

COVID - 19 Presenting as Acute Viral Encephalitis: A Rare Occurrence

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Abstract A 60 year old female presented with a 1 day history of altered sensorium. Her imaging findings were suggestive of Viral Encephalitis, for which she was empirically treated with Acyclovir. However, due to the rising incidence of COVID 19 all over the globe, her nasopharyngeal swab was sent for RT PCR, suspecting COVID 19. The report tested positive and she was simultaneously started on Favipravir and vitamin and mineral supplements. After 4 days of initiating treatment, she developed bilateral Creptitations and the Chest XRay was suggestive of Bilateral midzonal haziness. Eventually she was started on Methylprednisolone following which she showed signs of improvement. She eventually regained her orientation and completely recovered from Encephalitis and COVID 19 pneumonia after 15 days of initiating treatment. This case is reported to suggest one of the rarest non - respiratory manifestation of COVID 19.

Keywords: COVID 19, Encephalitis, diagnosis

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1. Introduction

Living through this global emergency of COVID 19, doctors and nurses are facing worse scenarios on a daily basis, ranging from diagnosis to saving the life of its victim! A new presentation, a new theory or a new drug does not seemingly surprise us due to the advancing research and technology developing globally. However, varied presentations of COVID 19 must be reported to increase the sensitivity in its diagnosis and thus, helping us to initiate its treatment at the earliest. One such rare neurological manifestation of COVID 19 is reported in this case.

2. Case Presentation

A 60 year old diabetic female, Class IV worker in a Government Hospital, presented in the casualty with complaint of altered sensorium since 1 day. She was at work when she couldn't adjust her saree on her own and developed slurred speech following which she became disoriented. She was immediately carried home by her fellow colleagues. She eventually became drowsy and irritable. Next day she was brought to the casualty in the same state. Her relatives gave no history of fever, headache, vomiting, seizures, neck stiffness, breathlessness, cough or sore throat. However, she belonged to a local hotspot area of COVID 19 and was routinely working among COVID patients since the last three months. She was on oral hypoglycemic treatment for Type 2 Diabetes

Mellitus, regularly. However, her blood sugar level was found to be 352 mg/dL, on arrival at the casualty with Urine ketone - Negative. On examination, her vital parameters were normal with oxygen saturation of 96% on room air. She was drowsy, disoriented, moving all 4 limbs, bilateral reflexes present and bilateral plantar flexor.

She was immediately shifted to the Intensive Care Unit and was treated as a suspect case of Dyselectrolytemia. On initial laboratory investigations, her Serum Electrolytes were normal and so was the Complete Blood Count (as shown in the table below).

Table 1. Laboratory Investigations

Parameters	Normal Values	Observed Values
Hemoglobin	12 - 16.2 g/dL	13.3
Total Leucocyte Count	3540 - 9060 /cmm	8580
Platelet Count	165000 - 415000/cmm	286000
Hematocrit	35.4 - 46.4	38.9
Mean Corpuscular Volume	80 - 96 fl	84.2
Urea	7 - 20 mg/dL	25
Creatinine	0.5 - 1.2 m/dL	0.6
Serum Sodium	136 - 146 mEq/L	143
Serum Potassium	3.5 - 5.5 mEq/L	3.8
CSF ANALYSIS	45-80 mg/dl	63 mg/dl
CSF Sugar		
Corresponding Blood Sugar		92 mg/dl
CSF Proteins	15-45 mg/dl	46 mg/dl
CSF ADA		< 1.0
Total Cells		8 cells
Polymoprhs		20%
Lymphocytes		80%
CSF Gram stain		No growth seen
CSF AFB stain		Negative

She was then planned for a Magnetic Resonance Imaging (MRI) Brain with Contrast to rule out Meningitis/Encephalitis. Her MRI showed Hyperintensity in the Right Parahippocampal region as compared to its Left counterpart, suggestive of Viral Encephalitis, most likely Herpes Simplex Virus (as shown in the figure below). She then underwent a Lumbar Puncture which further suggested a Viral cause (as shown in the table above).

She was immediately started on Injection Mannitol, Levitiracetam and injectable Acyclovir. However, due to her routine exposure to COVID patients and her hotspot residential address, the possibility of COVID 19 could not be completely ruled out. Hence, her nasopharyngeal swab was sent for RT PCR and to our surprise, it turned out positive for SARS CoV 2!

She was immediately shifted to the COVID ICU and was initiated on Fabipravir, Zinc and Vitamin C supplements as per Indian Council of Medical Research - Ministry of Health and Family Welfare (ICMR - MOHFW) protocol. On the third day since admission, she developed bilateral Crepitations with saturation dropping to 88% on Room Air and her Chest X Ray was suggestive of Bilateral midzonal and Left Lower Zone Consolidation. She was taken on high flow Oxygen, started on a 4 day course of injectable Methyl Prednisolone.

