

Convulsions in COVID19 Patient: Clinical Reasoning and Diagnostic Approach

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Abstract

SARS-CoV-2 is a novel coronavirus responsible of the latest pandemic. It can have various manifestations starting from respiratory to neurological, abdominal. The aim of this article is to emphasize the clinical reasoning in the presence of neurological symptoms in COVID19 patients. Our case is COVID19 female that presented an episode of generalized convulsions. A panel of tests have been conducted to explore the possible aetiology of her seizure.

Keywords: COVID19, convulsion, diagnostic approach.

Introduction

SARS-CoV2 is a novel coronavirus responsible of global outbreak. Its manifestations are various; the respiratory symptoms are well recognized, however neurological manifestations have not been properly studied yet. This study aims to emphasize the clinical reasoning in the presence of neurological symptoms in COVID19 patients. The authors of this article report the case of a COVID19 patient presenting an episode of convulsions.

Clinical Case

22-year-old female, no particular history, no previous neurological manifestation, diagnosed COVID19 positive during a systematic screening.

Initially, the patient was admitted in a COVID19 dedicated structure where she adequate care. On day 6, the patient presented an episode of apyretic generalized tonic-clonic convulsions. Then was transferred to the intensive care unit.

During her admission, the patient was conscious, GCS 15/15, no neurologic deficit, presenting hemodynamic and respiratory stability, cardiac frequency at 80bpm, blood pressure 110/65 mmHg, capillary glycemia 1.20 g/L, temperature 37.4 °C. EKG was normal.

Electronic blood panel showed normal Sodium (139 mEq/L), Potassium (3.9 mEq/L), Calcium (102 mg/L) and Magnesium (21 mg/L) levels, Albumin 48 g/L, urea at 0.22 g/L creatinine 7 mg/L, AST/ALT 20/18 UI/L, CRP 0.3 mg/L and PCT at 0.2µg/L.

CBC showed a lymphopenia 920 el/mm³, WBC 7661 el/mm³, Hb 13.7 g/dL, Hte 41%, Plt 306 000 el/mm³. Hemostasis tests were normal, D-dimers 0.1 mg/L.

Toxicology screening was negative. Non-contrast brain CT scan was normal, followed by CT-angiogram that revealed an abnormal communication between the carotid arterial system and vertebrobasilar system (arterial or venous). However, it could not determine whether this communication was a persistent primitive trigeminal artery or an arteriovenous fistula. (Figure 1).

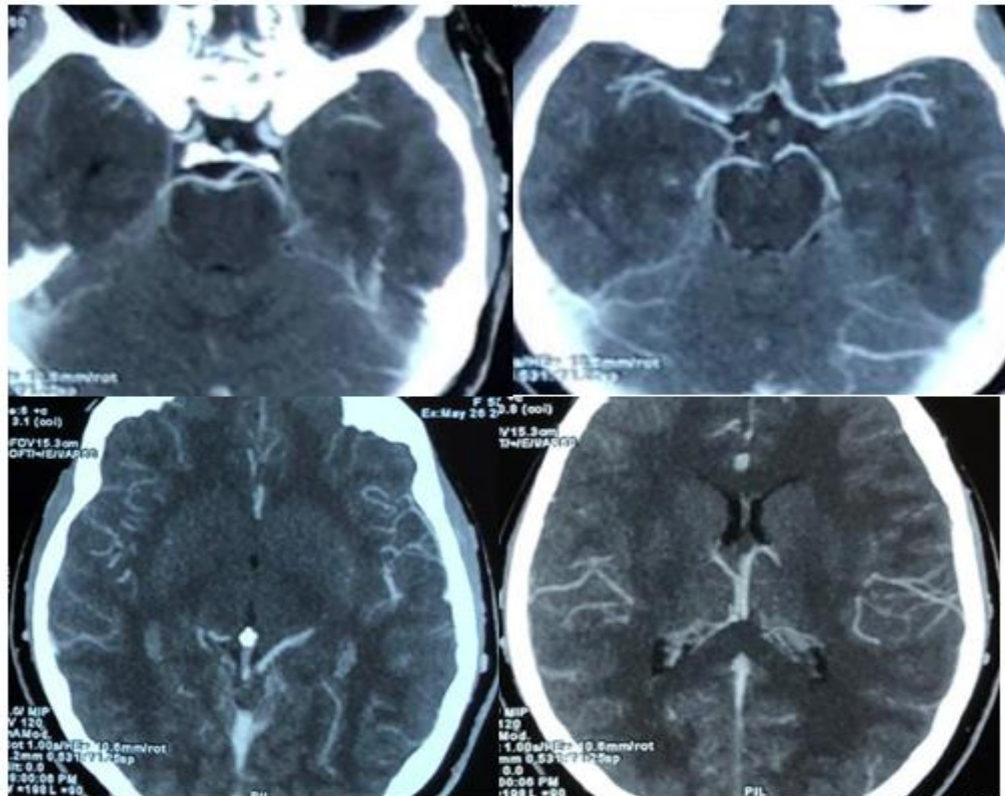


Figure 1: Axial images from angio CT, showing the carotid and vertebra basilar systems (up), and dilated veins (down).

