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Case Report

COVID-19 PNEUMONIA WITH ENCEPHALITIS PRESENTING AS ACUTE STROKE WITH RIGHT SIDED HEMIPARESIS - A RARE CASE PRESENTATION

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Abstract:

Acute stroke remains a medical emergency even during the COVID-19 pandemic. Most patients with COVID-19 infection present with constitutional and respiratory symptoms; while others present with atypical gastrointestinal, cardiovascular, or neurological manifestations. Here we are presenting a case of COVID-19 Pneumonia with Encephalitis in a 37 year old male, who presented initially with weakness of right side of the body & slurring of speech; with history of fever for 2 days 10 days back. Diagnosis was confirmed by RT-PCR for COVID 19, HRCT Chest & MRI of Brain. Antiviral medications along with steroid & anticonvulsant were started immediately after the diagnosis and the patient responded very well with subsidence of fever and feeling of well-being.

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Introduction

Beta-coronaviruses are a common cause of self-limited respiratory tract infection, but the strains responsible for the Middle Eastern respiratory syndrome (MERS-CoV), the severe acute respiratory syndrome (SARS-CoV-1), and COVID-19 (SARS-CoV-2) cause more severe disease[1]. The COVID-19 pandemic, which broke out in Wuhan in 2019, has become the global health crisis of our time. Elderly patients with certain fundamental diseases are more likely to develop severe cases. The secondary lesion following viral infection have only rarely been reported.

Case report

A 37 year muslim male was admitted into the Medicine ward of Uttara Adhunik medical College Hospital on 20.06.2021 with the complaints of weakness of right side of the body, slurring of speech & occasional headache for 2 days. He suddenly developed weakness on right side of his body , initially right upper limb, then right lower limb. Since then he was unable to move or walk. He had slurring of speech. The patient had headache for the same duration which was global, persistent, moderate in intensity. He also had fever for 2 days 10 days back which was intermittent, low grade, highest recorded temperature was 99.5®F and subsided after taking paracetamol. On query, occasional cough found which was non-productive, no chest pain, no breathlessness, no coughing out of blood present. He had neck pain but no joint pain or skin rash. There is no bowel and bladder abnormality. There's no history of weight loss, loss of consciousness, convulsion, trauma to head, nausea, vomiting and double vision.

On General examination, patient was ill looking, non-anaemic, non-icteric & vitals were as such - Pulse: 88 beats/min, BP: 130/80, Respiratory rate: 16 breaths/min, Temperature: 99®F, SpO2 96% on air during admission.

On systemic examination of the nervous system, he was conscious & oriented with slurring of speech.

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Cranial nerve VII showed UMNL on right side, other cranial nerves were intact. Muscle tone decreased in right upper and lower limb. Muscle power diminished – Upper limb 3/5, Lower limb 2/5. All jerks of right side were exaggerated & Planter reflex was extensor. All the reflexes of left upper & lower limb were intact. Co-ordination couldn't perform due to decrease muscle power, Sensory system was intact. Gait was hemiplegic & no signs of meningeal irritation found.

Other system examination showed no abnormality.

