

Stroke in young: An unusual presentation of COVID-19

Twinkle Pawar¹, Dhruv Talwar¹✉, Sunil Kumar², Pankaj Banode³, Prasad Takey⁴, Shivam Khanna¹, Vidyashree Hulkoti¹

To Cite:

Pawar T, Talwar D, Kumar S, Banode P, Takey P, Khanna S, Hulkoti V. Stroke in young: An unusual presentation of COVID-19. *Medical Science*, 2021, 25(112), 1417-1421

Author Affiliation:

¹Post Graduate Resident, Department of Medicine, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences and Research (Deemed to be university), Wardha, Maharashtra, India

²Professor, Department of Medicine, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences and Research (Deemed to be university), Wardha, Maharashtra, India

³Professor and Head of Department, Department of Interventional Radiology, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences and Research (Deemed to be university), Wardha, Maharashtra, India

⁴Post Graduate Resident, Department of Interventional Radiology, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences and Research (Deemed to be university), Wardha, Maharashtra, India

✉Corresponding author

Post Graduate Resident, Department of Medicine, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences and Research (Deemed to be university), Wardha, Maharashtra, India
Email: dhruv.talwar2395@gmail.com

Peer-Review History

Received: 13 May 2021

Reviewed & Revised: 14/May/2021 to 07/June/2021

Accepted: 08 June 2021

Published: June 2021

Peer-review Method

External peer-review was done through double-blind method.

ABSTRACT

Since the December of 2019 there has been an increase in reporting of cerebrovascular events in patients infected with COVID-19. Though it is a common complication which is encountered mostly in the old age it is rare to witness the same in young patient in the absence of prior risk factors. We report a rare case of a young patient with COVID-19 positive status who presented with a hyper acute infarct in left caudate nucleus, Lenti from nucleus, internal capsule, insular cortex, temporal lobe, parieto-occipital region, focal areas in frontal region and was immediately posted for thrombectomy. The patient improved drastically post procedure. Therefore we highlight the importance of contemplating the differential of stroke induced by COVID-19 even in young patients who present with symptoms consistent with a stroke in the ongoing pandemic.

Keywords: SARSCoV2, stroke, young patients, hypercoagulable state

1. INTRODUCTION

Neurological complication of Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) are a rising field of research to prevent morbidity and mortality in the ongoing pandemic. It might be associated with thrombotic vascular events, which includes cerebrovascular accident than other coronavirus and seasonal infectious diseases like the influenza. Altered mental status, encephalitis and psychotic manifestations can also be presentations of COVID-19 among the young. However, Stroke is an uncommon complication in the young patients affected by COVID-19. Para immune cytokine storms can also manifest as Guillain Barre syndrome which is also an established neurological complication of COVID-19. There is also a much broader aspect of mental stress induced by this exhausting pandemic of COVID-19 leading to various neuropsychiatric complications (Ellul et al., 2020). The cases of young patients with COVID-19 presenting with Stroke without any prior typical vascular risk factors are increasing (Varga et al., 2020). It is interesting to note that such patients do not have severe respiratory symptoms. Due to the availability of wide range of treatment modalities for Acute Stroke ranging from thrombolytic therapy to anticoagulant and antiplatelets, it is important to understand the relation between COVID-19 and stroke presenting in young patients to prevent mortality and morbidity (Belani et al., 2020). We report a



case of 28 year old male who presented with aphasia, right sided hemiparesis and facial angle deviation to left side and upon investigations turned out to be a atypical presentation of COVID-19 as a Stroke in Young which was successfully managed with thrombectomy.

2. CASE SUMMARY

A 28 year old male presented with acute onset aphasia with facial deviation to left side with hemiparesis of right since three hours. Patient had no significant past history of diabetes mellitus, hypertension or any other chronic diseases. The patient denied fever, cough or dyspnea. On general examination, pulse was 94/min, regular, blood pressure was 140/90 mm hg in right arm supine position and spo2 was 94 on room air. Patient was right-handed and had complete aphasia according to physical examination. Power was 5/5 in left limbs but 0/5 in right side limbs. All of his senses were intact. The reflexes of the deep tendon were normal. On the right side, the Babinski sign was positive. While laboratory tests such as a complete blood count and a complete metabolic panel came back normal, D-dimer was found to be elevated by 6.61 (table 1). MRI Brain revealed hyper acute infarct in left caudate nucleus, Lenti from nucleus, internal capsule, insular cortex, temporal lobe, parieto-occipital region, focal areas in frontal region, left MCA and PCA territory (Figure 1). Patient was taken for immediate thrombectomy which was done successfully (Figure 2). Nasopharyngeal swab for COVID-19 was done and it came back poistive HRCT Thorax was done which was suggestive of multiple ill-defined patchy ground glass opacities with consolidation and septal thickening in bilateral lung fields suggestive of infective etiology possibility of a typical viral pneumonia. Imaging grading is corad-6 with CT severity score-17/25 (Figure 3). Patient was started on remdesavir, antibiotics, mannitol, low molecular weight heparin and antiplatelet along with physiotherapy. During the course of hospital stay patient improved clinically and regained power of 3/5 on the right sided limbs and was discharged and is currently on follow up.

