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Case Report

A COVID-19 complication of bilateral lower motor neuron facial palsy

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ABSTRACT

COVID-19 caused by SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2), profoundly infectious disease which manifests as respiratory symptoms is potentially fatal due to multiorgan involvement and greatly of public health concern. However neurological symptoms could be the first or only symptom of the disease. Here, we report an unusual case of an international traveler who was diagnosed with COVID-19 after presenting with bilateral lower motor neuron (LMN) palsy, despite showing no respiratory manifestations at initial presentation.

1. Introduction

Initially, COVID-19 was known to influence the respiratory organs. As of now it has a wide assortment of indications which incorporates multiorgan contribution. Corona viruses have been related with neurotropic and Neuro-invasive capacities. Neurological manifestations including febrile seizures, convulsions, acute cerebrovascular events, encephalitis Guillain-Barré syndrome have been accounted for in COVID-19[1] Nonetheless, COVID-19 presenting as bilateral LMN palsy is very rare and seldom reported.

1.1. Case history

A 37-year-old man who had a recent international travel presented with complaints of decreased facial expressions and emotions since one day which was apparently noticed by his family. The patient had no facial deviation and denied history of similar complaints. He had no symptoms of fever, cough, dyspnea, myalgia or skin rash. No recent history of respiratory infection or SARS-CoV-2 epidemiologic context was reported. No history of tick bite or recent trauma was described. Nerve conduction study (NCS) revealed demyelinating neuropathy of left facial nerve. However, conduction in the right facial nerve was almost normal. He was tested positive for COVID-19 by real time polymerase chain reaction (RT-PCR) method. Treatment was initiated with prednisolone 60 mg for the duration of 30 days with doses tapered for every 5 days, cyanacobalamin and facial physiotherapy exercises. The patient visited our centre for follow up after 20 days during which he had complete recovery.

2. Discussion

Bilateral facial palsy is a rare entity, around one per five million per year and 0.3%–2% of all peripheral facial palsies. Infection, inflammation and idiopathic mechanisms are risk factors for the development of bilateral palsy, but the precise aetiology remains ambiguous. However, viral infections like Epstein-Barr virus, mumps, rubella, and most commonly, Herpes Simplex are known to cause facial palsies,[1] all of which were excluded in our patient.In contrast to unilateral palsy, the bilateral form is seldom

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considered idiopathic — only 20% of the cases — and frequently indicates a potentially severe subjacent condition.[2]

Several studies has suggested that COVID-19 could also develop neurological symptoms and surprisingly had neurological symptoms as the first manifestation, particularly in patients with asymptomatic or mild infection. A retrospective review reported neurological symptoms in 36.5% of patients.[3] However, there are cases where SARS-CoV-2 RNA was found in the cerebrospinal fluid (CSF) though it was absent in the nasopharyngeal swab, giving additional evidence that SARS-CoV-2 is a neurotropic virus.[4]

According to previous literatures, Viral encephalitis, meningitis, encephalopathy, demyelination and acute cerebrovascular accidents have been reported in COVID-19 patients[5] A retrospective study conducted by Mao et al. showed 36.4 percent of patients had neurological manifestation and were commonly seen in severely ill patients.[6] Additionally, series of cases reported by Helms et al inferred that 14 percent of patients had neurological symptoms at the time of admission, confusion in 65 percent, agitation in 69 percent and upper motor neuronal sign in 69 percent of patients.[7]

As neuroinvasive propensity is a typical feature of Corona Virus, it is quite likely that SARS-CoV-2 additionally has potential neurotropic, possibly through direct neurological damage, as it has high partiality for ACE2 receptors, which are expressed in the nervous system. ACE2 receptor is highly expressed in the nasal mucosa, especially in the ciliated epithelium and goblet cells, where viral replication appears to be fastest, as evidenced by the highest viral titers shed from the nose. SARS-CoV-2 affects olfactory nerve and bulb, which provides a direct pathway to the central nervous system.[8]

In this case, the patient who had no history or active respiratory symptoms was diagnosed with COVID-19 presenting as bilateral LMN Palsy. Similar cases was reported by Cabrera Muras. A et al. where a 20-year-old male had bilateral facial weakness showed positive for RT-PCR, thereby implicating a possible association between SARS-CoV-2 and bilateral LMN palsy.[9]

More evidence could be added to this association by another case reported by Kerstens, J et al. where an asymptomatic man had asymmetrical bilateral peripheral facial palsy (HB grade V on the right and grade III on the left side) was tested positive for this contagious disease.[10]

The incidence of peripheral facial palsy is increasing even in pregnant population due to hypercoagulabity, elevated cortisol levels, immunosuppression, increased total body water, hormonal imbalance, and elevated blood pressure during gestation. Rita Figueiredo et al. presented a case of full term pregnant woman diagnosed to have COVID 19 after presenting with isolated peripheral palsy.[11]

Oral steroids and supportive care are the mainstay of the treatment. In this case, patient recovered completely with prednisone within fifteen days as a similar case was reported by Casas et al. showed good clinical outcome in those patients diagnosed to have COVID-19 associated with Bell's palsy.[12]

Our case report depicts that bilateral LMN palsy could also be the first symptom of COVID-19 and suspected in patients with facial palsy. However, probable association between SARS-CoV-2 and bilateral LMN palsy can be established based on more epidemiological data.

3. Source of Funding

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4. Conflict of Interest

None.

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