

## Case Report

### Stroke — Next Wave of Complications from COVID-19

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Since the declaration of COVID-19 infection as Pandemic in March, 2020, There has been rise in Multisystem Complications apart from regular Acute Respiratory Syndrome which is hallmark of COVID-19 infection. As the second wave surge of COVID-19 has occurred, most of the patients already suffered from dyspnoea but also rare complications like CVA (Infarct and Haemorrhage) , Seizure and altered sensorium related to Hypoxic Brain Injury. COVID-19 frequently presents with a state of altered coagulability which increases the risk of pulmonary embolism and other Thrombotic events such as Cerebrovascular events. This case report is limited to Neurological complications seen in COVID-19 Infected patients.

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**Key words :** CVA, Acute Respiratory Distress Syndrome, Coagulability, Neurological.

The COVID-19 infection caused by SARS- CoV-2 virus has been declared Pandemic by World Health Organization since March, 2020<sup>1</sup>. The most frequent presentation of the disease is viral pneumonia with fever and dry Cough, Acute Respiratory Syndrome due to COVID-19 infection was primary identified in Wuhan City, China on January, 2020<sup>2</sup>. there is evidence of heterogeneous spectrum of Multisystem involvement due to distribution of ACE receptors over different sites in human body.

COVID-19 frequently presents with a state of altered coagulability which increases risk of Pulmonary embolism and other thrombotic events such as Cerebrovascular events in marked number of COVID patients. Patients present with altered D-dimer, Fibrinogen and Ferritin levels.

Cases discussed in this report were admitted in Lokpriya Hospital (Reg no- RMEE1900995), Meerut – A Primary care facility (COVID Section) in western UP which is primarily a Sugarcane belt of India where most Patients are Uneducated and belong to lower Socio-economic status.

#### Case 1 :

Hb	13.7	D-Dimer	1084.37
TLC	12.8	LDH	878
Neut.	94	FERRITIN	388.18
Lympho.	6	HBA1C	7.1
Urea	39	PT/INR	12.4/1.06
Creat	1.2	CRP	103.7
Na	136		
K	3.9		

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#### Editor's Comment :

- As COVID pandemic still running Globally so clinician should also aware other manifestations other than Respiratory system.

A Male patient 51 years (UHID-11106) came with c/o difficulty in Breathing x 6days , with vitals, PR 100/min, BP 132/86mmhg, RR 34/min temperature 98.4F Spo2 74% in RA. No history of any comorbidities. Patient's COVID Antigen test was done, which came out to be positive and patient was admitted in COVID Section for further management. Patient was taken on continuous O2 support via NRBM and maintained Spo2 90-92%, Relevant investigations are-



Fig 1 — HRCT chest S/O CTSI 18/25.

During the Course of treatment, On 3<sup>rd</sup> day, patient started complaining of weakness in Right Upper Limb

and Lower Limb, on examination, plantars were found extensor on right side and flexor on left side, B/L pupil were normal size normal reactive. Power in Right Upper Limb was 3/5 and Lower Limb 4/5. After which immediate NCCT head (Fig 1a) was done. Which were suggestive of SUBTLE HYPODENSE AREA OF MEAN 20HU NOTED INVOLVING LEFT OCCIPITAL, THALAMUS AND CORONA RADIATA REGION/ ISCHEMIC INFARCT, patient's blood thinner were increased after taking Neurology opinion.

Patient was then managed conservatively. Patient was then discharged with stable vitals at room air with COVID RTPCR negative report., with existing Neurological deficit and mild Post COVID symptoms.

3 more Cases are discussed in this Case report showing CNS related complications in Admitted COVID Infected patients.

### DISCUSSION

Even though, most common manifestation of COVID-19 is Respiratory Failure, but during the Second wave Patients had constellation of Neurological manifestations like headache, vertigo, dizziness, loss of smell and taste, as mild symptoms and Major complications like Seizures, CVA (infarct / bleed) has been present in COVID-19 patients.

The pathophysiological mechanisms that underlie Cerebrovascular events in COVID-19 could potentially be related to vasculopathy<sup>4</sup>. In addition, there is an increase of conventional Stroke risk during Sepsis<sup>5</sup>, comorbidities, such as Diabetes, Hypertension, Dyslipidemia enhance expression of Angiotensin-converting enzyme2 receptors in the Brain and neurotropism of SARS-CoV-2 virus<sup>6</sup>.

The above cases discussed shows that without any prior Neurological history, patient presented or developed these Neurological complications, attributed to the SARS-CoV2 infection. Therefore, multidisciplinary approach needed in management of COVID-19 patients.

From the beginning of COVID-19 Pandemic, potential Central Nervous System involvement has been hypothesized through various etiological mechanisms, including direct Neuroinvasion<sup>7</sup>, parainfectious autoinflammatory involvement<sup>8-11</sup>, endothelial dysfunction<sup>12</sup> and indirect involvement due to altered homeostasis such as altered coagulative states that cause an increase in ischaemic hemorrhagic lesions<sup>13-18</sup>.

Further studies are needed to determine whether these Neurological complications are more due to Thrombo Inflammation caused by SARS-CoV-2 virus due to enhance expression of ACE-2 receptors in the brain or due to Prophylactic/overuse of anticoagulant therapy in hospitalized patients.

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