

COVID-19-associated spontaneous subacute subdural haematoma: report of one case

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Abstract

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COVID-19-associated spontaneous subacute subdural haematoma: report of one case

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No conflict of interest

Abstract

Coronavirus disease 2019 (COVID-19) is an emerged pandemic disease caused by a new coronavirus known as SARS-CoV-2 (severe acute respiratory syndrome-coronavirus-2). Initially the mortality of this infection are related to severe acute respiratory distress syndrome, but several publications also showed that this infection caused an inflammatory response with severe systemic complications (1).

spontaneous intracerebral hemorrhage (ICH) is a devastating consequence of coronavirus disease 2019 (COVID-19) infection.(2-3)Prior single-center studies have reported ICH in patients with COVID-19, but these findings have not been confirmed in a multicenter study.(3)

We sought to describe the prevalence of ICH among hospitalized patients with COVID-19 in the American Heart Association COVID-19 Cardiovascular Disease registry and compare the clinical characteristics and outcomes of COVID-19 patients with and without ICH.

Introduction:

Since March 2020, the pandemic of coronavirus disease 2019 (COVID-19) has become a threat to global health. Several kinds of coronavirus-associated disorders, including vascular involvements with neurological symptoms, have been reported worldwide. Here, we describe an individual with COVID-19 with no history of traumatic brain injury nor of vascular injuries, who developed spontaneous subdural haematoma in a subacute process

Case report

A 60-year-old man with no significant medical history, presented to the hospital owing to shortness of breath and fever. Physical examination showed the signs of dehydration, blood pressure of 120/60 mm Hg, and temperature of 38, 5°. Respiratory frequency was as 15 cycles/min and saturation measured a 90%.

The patient was fully conscious with normal neurological examination.

Polymerase chain reaction (PCR) on a nasal swab confirmed COVID-19 diagnosis.

Biological analysis showed a leucopenia.

The patient received oral macrolides, multivitamins and zinc with oral rehydration, non antibiotics were prescribed.

In the following days, showed a decreased GCS at 9, fixed and dilated left pupil.

CT of the brain revealed subdural left heamatoma with swirl sign (figure1), fluid-fluid levels (figure 2) associated to subfalcine brain herniation (figure 3).

The patient did not undergo surgery because of bad prognosis.

