

Ischemic stroke is a rare finding in COVID-19 infected patients: A case report

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A B S T R A C T

Coronavirus has become a global pandemic in short period and causing huge number of mortalities due to variety of complications caused by viral illness. Presentations from COVID-19 infection vary from mild respiratory symptoms, fever, pulmonary embolism, heart attacks and neurological manifestations to deadly acute respiratory distress syndrome. A case of elderly patient who was diagnosed as having COVID-19 infection with mild symptoms who was then admitted in hospital for the treatment of COVID-19 infection and then developed a massive ischemic stroke during the hospital stay. Coronavirus disease can present with atypical features for which clinicians should be aware of; so that the diagnosis and treatment should not be delayed and patient can receive maximum benefit with special emphasis on anticoagulant therapy in minimal symptomatic infection.

Keywords: Coronavirus, ischemic stroke, hypercoagulable state, cytokine storm, Acute Respiratory Distress Syndrome (ARDS)

Introduction

COVID-19 is a disease caused by novel coronavirus, also known as a severe acute respiratory syndrome coronavirus 2 (SARS-COV-2 virus) which had its origin from Wuhan city of china and now became a scary virus engulfing many precious lives worldwide. This viral illness has a range of symptoms varying from mild flu, fever and cough to acute respiratory distress syndrome (ARDS). Due to this virus, many valuable lives were snuffed out during this pandemic. Here a case of middle-aged male is presented who had COVID-19 infection and was admitted in hospital with his worsening symptoms but developed massive ischemic stroke during hospital stay.

Case report

A 59-years old male, previously known case of diabetes and hypertension for last two years with no established diabetic or hypertensive complications and

well controlled with medications, presented in emergency department of hospital during COVID-19 pandemic with symptoms of fever, generalized body aches and loss of taste sensation for two days. Fever was high grade and associated with rigors and chills. It was continuous which relieved only with antipyretics. He was vitally stable with blood pressure of 125/79mmHg, pulse 82bpm regular, temperature 101F, and respiratory rate 16/minute and oxygen saturation 96% at room air. Chest examination revealed bilateral basal crackles. Other systemic examination was unremarkable. Due to history of positive close contact with COVID-19 patient, coronavirus disease was suspected and patient was admitted in isolation ward and all relevant tests send on urgent basis. Laboratory studies showed normal total leukocyte count with lymphopenia and raised levels of C-reactive proteins, D-Dimers, ferritin and interleukin-6.

Other investigations including liver function tests, renal function tests, and urine routine examination, blood and urine cultures were normal. Nasopharyngeal swab for COVID-19 Real Time PCR came out to be positive. Chest x-ray showing bilateral basal infiltrates pre-dominantly on peripheral margins of lung fields. High resolution computed tomography of chest (HRCT-chest) done which showed findings suggestive of COVID-19 pneumonitis. From the time of admission, patient was receiving antibiotics, antivirals, dexamethasone and enoxaparin in prophylactic dose. Patient remained vitally stable on first day of admission but developed sudden onset of right sided body weakness on seventeenth day of admission.

Patient's Glasgow coma scale (GCS) fell from 15/15 to 8/15, power 0/5 in right upper and lower limb, gag was not intact, with right sided up going planter. Patient was suspected to have associated cerebra-vascular accident. CT-scan brain was done within half hour of symptoms which has ruled out intracranial bleed.

So, the treatment of ischemic stroke was started. CT-scan brain was repeated after 2 days which showed massive left sided malignant middle cerebral artery infarct causing mild mid-line shift (Figure:1). Patient was managed according to left massive middle cerebral artery (including antiplatelet, mannitol and dexamethasone).