Table 1 Showing lab investigations of the case

CBC	Hb-12.9gm/dl MCV-89fl Platelet count-95000/dl WBC Count-11200/dl
LFT	Total Protein-6.0gm/dl, Albumin3.0gm/dl, Globulin3.0gm/dl, aspartate aminotransferase 22 units/l , alanine aminotransferase 24 units/l, AlkanlinePhophatase92IU/l, Total Bilirubin :1.0mg/
KFT	Creatinine:1.0mg/dl, Urea30mg/dl, Sodium135mmol/l, Potassium -4.3mmol/l
CRP	52.0mg/dl
D-Dimer	6.6
Serum Ferritin	700ng/ml
HRCT Score CORAD	17/25 6

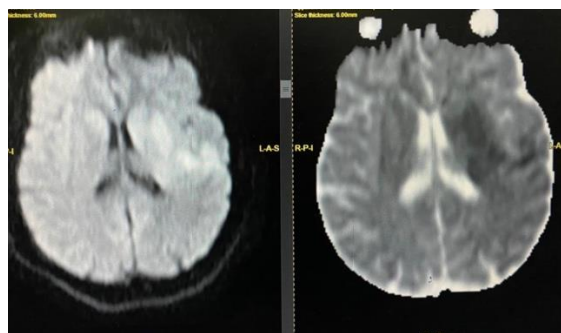


Figure 1 MRI Showing Acute infarct

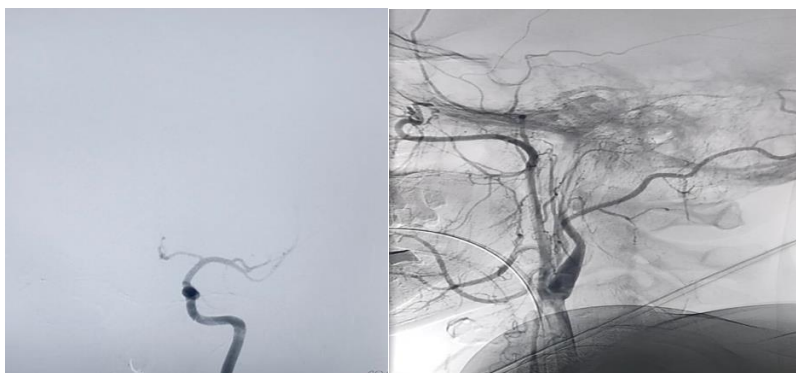


Figure 2 Showing Thrombectomy

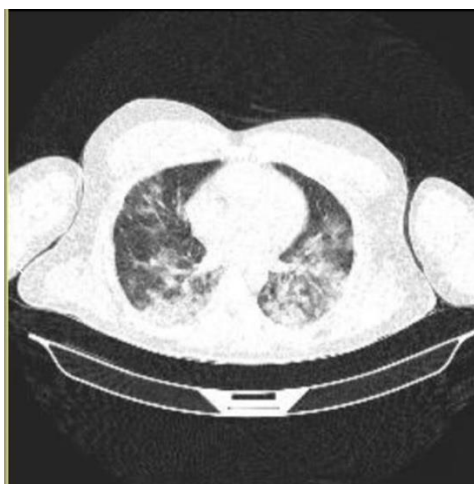


Figure 3 HRCT Showing ground glass opacities

3. DISCUSSION

According to reports, patients infected with COVID-19 have a higher risk of thromboembolic events (Jain et al., 2020). COVID-19 induces a hypercoagulable condition, which increases the risk of thrombus formation in the artery, resulting in arterial thrombosis and acute ischemic stroke. However, a direct virus-mediated immune response may also cause neuronal damage. SARS-CoV-2 is thought to enter central nervous system through hematogenous or retrograde neuronal pathway. A cytokine storm may be caused, resulting in severe necrosis and inflammation (Bikdeli et al., 2020). It's convincible that a hypercoagulable condition combined with severe endothelial damage caused by the cytokine storm's extensive inflammation may be the cause of acute ischemic stroke in COVID-19 patients (Talwar et al., 2021). It's important to note that our patient has no cerebrovascular risk factors, allowing COVID-19 to be the sole cause of Acute Cerebrovascular Accident. Furthermore, our patient was 28 years old, making this an unusual case of COVID-19 manifesting as stroke in a young patient that too with the symptom of Aphasia with hemiparesis and facial angle deviation. It is also of paramount importance that the patient did not have any significant respiratory distress and that the patient was totally unaware of his respiratory system involvement by COVID-19 which was found only upon investigations. This warns the