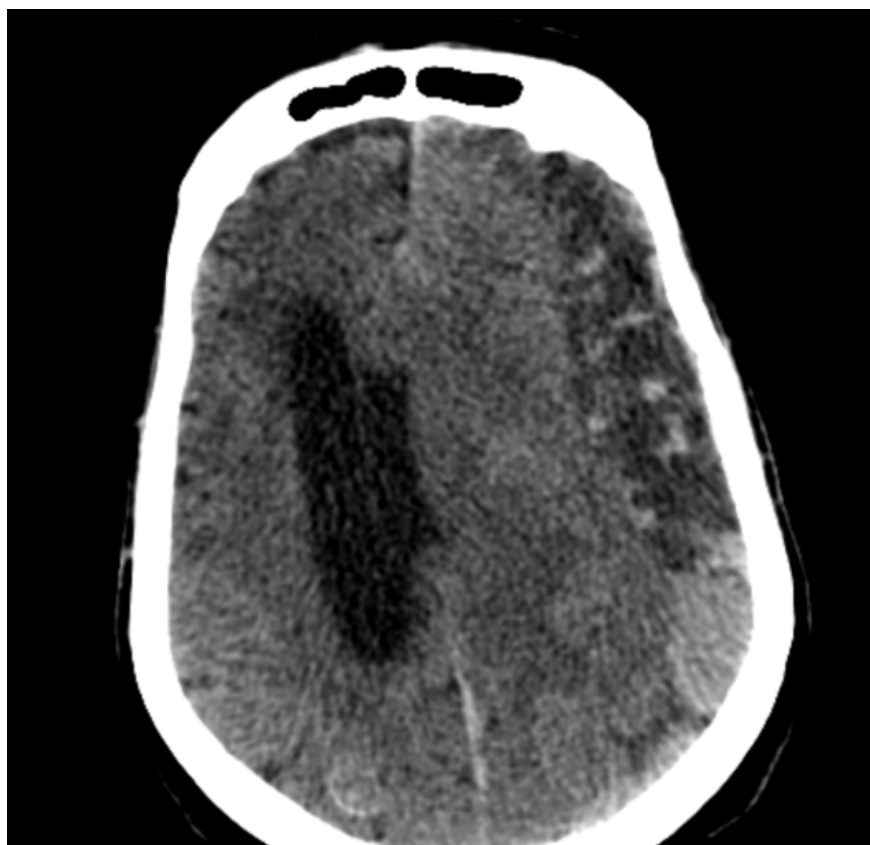


Figure 1 non enhanced head CT scan image showing a left heterogenous SDH with brain herniation.



Figure 3: left sub-dural hematoma with fluid-fluid levels with brain herniation.



Figure 2 : non enhanced head CT showing a sub-tentorial hematoma.

Discussion

Although coronavirus disease 2019 [COVID-19] primarily manifests as a lung infection, with symptoms ranging from those of a mild upper respiratory infection to severe pneumonia and acute respiratory distress syndrome (ARDS), other multisystemic manifestations of this disease and related complications are becoming more commonly recognized (4).

With respect to the neurological manifestations of COVID-19, such as ischaemic stroke, myelitis, seizure, encephalitis and virus isolation from cerebrospinal fluid, it is understood that SARS-CoV-2 has a neurotropic and neuroinvasive nature [5]. The initial report from Rothstein et al. demonstrated the occurrence of ischaemic stroke, subarachnoid haemorrhage and intracerebral haemorrhage associated with SARS-CoV-2 in individuals with COVID-19, which was described as relatively uncommon [5]. Gogia et al. reported the first case of COVID-19-associated hyperacute SDH along with extensive intra-cerebral haemorrhage and sub-arachnoid haemorrhage in a 75-year-old patient. This individual was on double antiplatelet (aspirin and clopidogrel) treatment [6]; however, our case had no history of antiplatelet or anticoagulant therapy. Different types of intracranial haemorrhage and their risk factors in patients with COVID-19 were described by Altschuler et al. in November 2020 [7]. In their study, among 5227 individuals with COVID-19, 35 were found to have haemorrhage of some kind and 17 of the 35 had acute SDH. Based on the characteristics of these patients, 70.6% (n= 12) had a head trauma before the haemorrhage and five were on anticoagulant drugs [7]. However, such predisposing factors were not observed in our case. Intracranial haemorrhage in individuals with COVID-19 were systematically assessed in a review by Cheruiyot et al. According to that study, out of 148 individuals

with a diagnosis of intracranial haemorrhage, extracted from 23 studies, only 19 had a diagnosis of SDH and none of them were diagnosed with the subacute type of SDH [8]. Some mechanisms can be considered in the tendency of these patients to develop SDH. The point of entry for SARS-CoV-2 into human tissue is mediated primarily by a specific cellular receptor, angiotensin-converting enzyme 2 (ACE-2), which is expressed in various organs including brain parenchyma. In addition, ACE-2 receptors play an important role in vascular autoregulation and cerebral blood flow. Sharifi-Razavi et al. Hypothesized that ACE-2 receptor dysfunction caused by direct invasion by SARS-CoV-2 may result in disruption of autoregulation and make the patient prone to vascular wall rupture in the presence of hypertension spikes [9]. In fact, systemic viraemia and subsequent endothelial dysfunction may make the bridging veins of the subdural space more vulnerable to bleeding following a minor trauma even to the point of sneezing, coughing or a Valsalva manoeuvre. Vascular damage can also happen during viral infections that result in vasculitis, such as varicella zoster virus or human immunodeficiency virus. (10)

Conclusion :

Unusual presentations with SDH SARS-CoV-2 have been increasingly reported. They approved that COVID-19 is a serious contributor to vascular complications, increasing the fatality of the disease. Heightened awareness of this atypical but potentially treatable complication of the COVID-19 disease spectrum should be encouraged even in patients without associated comorbidities as in our observation.

Consent statement:

I confirm that all authors have confirmed to the submission.

Patient has passed away.

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