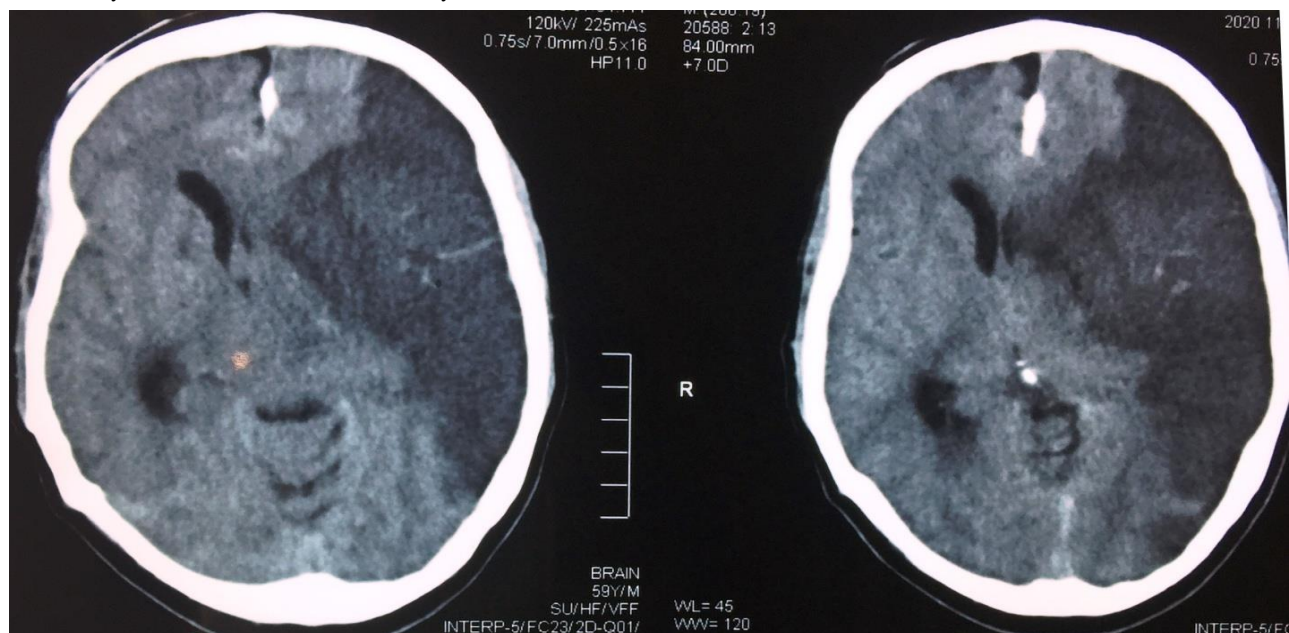


Figure 1: CT-Scan brain showing massive left frontal, parietal and occipital infarct.

Discussion

The patient was diagnosed as a case of massive malignant middle cerebral artery infarct which is a rare and atypical outcome of COVID-19 infection. He presented with typical feature of fever and shortness of breath but developed ischemic stroke on 17th day of symptoms onset. He was managed accordingly. Most of the cases published till date; patients usually have stroke on average of 12th day after symptoms onset but my patient had stroke on 17th day of symptoms initiation.¹ Novel respiratory virus, which was named later as severe acute respiratory syndrome coronavirus 2 (SARS-COV-2).²

Patients with COVID-19 infection usually present with flu, fever and respiratory symptoms but atypical presentations can also be present including symptoms from cardiovascular, central nervous system and gastrointestinal systems.² There are broad clinical syndromes associated with COVID-19 infection which includes symptoms like dizziness, headache, anosmia, dysgeusia, peripheral neuropathy, altered mental status, acute psychosis, encephalitis, encephalopathy, neuro-cognitive (dementia-like syndrome), Guillain-Barre syndrome, acute kidney injury, myocarditis, acute respiratory distress syndrome (ARDS) or stroke (ischemic or hemorrhagic).^{1,3} Studies have shown more percentage of ischemic stroke

rather than hemorrhagic one.¹ Acute ischemic stroke incidence is increased in COVID-19 infection compared with influenza.⁴ It is also shown that patients with ischemic stroke associated with COVID-19 infection has increased incidence of death as compared to patients who did not developed ischemic stroke during COVID-19 infection.⁴

Medical personnel have noticed more severe ischemic stroke in COVID-19 infection. Reason for the ischemic stroke in COVID-19 infection can be inflammation, prothrombotic state, endothelial injury, cardiac abnormalities, underlying premorbid conditions, embolism, hypoxemia or infection.²⁻⁵ Cytokine storm lead to vascular endothelial injury or a hypercoagulable state which may lead to micro vascular dysfunction and ultimately causing thrombosis.⁶ This infection also causes venous and arterial thrombosis and is supported by increased D-Dimers, ST-segment elevation myocardial infarction (STEMI), deep venous thrombosis and pulmonary embolism in COVID patients.^{6,7} Some authors have mentioned that patients who developed stroke due to COVID-19 infection usually had previous premorbid like hypertension or carotid stenosis and they observed to had stroke at average of 12 days after diagnosis.³

Performing the CT-Scan brain and diagnosis is often challenging as altered mental status, poor history and scarcity of visitors and caregivers and especially because of isolation protocols.^{1,2,7}

Best medical care for acute ischemic stroke includes intravenous thrombolysis and thrombectomy; but simonescalard reported poor outcomes in patients treated with this therapy even after successful intervention.⁸ The best treatment for acute ischemic stroke in COVID-19 infection has yet to be discover. Increasing prophylactic dose of anticoagulation to 40mg twice daily or higher is the treatment till now.

Conclusion

Increased number of strokes has been identified in patients with COVID-19 infection in this pandemic and causing intense strain and burn-out for health care workers and also on health care system.⁵ Neurologists have to be prepared for increasing neurological cases during this horrifying pandemic.⁴ Keeping in view this scenario, medical personnel have to be more vigilant about neurological deficits in COVID patients during or even after COVID-19 infection.

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