Ten days since admission, she regained her orientation and was gradually shifted from High Flow Oxygen to Venturi Mask. Her room air saturation improved to 92% and crepitations started resolving. Twelve days since admission, she was shifted to the general ward and was monitored for the next 72 hours.

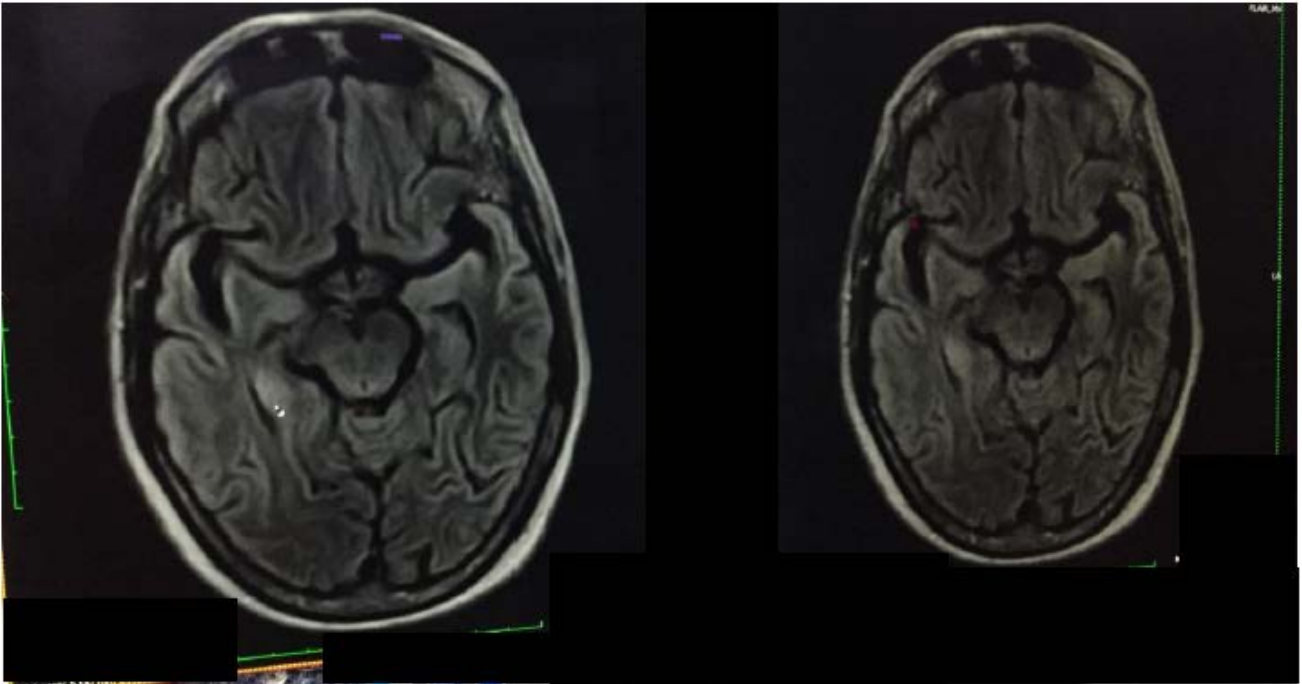


Figure 1. MRI Brain (Plain + Contrast) suggestive of Hyperintensity in Right Parahippocampal region as compared to the Left

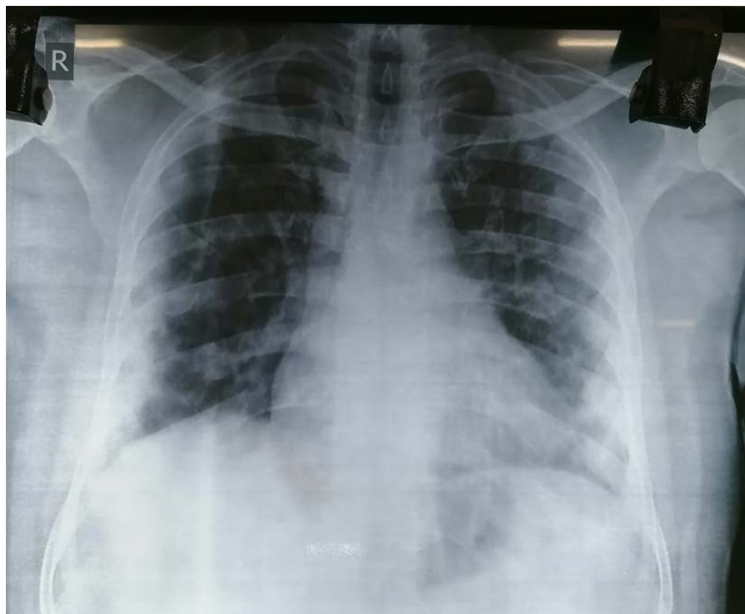


Figure 2. Chest X Ray - PA view suggestive of Bilateral midzonal and Left Lower Zone Consolidation (Third day of admission)

