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Case Report

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Case Report: COVID-19 Associated Guillain-Barre Syndrome

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ABSTRACT

We report a case of a 72-year-old female who presented to the emergency department with a complaint of generalized weakness. The patient was found to have ascending muscle weakness and subsequently diagnosed with COVID-19 related Guillain-Barre Syndrome. Our patient was negative for *Campylobacter jejuni*. In addition, the patient did not have fever, respiratory symptoms or loss of the sensation of taste.

Keywords: COVID-19 associated Guillain-Barre Syndrome, Guillain-Barre Syndrome, COVID-19

INTRODUCTION

COVID-19 is a novel coronavirus infection. The most commonly associated symptoms are fever, myalgias and respiratory symptoms. Gastrointestinal symptoms have been reported. Neurological diagnoses have been reported. Guillain-Barre Syndrome (GBS) is an acute, generalized polyradiculoneuropathy that has been associated with a wide-variety of pathogens.

Here we describe a case of GBS following COVID-19 infection. This association is important, because early detection of GBS may decrease or reverse disease progression. Our case is unique in that the patient did not present with any overt signs of COVID-19 infection, such as respiratory symptoms. COVID-19 should be considered in any patient with acute ascending symmetrical weakness, paresthesias, and historical features of GBS; likewise the reverse is true, any patient with COVID-19 should receive a neurological exam and historical questions relating to motor strength.

CASE PRESENTATION

A 72-year-old female presented to the Emergency Department (ED) for the evaluation of bilateral lower extremity weakness. Her past medical history included sarcoidosis, chronic low back pain, paroxysmal atrial fibrillation, hypertension, non-toxic multinodular goiter, and thyrotoxicosis. The patient had a recent hospitalization for diverticulitis. An acute gastrointestinal stool panel taken during her recent hospitalization was negative for *Campylobacter jejuni.*

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She denies subjective fever or chills. She denied headache, dizziness, myalgias, change or loss in sense of taste, cough or sore throat. Her vital signs were within normal limits. She had absent patellar reflexes bilaterally, with a normal Achilles reflex. Muscle strength in bilateral lower extremities was 1/5. Sensation in the lower extremities was normal.

On laboratory testing, she was noted to have leukopenia. She was PCR test for COVID-19 was positive. MRI of the cervical, thoracic and lumbar spine revealed no abnormalities that could be associated with patient's presentation. Lumbar puncture was unobtainable secondary to chronic anticoagulation. A diagnosis of Guillain-Barre Syndrome (GBS) was made. The patient was treated with a 5 day course of IVIG was initiated in the ED. The patient's motor strength improved significantly by the time of discharge and at the time of out-patient follow up was able to walk unassisted with some persistent thigh weakness.

DISCUSSION

COVID-19 is a novel coronavirus infection. The most commonly associated symptoms are fever, myalgias and respiratory symptoms. Gastrointestinal symptoms have been reported. Neurological diagnoses have been reported. These include stroke, headache and dizziness.

GBS is an acute, generalized polyradiculoneuropathy that has been associated with a wide-variety of pathogens, including *Campylobacter jejuni*, EB virus, influenza, CMV and the Zika virus. It has been seen after influenza vaccinations [1].

GBS is felt to be caused by an autoimmune response that triggers a cross-reaction to ganglioside components of peripheral nerves [2].

Most patients with GBS report neurological symptoms within 2 days to 12 weeks of a diarrheal illness. Paresthesias may precede motor symptoms. Symptom progression is typically symmetric, starting distally. Lower back pain is a common complaint. Gait abnormalities, difficulty standing up are common complaints. Deep-tendon reflexes are depressed or absent in the majority of patients. Respiratory depression and cranial neuropathy often occur later. Symptoms may begin in as little as 12 hours but progression past 28 days is very rare. More rapid onset and progression of symptoms is associated with poorer outcomes.

There are a few reported world-wide cases of GBS following COVID-19 infection [3].

A review of 37 cases of COVID-19 associated GBS found that the mean time to presentation from the onset was 11 days. When assessed, albuminocytologic dissociation was found in 76% of cases. Serum anti-ganglioside antibodies were absent in the majority of cases where assessed [1].

GBS is a clinical diagnosis, based on physical exam and history. While lumbar puncture results such as cytology can support the diagnosis, this confirmation is unnecessary to establish diagnosis. The review by Caress of COVID-19 related GBS found paresthesias in 68% of cases, limb weakness in 68% of cases and cranial nerve symptoms in 35% of cases [1].

Our patient was afebrile and had not preceding respiratory symptoms. Patients have also been reported with COVID-19 associated GBS in which there were no preceding respiratory symptoms and no fever [2]. The patient did not have loss of taste. Patients with COVID-19 GBS have been reported in which there is no loss of taste [4].

Early detection of GBS may decrease or reverse disease progression. Initiation of Intravenous Immunoglobulin (IVIG) therapy is an option. Plasmapheresis is another therapeutic option for GBS.

CONCLUSION

Novel pathogens carry with them new pathologies that require elucidation. SARS-CoV-2 exemplifies this idea, and has been implicated in a variety of unusual pathologies not commonly associated with viral infection. Several cases of Guillain-Barre Syndrome associated with COVID-19 have been reported. Our case is unique in that the patient did not present with any overt signs of COVID-19 infection, such as respiratory symptoms. COVID-19 should be considered in any patient with acute ascending symmetrical weakness, paresthesias, and historical features of GBS; likewise the reverse is true, any patient with COVID-19 should receive a neurological exam and historical questions relating to motor strength.

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