

COVID-19 presenting as acute transient flaccid limb paralysis

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ABSTRACT

Novel corona virus pandemic in 2020 has created havoc across the world. Since its entry into Indian subcontinent in February 2020, it has become the second most affected country in the world. In this context we wish to share the case of a young man who presented with periodic paralysis was eventually diagnosed to have COVID-19 infection. During this pandemic season, one has to be vigilant and think out of the box to identify COVID-19 infections even among the least suspicious cases.

Keywords: COVID-19 infection, flacid paralysis, novel corona virus, periodic paralysis, pandemic

Introduction

The novel human corona virus disease (COVID-19) has emerged as the fifth global pandemic after the Spanish flu of 1918.^[1] COVID-19 was first reported in Wuhan city, China among a cluster of cases who presented with Viral pneumonia like features (fever, malaise, dry cough, and dyspnea). It has subsequently spread throughout the globe, since late December 2019.^[2,3] After isolating the culprit virus, the World Health Organisation has officially named the entity “corona virus disease 2019” (COVID-19) on 12 February 2020.^[1]

COVID-19 disease shook medical fraternity across the globe by its variable clinical manifestations. Most patients have self-limiting course. Common symptoms are fever and dry cough that can progress in a minority to moderate lower respiratory infection.^[2] However, with escalating case numbers and growing clinical experience, protean manifestations involving many organ systems are increasingly recognised. Serious complications associated with COVID-19 infection are due to major organ involvement

as in ARDS, acute heart injury or failure, acute kidney injury, sepsis and disseminated intravascular coagulation. These deadly complications account for the mortality, especially among elderly or those with underlying comorbidities. Neurological manifestations are increasingly recognised in COVID-19.^[4]

Case Report

We share the case of a 34-year-old gentleman, office executive in a tertiary care hospital, who presented with weakness of all four limbs of acute onset over a few hours duration. He gave history of low grade fever, dry cough, myalgia, chest tightness and sore throat for 2 days prior to the onset of weakness. His past history was remarkable for acute episodes of muscle weakness dating back from 17 years of age, the last occurrence five years back. His mother also had similar complaints. He admitted inhalation of salbutamol via metered dose inhaler (2 puffs on four occasions) on the previous day at the advice of a general practitioner for chest tightness. Evaluation revealed a comfortable gentleman with respiratory rate of 20/minute and peripheral blood O₂ saturation of 97% on room air. Auscultation of chest revealed fine crackles at both lung bases. Neurological examination identified grade 2-3 power of multiple muscle groups of all four limbs with hyporeflexia. Cranial nerve

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Table 1: Serial potassium values at various points of time

Point of time	Serum potassium values	Supplementation in interim period
3 month prior to presentation	3.6 meq/litre	NONE
At presentation	1.9 meq/litre	40 meq intravenous and 2 doses of 20 meq orally
4 h (after initiation of supplementation)	4.1 meq/litre	2 doses of 20 meq orally
24 h	4.4 meq/litre	20 meq per day
72 h	4.5 meq/litre	NONE

examination was normal and no signs of meningeal irritation were elicited. Considering the present pandemic situation, nasal and throat swab was sent for COVID-19 RT-PCR which returned positive. He was admitted in isolation room and symptomatic medications were started. His blood counts, renal and liver functions, serum electrolytes and thyroid functions were requested. Chest radiograph revealed a few peripheral infiltrates in lower zones [Figure 1]. Serum potassium levels returned as 1.9 meq/l. A possibility of hypokalemic periodic paralysis was entertained considering the low serum potassium levels, episodic paralysis and family history. Potassium supplementation was done via oral and intravenous route. Neurology opinion was taken and alternate differentials like CVA, spinal cord lesions, thyroid disease and myopathies were ruled out with appropriate tests. His muscle strength rapidly improved to grade 5 power in next 6-8 hours with return of potassium level to 4.1 meq/l. The rapid return of potassium level to normal with small exogenous supplementation is inconsistent with renal potassium loss and is characteristic of intra to extracellular migration observed in channelopathies. He was maintained in COVID-19 isolation for 10 days till his rapid antigen test done on day 10 returned negative. He did not have any recurrence of hypokalemia or muscle weakness and was uneventfully discharged. His serial potassium values in serum and supplementation given are summarised in Table 1.

Discussion

A multitude of neurological manifestations have been reported in COVID-19.^[4,5] Hypoxia or metabolic abnormalities can lead to severe neurological manifestations like altered sensorium, delirium, and coma. Coagulopathy associated with COVID-19 may lead to ischemic or hemorrhagic stroke. Rarely, SARS-CoV2 virus encephalitis, acute necrotising encephalopathy or acute disseminated encephalomyelitis also have been reported. Nonspecific headache is a commonly experienced neurological symptom among patients and healthcare workers associated with care of COVID-19. Headache associated with prolonged use of masks, goggles etc., has been termed “personal protection equipment related headache”.^[6] Complete or partial anosmia and ageusia are common peripheral nervous system manifestations. Cases of GuillainBarré syndrome in COVID19 patients have been observed, and the pathogenesis is probably linked to a post-infectious immune mediated inflammatory process. Myalgia and fatigue are common and extend well into the recovery phase for weeks. Elevated CPK levels indicate muscle injury.

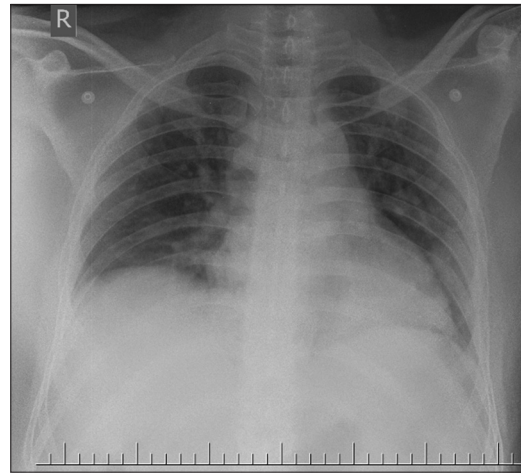


Figure 1: Chest radiograph showing peripheral infiltrates

As previously discussed, acute flaccid paralysis from Guillain Barre syndrome has been reported in COVID 19, presumably via an immune mediated mechanism.^[7,8] Precipitation of an acute attack of hypokalemic periodic paralysis (either de-novo or in a patient known to have the entity) associated with COVID 19 has been unreported till date. In the present case, documentation of extremely low potassium levels clinched hypokalemia as the cause of acute flaccid paralysis. Previous similar episodes and similar history in family member (mother) narrowed the differentials. An acute attack of hypokalemia and paralysis is probably multifactorial in our patient. Infections including viral infections are known to trigger an acute attack and COVID-19 would have contributed to the same. Salbutamol inhalation administered for his chest tightness would have worsened intracellular potassium shift. Finally, a high carbohydrate diet consumed by the patient and consequent endogenous insulin secretion would have played its part in worsening hypokalemia.

Conclusion

To summarise, we report the first case of COVID-19 manifesting as acute attack of flaccid paralysis in a patient with known history of hypokalemic periodic paralysis. His muscle weakness promptly reversed with potassium supplementation and he regained full muscle power and functional recovery in a matter of hours. His COVID-19 had an unremarkable course and recovery.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have

given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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