physicians battling with COVID-19 on the front to use anticoagulants and antiplatelets in hypercoagulable patients who test positive for COVID-19 even in the absence of significant respiratory distress as there might be a masked hypercoagulable state which should be investigated for. This can be explained by happy hypoxia caused by COVID-19 during the initial phase of infection due to mechanisms involving intra pulmonary shunting. Usually, there is treatment by anticoagulation with low molecular weight heparin in patients who have COVID-19 but physicians usually are reluctant to use the same in Ischemic Strokes to prevent haemorrhagic transformation. However, the case can be thought to be different in cases with COVID-19 where patient presenting with COVID-19 can be given heparin. Although, further study is required in this field of treatment for genuine conformation. Fortunately our patient was eligible thrombectomy which proved to be beneficial in COVID-19 associated Strokes.

4. CONCLUSION

The body of evidence supporting a connection between COVID-19 and stroke in young people without traditional vascular risk factors, and often even with only mild respiratory symptoms, is growing. We conclude that the diagnosis of COVID-19 should be extensively investigated in otherwise healthy young patients who present with stroke during the pandemic. Conversely, in patients with moderate COVID-19, the possibility of an upcoming stroke should be foreseen. If they present with new neurological symptoms and have respiratory symptoms, a low threshold for stroke investigation should be maintained. In our case prompt diagnosis along with management with thrombectomy proved to be highly beneficial as patient improved markedly thus preventing mortality and morbidity.

Acknowledgement

We thank all the participants who have contributed in this Study.

Conflict of interest

The Authors have no conflicts of interest that are directly relevant to the content of this clinic-pathological case

Financial Resources

There are no financial resources to fund this study

Informed Consent

Informed Consent was obtained from the patient.

Author's contribution

All the authors contributed equally to the case report.

Data and materials availability

All data associated with this study are present in the paper.

REFERENCES AND NOTES

1. Belani P, Schefflein J, Kihira S, Rigney B, Delman BN, Mahmoudi K, Mocco J, Majidi S, Yeckley J, Aggarwal A, Lefton D, Doshi AH. COVID-19 Is an Independent Risk Factor for Acute Ischemic Stroke. *AJNR Am J Neuroradiol* 2020; 41(8):1361-1364.
2. Bikdeli B, Madhavan MV, Jimenez D, Chuich T, Dreyfus I, Driggin E, Nigoghossian C, Ageno W, Madjid M, Guo Y, Tang LV, Hu Y, Giri J, Cushman M, Quéré I, Dimakakos EP, Gibson CM, Lippi G, Favaloro EJ, Fareed J, Caprini JA, Tafur AJ, Burton JR, Francese DP, Wang EY, Falanga A, McLintock C, Hunt BJ, Spyropoulos AC, Barnes GD, Eikelboom JW, Weinberg I, Schulman S, Carrier M, Piazza G, Beckman JA, Steg PG, Stone GW, Rosenkranz S, Goldhaber SZ, Parikh SA, Monreal M, Krumholz HM, Konstantinides SV, Weitz JI, Lip GYH; Global COVID-19 Thrombosis Collaborative Group, Endorsed by the ISTH, NATF, ESVM, and the IUA, Supported by the ESC Working Group on Pulmonary Circulation and Right Ventricular Function. COVID-19 and Thrombotic or Thromboembolic Disease: Implications for Prevention, Antithrombotic Therapy, and Follow-Up: JACC State-of-the-Art Review. *J Am Coll Cardiol* 2020; 75(23):2950-2973.
3. Ellul MA, Benjamin L, Singh B. Neurological associations of COVID-19. *Lancet Neurol* 2020; 19: 767-83.

4. Jain A, Talwar D, Kumar S. Spectrum of Respiratory Involvement in COVID 19 Era; An Overview. *Indian J of Forensic Med & Toxicol* 2020; 14(4):6593-9.
5. Paniz-Mondolfi A, Bryce C, Grimes Z. Central nervous system involvement by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). *J Med Virol* 2020; 92: 699–702.
6. Talwar D, Kumar S, Madaan S, Khanna S, Annadatha A. Intractable Singultus: Atypical presentation of COVID 19. *Medical Science* 2021; 25(111), 1183-1187
7. Varga Z, Flammer AJ, Steiger P. Endothelial cell infection and endotheliitis in COVID-19. *Lancet* 2020; 395: 1417–18.