On this ground, an MR angiography was realized and excluded the diagnosis of fistula. The abnormal image seen on CT was due to a dilated Rosenthal vein (basal vein). (Figure 2).

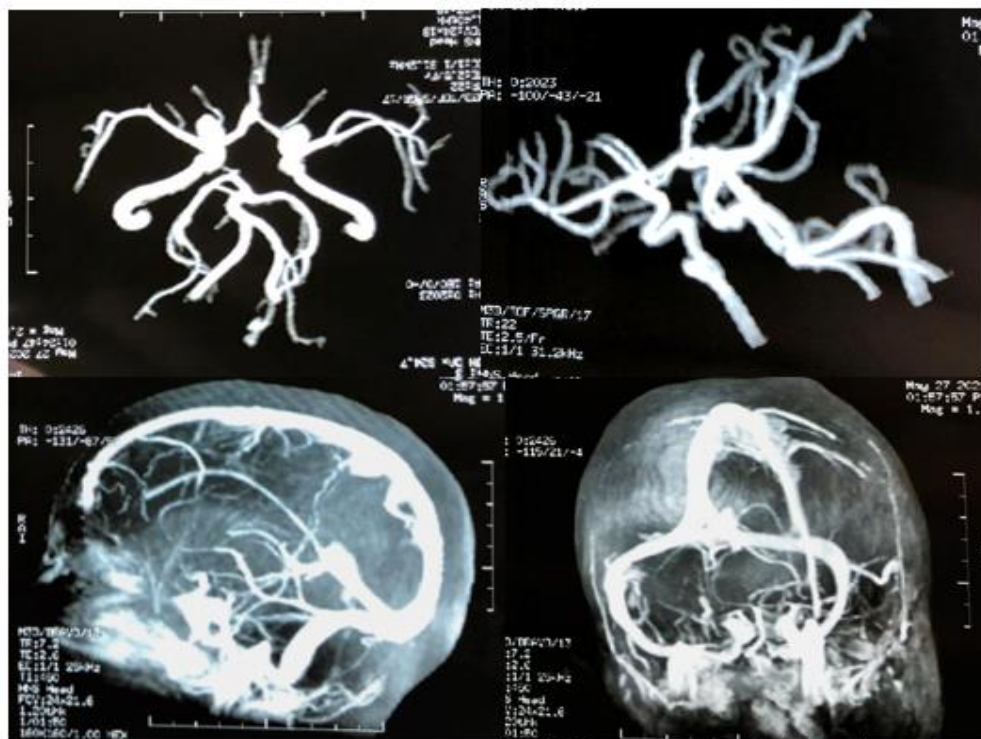


Figure 2: MRA, 3D-TOF (up) and 2D-TOF (down) images showing normal brain vessels. Absence of arterio-venous shunt.

Awaiting the MR diagnosis, an EEG and lumbar puncture have been realized, revealed normal. An anticonvulsant

treatment was prescribed (carbamazepine 5mg/kg), in addition to enoxaparin 0.6 mL, twice a day.

Case discussion

SARS CoV2's involvement in neurological impairment has been proved by numerous studies, regardless of the patients' history. The symptoms vary from simple headache to encephalopathy, including seizure, atonia and delirium [1,2]. Its pathophysiology is still not clearly evident. However, many hypotheses can explain these manifestations. The most prominent being the cytokines storm in inflammatory response that may trigger neuronal hyperexcitability and lead to generalized seizures [3-5]. Other studies incriminate the virus itself to cause such symptoms, but it is still controversial whether it can cross the Blood-Brain-Barrier or not [3,6].

Cerebral arteriovenous fistulae may also be revealed by generalized seizures, particularly when they are fed by the middle cerebral artery, lack of intranidal aneurysms or have a cortical location [7], which is not the case in our patient.

Previous studies have shown an association between convulsions and hydroxychloroquine. Which can be explained by the decrease of epileptic threshold due to diminution of the inhibitory neurotransmitters concentration (GABA) [3,8,9] justifying the refraining of chloroquine use for our patient.

Conclusion

Despite COVID19 being primarily a respiratory illness, it can cause a variety of extra pulmonary symptoms, including neurological.

Convulsions may be a symptom encountered during a SARS-CoV-2 infection, however, a good diagnostic approach is always recommended before attaching them to COVID19.

The pathophysiology of these manifestations is yet to be established in further studies.

Compliance with ethical standards

Conflict of interest: the authors declare that they have no conflict of interest.

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