Neurological Manifestation of COVID-19 Infection

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Abstract

Bell's palsy is an acute peripheral facial paralysis commonly associated with viral infections. COVID-19 may be a potential cause of peripheral facial paralysis and other neurological manifestations. We report a case of Bell's palsy due to COVID-19 infection in a previously healthy 35 -year- old male.

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Abstract :

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We report a case of Bell's palsy due to COVID-19 infection in a previously healthy 35 -year- old male

Case presentation :

A 35-year-old male with no past medical history presented to the emergency department complaining of a 2- day history of sudden right-sided facial weakness associated with fever, cough, and sore throat. Three days ago, the patient went to a primary health care center due to upper respiratory tract symptoms, and a diagnosis of covid-19 infection was made.

Two days later, the patient suddenly developed weakness associated with numbness, drooling saliva while eating and difficulty closing the right eye. He had no other neurologic symptoms and denied ear pain, skin rash, or arthralgia. He has no past medical history, a recent history of travel, or a tick bite. A systematic review was unremarkable.

In the ED, his vital signs were within normal limits. Physical examination revealed the absence of right-sided forehead wrinkles compared to the left, drooping of the right eyelid, and prominent mouth deviation suggestive of right lower motor neuron facial nerve palsy. Careful examination of ears showed dry impacted wax in the right ear with no vesicles. Examination of the parotid gland was unremarkable. Sensation in both upper and lower extremities was intact. No weakness was noted in either the upper or lower limbs. Kernig's and Brudzinski's signs were negative. Examination of other systems was unremarkable.

The patient's complete blood count and basic metabolic panel were within normal ranges. His COVID-19 rapid antigen test was positive. Chest x-ray was unremarkable. A diagnosis of Bell's palsy secondary to COVID-19 infection was made, and the patient was treated with prednisolone, levocetirizine, gentamicin,

paracetamol, and eye drops. He was also referred to a physical therapy clinic. On his four-week follow-up visit, the patient showed no significant improvement.

Introduction :

COVID -19 infection has affected millions of people worldwide. It's an infectious disease caused by the SARS-CoV-2 virus. People with COVID -19 infection have had a wide range of symptoms reported ranging from a mild cough to acute respiratory syndrome (ARDS).[1] These patients' common complications and causes of death include sepsis, acute kidney injury, ARDS, acute hypoxic encephalopathy, and acute cardiac injury.[1]

Expanding number of COVID-19 associated with facial nerve palsies are now being reported, with most being the first presenting symptom or occurring within the first week of onset of viral symptoms or a positive COVID-19 test.[2] Other neurological complications such as anosmia, dysgeusia, encephalopathy, Guillain-Barre syndrome, Miller-Fisher syndrome, and polyneuritis cranialis may also present.[3]

Discussion :

Besides the usual and well-known respiratory symptoms, the SARS-CoV-2 virus can affect the peripheral and central nervous systems. Neurological symptoms can be the first manifestation of COVID-19 infection or concurrent respiratory symptoms. A retrospective review reported neurological symptoms in 36.5% of patients.[4]

Two different mechanisms could explain the neuropathogenesis of SARS-CoV-2 virus. The first mechanism is due to endothelial damage and the subsequent passing of the virus from the systemic circulation to the cerebral circulation. The alternative mechanism is thought to be due to the direct entering of the virus through the cribriform wall and olfactory bulb, where the olfactory nerve terminates.[5] Using the olfactory pathways, the virus can harm the central nervous system (CNS), which may propagate from neuron to neuron by axonal transport.[6]

When glial cells get infected with the virus, the body enters a pro-inflammatory state and releases cytokines. The prolonged exposure to cytokines may lead to nerve damage.[7]

Moreover, various types of neurological manifestations of COVID-19 infection have been reported. For example, Filatov et al. reported a case of encephalopathy following COVID-19 illness on the same day of admission.[8]

A case series from Spain described cranial nerve manifestations associated with COVID-19 disease in two patients, one of which developed Miller Fisher syndrome on day five and the other developed polyneuritis cranialis on day three.[9]

A previous study also described a case of an isolated facial paralysis presented after six days in a patient with COVID-19 infection.[2]

Our patient experienced a lower motor neuron facial paralysis on the 3rd day of his ongoing COVID-19 infection.

Bell's palsy is a lower motor neuron impairment of the facial cranial nerve, manifesting acutely as a unilateral facial paralysis.[10] Although the reason for many cases is unidentifiable, the most common cause of peripheral facial palsy is attributed to infections, mainly HSV-1, VZV, and Lyme disease.[11] Our patient denied any recent travel, trauma, insect bite, skin rash, joint pain, itchiness, or tingling sensation in the body. Physical examination was unremarkable, with no skin rash; the outer ear canal was clear, and no signs of meningitis. Causes such as autoimmune and vasculitis were excluded as the patient did not

have any systemic findings; HIV infection was also excluded as it is a part of the infectious screening for all people getting their residencies in the country. The patient had a fever, sore throat, and generalized body pain, and his COVID-19 rapid antigen test came positive. Therefore, no other etiologies than COVID-19 infection could be attributed to palsy.

COVID-19 infection is known to present mainly as respiratory symptoms ranging from mild to severe, such as acute respiratory distress syndrome (ARDS) and fever.[12] In addition, neurological manifestations, including Guillain-Barre syndrome, Anosmia/ageusia, encephalopathy, and myelitis, are also encountered.[11] Bell's palsy has been one of COVID-19's manifestations. Poor prognosis is predicted in patients > 60 years of age with systemic problems such as diabetes mellitus, severe pain in the ear, and loss of tears. Bell's palsy generally has a good prognosis and recovery of 90%.[13] Regarding the treatment, the most used one in facial paralysis is corticosteroids, with high effectiveness rates.[12] Prednisolone's effect on the facial nerve is by reducing its edema.[14] In our case, the patient had no risk factors for poor prognosis; he was prescribed prednisolone 20mg for ten days and referred to a physiotherapy clinic. His four-week follow-up visit showed no significant change in his condition.

Limitations:

The viral screening wasn't done to rule out all other viral etiologies.

Conclusion :

This case report raises the possibility that Bell's palsy and COVID-19 infection are related. However, to prove the causal association, more cases with epidemiological data are required. For a deeper knowledge of COVID-19 infection, it is crucial to investigate its neurologic symptoms. Therefore, additional research is needed to fully understand the prognostic importance of cranial neuropathies in COVID-19 disease and their natural history and choose the most effective therapy approach.

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