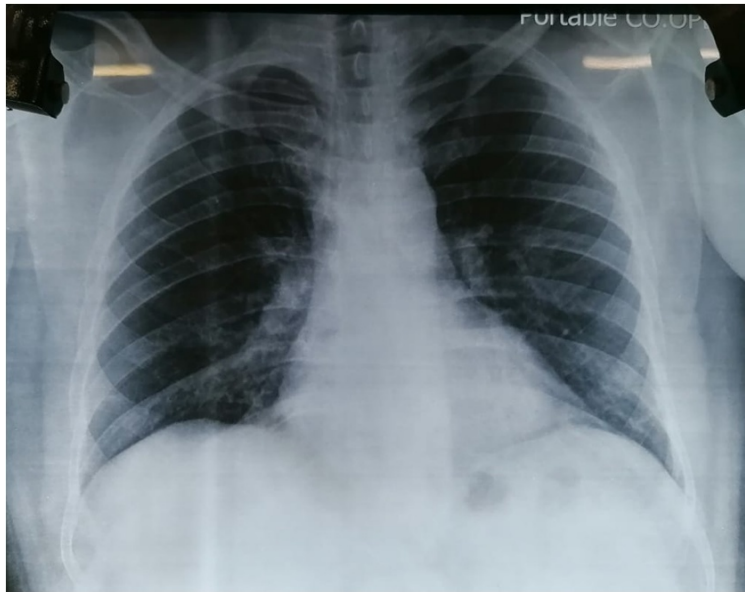


Figure 3. Chest X Ray - PA View suggestive of Bilateral consolidation resolved (Twelfth day of admission)

Fifteen days since admission, she started maintaining saturation on room air following which she was discharged and asked to remain home quarantined for the next seven days, according to ICMR - MOHFW Protocol.

During the course of home quarantine, she did not develop any signs of deterioration or relapse. She follows up regularly every 15 days.

3. Discussion

COVID 19 has been gaining momentum since the past few months. The exponential rise in the number of cases has led to the discovery of varied presentations of COVID 19. However, very few have been reported.

Clinicians from Henry Ford Health System in Detroit, Michigan, have reported the first presumptive case of acute necrotizing hemorrhagic encephalopathy associated with COVID-19 [1]. The patient was a 58 year old female with an initial presentation of respiratory symptoms and body ache. The MRI was suggestive of hemorrhagic rim enhancing lesions within bilateral thalami, medial temporal lobes and subinsular regions narrowing the diagnosis to acute hemorrhagic necrotizing encephalopathy. However, this presentation was attributed to 'cytokine storm' within the patient. In contrast to our case, the presentation was purely non - respiratory and moreover, no evidence of cytokine storm was observed, during the initial days of presentation.

Another report suggested that Chinese researchers at Qingdao University have detected the presence of SARS - CoV - 2 genes in the cerebrospinal fluid (i.e., brain fluid) of a 56-year-old patient with Covid-19 in Beijing Ditan Hospital [2]. Similar testing could not be conducted at our centre due to lack of availability of test kits and moreover, due to lack of funds.

With respect to virus latency, Yan-Chao Li, associate professor at Norman Bethune College of Medicine, Jilin University explains, "Since SARS-CoV-2 may conceal itself in the neurons from the immune recognition, complete clearance of the virus may not be guaranteed even the patients have recovered from the acute infection." However,

not much evidence has yet been found to prove this theory.

Many elderly COVID 19 patients succumb easily due to late presentations and diagnosis, which delays the onset of treatment. In our case, the patient was initiated with antiviral treatment within a day of admission. The action of Acyclovir on SARS-CoV-2 is still unclear hence, drugs like Lopinavir / Ritonavir combination and the recently FDA approved Favipravir are being routinely used in the treatment of COVID 19.

To the best of our knowledge, this is the first case in India ever reporting an Encephalitis presentation of COVID 19.

4. Conclusion

COVID 19 has been a challenge for health care professionals from diagnosis to its treatment. Despite repeated attempts in controlling the exponential rise, SARS-CoV-2 does not seem to have given up! Each day we see new and creative presentations of SARS-CoV-2 making it humanely impossible to diagnose it clinically. Each individual has been trying different ways of preventing COVID 19 ranging from steam inhalation to having milk with turmeric! Perhaps the best we can do is to maintain a vigilant immune system with healthy lifestyle habits - as to not give viruses opportunities to activate within you.

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