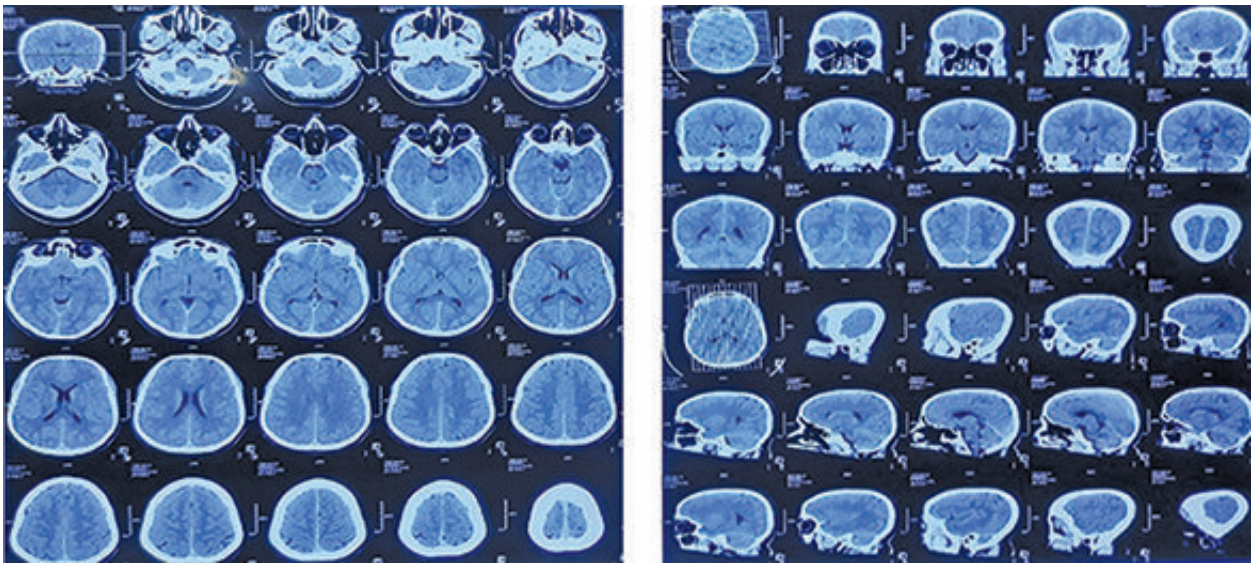

Figure 1: *CT Scan of Brain reveals no abnormality.*

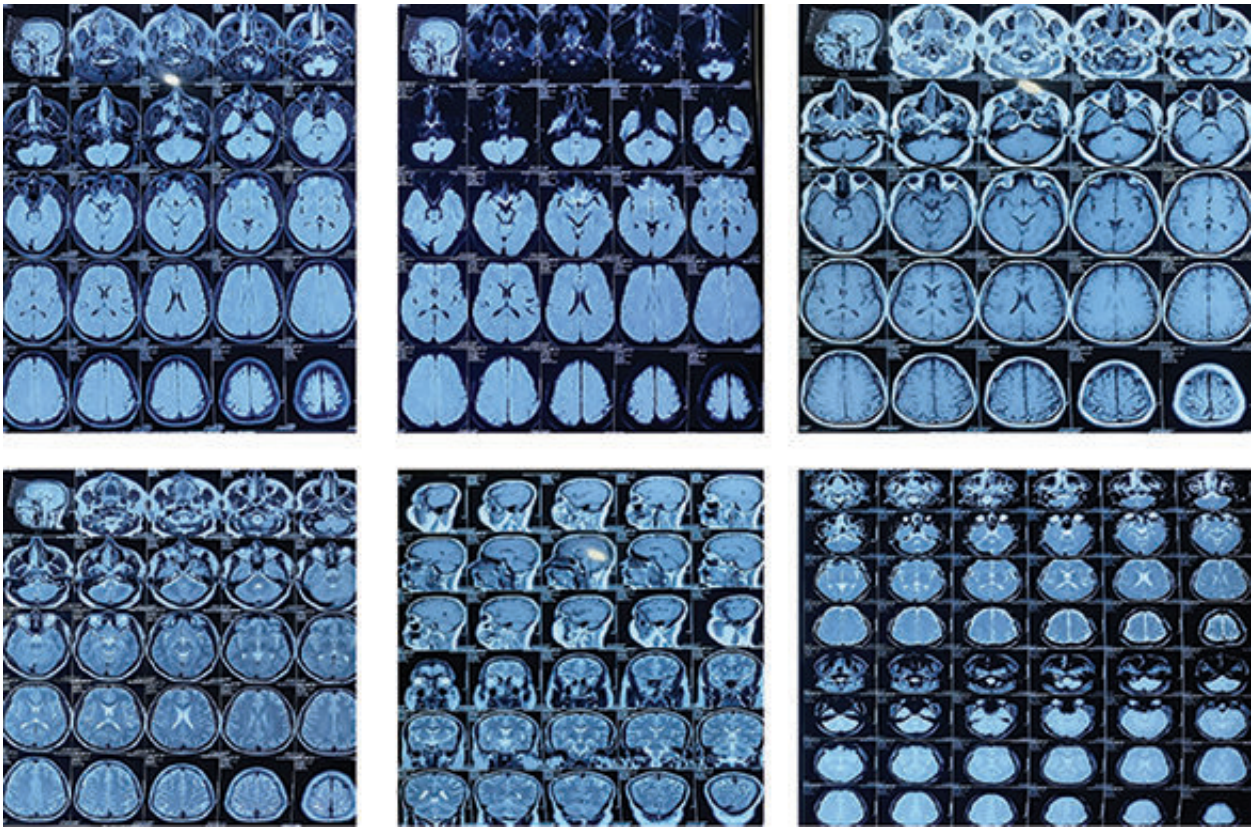

Figure 2: *There are T2/FLAIR hyperintensities involving the bilateral frontal lobes, predominantly along the anteromedial orbital gyri, with extension to the gyrus rectus, especially on the right side. Given the clinical diagnosis of COVID-19 positivity, these MRI findings are suggestive of encephalitis.*

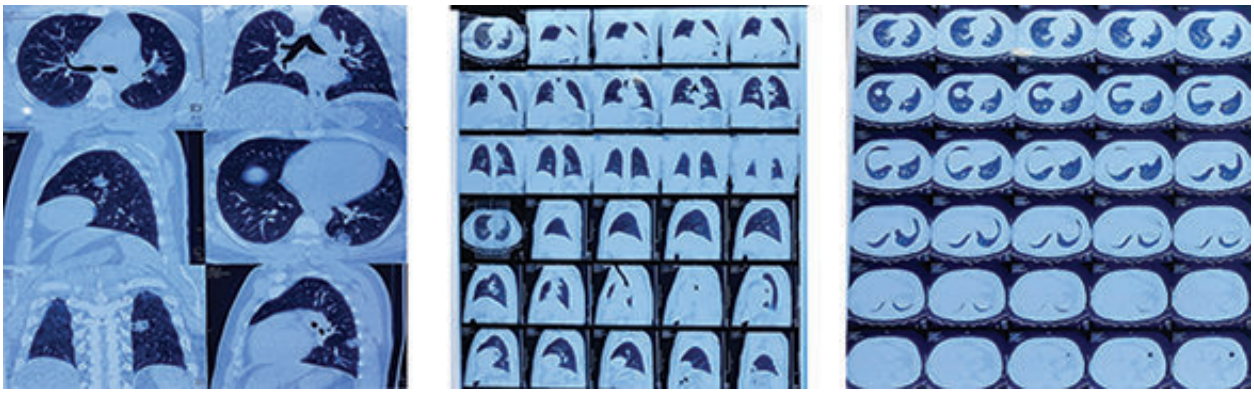

Figure 3: *High Resolution CT Scan of Chest suggestive of Bi lobar consolidation in left lung.*

His investigations included CT scan of Brain, CBC with ESR, S. Creatinine, RBS, HbA1C, S. Electrolyte, SGPT, S. Lipid Profile, ECG, Echo CD, Chest Xray (P/A) showed no abnormality.

During his hospital stay as his headache didn't improve, MRI of brain & MRA of brain and neck vessels were done to exclude any CNS pathology. CSF study wasn't done due to risk of hazards of COVID-19.

The patient was started on anti-viral medications with steroids and anti-convulsants immediately

After 2 days, the patient developed respiratory distress & evidence of hypoxia. His SpO2 was 90% on air.

In order to exclude COVID pneumonia, COVID-19 test and HRCT Chest were done.

RT-PCR for COVID 19: Positive

D-dimer, S. Ferritin was slightly elevated (D-dimer : 0.66, S. Ferritin : 815) & NT pro BNP was within normal limit.

