



Emergency room neurology in times of COVID-19: malignant ischaemic stroke and SARS-CoV-2 infection

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Introduction

The COVID pandemic has severely ravaged through Spain over the past weeks. The increasing number of affected patients in a short time required a quick reorganization of our healthcare system in order to encompass this huge amount of work and avoid the collapse of hospitals. It is a formidable effort for everyone

and many of our colleagues have acquired infection in this process.

The case of a 36-year-old woman who was a healthcare worker and was brought by ambulance to the emergency room is reported.

Case report

Her mother had to contact the police because she was unable to talk to her on the phone for the last 48 h. She was found lying on her apartment floor unable to talk nor to move the right side of her body. She was on her own because her partner was taking care of his parents when the lockdown started and decided to stay with them during the state of emergency. She was a smoker, but no other previous medical history was known. Physical examination revealed a global aphasia and a right hemiplegia (National Institutes of Heart Stroke Scale 21). Computed tomography (CT) of the brain showed an established infarct in the territory of the left middle cerebral artery with a mild deviation of the midline (Fig. 1a). CT angiography showed an occlusion of the left internal carotid artery, middle cerebral artery and the left anterior cerebral artery with a free-floating thrombus in the ascending aorta with no signs of aortic atheromatosis (Fig. 1b, c). A thoracic CT revealed bilateral pneumonia and signs of bilateral acute pulmonary embolism. Polymerase chain reaction test for SARS-CoV-2 was performed and was positive. Blood tests

revealed elevated creatine kinase (8669 U/l) and D-dimer levels (7540 ng/ml), a C-reactive protein of 156 mg/L and 23 600 white blood cells/ μ l. [Correction added on 17 July 2020 after first online publication: '156 mg/ml' has been amended to '156 mg/L' in the preceding sentence.] Because of the delay, the severe mass effect and the poor clinical status, it was decided not to perform hemicraniectomy. Her level of consciousness gradually deteriorated, and she passed away 72 h after admission.

Discussion

The major clinical manifestations of the SARS-CoV-2 infection are mainly due to pulmonary complications [1]. To date, the incidence of neurological symptoms in COVID patients remains unknown and, although several neurological symptoms have been reported, the biological mechanism remains unknown [2].

It is well known that COVID infection can induce changes in coagulation and other laboratory findings such as thrombocytopenia, elevated D-dimers, prolonged prothrombin time, and disseminated intravascular coagulation which can lead to the development of thrombosis. However, its effects on systemic circulation and coagulation have not yet been established [3,4]. Under these circumstances, neurologists were fearing the collapse of our units and planning how to deal with the potential

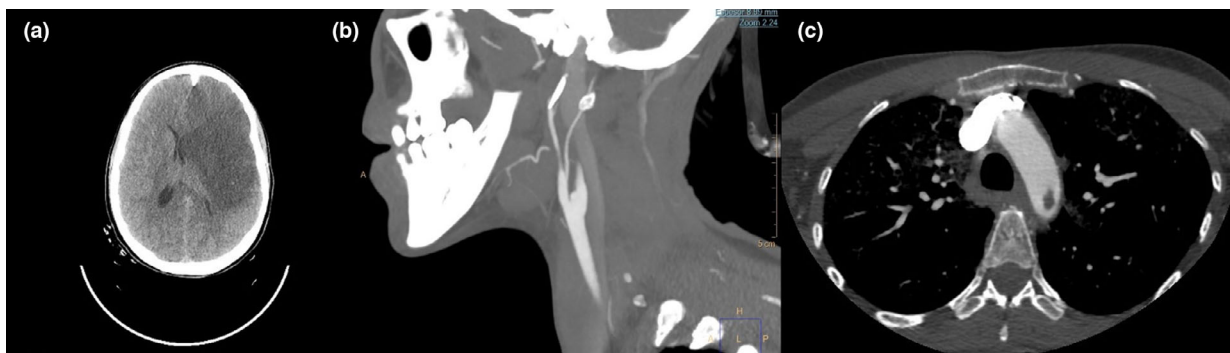


Figure 1 (a) CT scan of the brain showed an established subacute infarct in the territory of the left middle cerebral artery with a mild deviation of the midline. (b) CT angiography shows the occlusion of the left internal carotid artery. (c) CT angiography shows a free-floating thrombus in the ascending aorta.

increase of our stroke patients. Surprisingly, a substantial reduction of neurological emergencies has been experienced during on-calls. This raises the question of whether these patients are being overlooked.

It is believed that this case illustrates the strong association between SARS-CoV-2 and the development of systemic thromboembolisms due to a hypercoagulable state, no matter the age of the patient. Thus, the awareness of neurologists about severe forms of systemic ischaemia and stroke in patients with

signs of COVID infection need to be increased in order to provide all patients with the best possible care.

Disclosure of conflicts of interest

The authors declare that they have no conflicts of interest.

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