HRCT Chest: Bi-lobar consolidation of left lung

Management of COVID-19 was immediately started and the patient was shifted to COVID-19 ward for better management.

Discussion

A considerable amount of evidence indicates that especially respiratory-related infection is an independent risk factor for acute cerebrovascular disease.[2] Inflammation during acute viral infection can increase the risk of ischemic stroke through changes in blood pressure, coagulation, immune response, and endothelial function. Respiratory infections such as influenza and COVID 19 result in sharp increases of inflammatory markers associated with vascular pathologies.[3] It is worth noting that SARS-CoV-2 RNAaemia is largely restricted to the most severely ill patients with COVID-19 and is not universal even in that setting, pointing towards other mechanisms of thromboembolic disease that might originate in the lungs.[4] Neurological manifestations are now being recognized as sequelae of severe COVID-19 infection. A study of COVID-infected patients in Wuhan, China, found 36.4% of their studied cohort to have neurological symptoms including dizziness, headache, ageusia, anosmia, and stroke.[5] While stroke occurred in 2.8% of the 214 patients reviewed in that study, the incidence of stroke occurred more frequently in patients defined as having severe infection (5.7% vs 0.8%), suggesting that risk of stroke is directly correlated with severity of disease.[5] The spectrum of symptoms described in long COVID has prompted comparisons with myalgic encephalomyelitis or chronic fatigue syndrome (ME/CFS). Indeed, the overlap in symptoms between post-acute COVID-19 syndromes and ME/CFS is remarkable for the shared symptomatology including fatigue, autonomic instability, post-exertional myalgia or weakness as well as neurocognitive impairments.[6] Encephalopathy in COVID-19 has been shown to have various manifestations with ranging severities, characterized by subacute onset and fluctuations or progressive course, eventually reversible.[7] Nonetheless, other viral illnesses (e.g. Dengue, West Nile disease, mononucleosis) are also associated with substantial disabilities that resemble the previous symptom complex. The precise diagnosis and management of neurological symptoms in long COVID is an emerging area of study, which is in evolution as more studies become available. Important caveats in considering persistent or delayed neurological

disorders related to COVID-19 include the contribution of comorbid illnesses and their associated therapies to neurological disease as well as the potential for uncovering previously unrecognized illnesses.[8]

Irrespective of SARS-CoV-2 positivity, the COVID-19 pandemic and the subsequently imposed restrictions had a negative influence on mortality and functional outcomes in stroke patients in general. Higher incidence of mortality and worse functional outcomes at discharge were reported in different cohort studies evaluating stroke patients who were admitted during the COVID-19 pandemic, compared with historical controls of the pre-COVID-19 period.[9-15] These alarming results may be attributable to delays in the presentation of stroke patients and subsequent lower rates of recanalization therapies. Literature describing the characteristic stroke associated with COVID is limited. Despite several cases of young patients including this one who developed large-vessel occlusion, early literature suggests that COVID stroke occurs more commonly in elderly patients with comorbidities including hypertension, diabetes, obesity, and heart disease.[16,17] Additionally, some reports suggest increased stroke incidence in males compared with females.[18,19] This needs to be investigated further. As seen in our patient, COVID patients who developed stroke have had elevated D-dimer, ferritin when compared with stroke patients without COVID.[18,19]

Conclusion

CoV infections can affect the nervous system, and it is currently believed that CoV in concert with host immune mechanisms may turn these infections into persistent infections that may lead to neurological diseases. Therefore, patients with CoV infections should be evaluated early for neurological symptoms, including headache, consciousness disorder, paresthesia, and other pathological signs. Timely analysis of cerebrospinal fluid and awareness and management of infection-related neurological complications are key to improving the prognosis of critically ill patients. In conclusion, COVID-19 may be a risk factor or aggravating factor for stroke.

Conflicts of interest

The authors declare no conflict of interest regarding the publication of this paper.

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