SARS-CoV-2 triggered seizure complicated by fatal subdural hematoma under edoxaban and clopidogrel

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ABSTRACT
SARS-CoV-2 associated coagulopathy may manifest as hypocoagulability with a propensity for bleeding. Here we report a COVID-19 patient with fatal subdural hematoma (SDH) shortly after thrombendarterectomy (TEA), and anticoagulation together with anti-thrombotic treatment. A 83-year-old male developed sudden-onset fever triggering a first ever tonic-clonic seizure. His previous history was positive for diabetes, hypertension, hyperlipidemia, aorto-coronary bypass grafting, percutaneous, transluminal coronary angioplasty with stent implantation, peripheral occlusive artery disease with percutaneous, transluminal angioplasty of the left popliteal artery, hypoacusis, and atrial fibrillation. He had undergone TEA 10 days prior to admission because of a non-symptomatic, right-sided 70% common carotid artery stenosis. He was on clopidogrel and edoxaban on admission. He presented with coma, non-reacting, unrounded pupils, stretch synergisms, reduced tendon reflexes, and positive pyramidal signs. Cerebral CT revealed an extensive SDH over the left hemisphere with edema and mass effect and a midline shift to the right. After acute decompression surgery had been declined, the patient expired a few hours after admission. Fatal SDH may occur under clopidogrel and edoxaban during a mild COVID-19 disease after a seizure triggered by fever. Whether hypocoagulation due to COVID-19 increased the bleeding risk and thus contributed to the fatal bleeding remains speculative, but is conceivable.

Keywords: Anticoagulation, atherosclerosis, COVID-19, SARS-CoV-2, seizure, subdural hematoma

Case Report

Since the outbreak of the SARS-CoV-2 pandemic, it became increasingly evident that the virus not only affects the lungs, but also other organs and can impair the coagulation system. SARS-CoV-2-associated coagulopathy may manifest either as hypercoagulability with an increased propensity for thrombosis or as hypocoagulability with a propensity for bleeding. Here we report and discuss a COVID-19 patient with fatal subdural hematoma (SDH) shortly after thrombendarterectomy (TEA), anticoagulation, and anti-thrombotic treatment, which has not been reported before. Informed consent was obtained for publication from the patient’s relatives. This case is relevant to the practice of primary care physicians as they frequently the first confronted with complications of SARS-CoV-2 infections and as coagulopathy is a frequent complication of the infection.

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of a non-symptomatic, right-sided 70% common carotid artery stenosis. Clopidogrel was given 1 day after surgery. Edoxaban was re-established 3 days after surgery. After he had tested positive for SARS-CoV-2 3 days after surgery, he was discharged upon his own will. Clinical neurologic exam revealed coma, non-reacting, unrounded pupils bilaterally, stretch synergisms, reduced tendon reflexes on the lower limbs, and positive pyramidal signs. Blood tests revealed anemia, a proBNP of 2617 pg/mL (n, <450 pg/mL), an INR of 1.4, a PTZ of 52% (n, 70-130%), and an aPTT of 38.8 sec (n, 23-27 sec). ECG showed tachycardious atrial fibrillation. A CT scan of the brain revealed an extensive subdural hematoma (SDH) over the entire left hemisphere, a mass effect with a midline shift to the right of 1.8 cm and intracerebral edema of the entire left hemisphere [Figure 1]. Neurosurgeons refused to decompress because of the unilateral cerebral edema, abnormal coagulation parameters, and the presumed poor outcome, why the patient received a comfort care order and died a few hours after admission.

Discussion

The index patient is relevant to the practice of primary care physicians because primary care physicians are commonly confronted first with patients experiencing complications of SARS-CoV-2 infection and because coagulopathy is increasingly recognized as a complication of SARS-CoV-2 infection. The presented patient is interesting for SDH under anticoagulation with edoxaban, re-established 3 days after surgery, and an antithrombotic treatment with clopidogrel, established 1 day after surgery. Whether the seizure occurred prior to the SDH or following the SDH remains elusive, but most likely the seizure occurred first, since the patient initially developed fever followed by the seizure and had hyponatremia on admission. Whether SDH developed spontaneously, after a trauma, or due to the seizure also remains speculative. As history was negative for a fall or another trauma and as the patient did not wake up after the seizure, it is conceivable that either the seizure caused the SDH or it developed spontaneously due to over-anticoagulation or hypocoagulability from COVID-19. The SDH caused unilateral cerebral edema, and SDH together with the edema was responsible for the midline shift. Whether the infection with SARS-CoV-2 forwarded the bleeding and increased the bleeding risk remains speculative, but due to the increasing number of reported patients in whom COVID-19 is complicated by thrombosis or intracerebral bleeding it is conceivable that the viral infection was included in the pathophysiology of the bleeding. Several cases have been reported in which SARS-CoV-2-induced coagulopathy was made responsible for intracerebral bleeding (ICB) or even subarachnoid bleeding. Whether the prevalence of ICB is truly increased compared to non-COVID-19 cases is under debate.

This case shows that fatal SDH may occur during a mild COVID-19 disease after a seizure triggered by fever and after establishing clopidogrel and edoxaban in combination for atrial fibrillation and a recent TEA. Whether hypocoagulation due to the SARS-CoV-2 infection increased the bleeding risk and thus contributed to the fatal bleeding remains speculative, but is conceivable.

Declarations

MK: literature search, discussion, critical comments, final approval, JF: design, literature search, discussion, first draft, critical comments

The study complies with the declaration of Helsinki

Ethical approval

All procedures performed in the studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Key take home message

Anticoagulated SARS-CoV-2-infected patients are at an increased risk of bleeding not only because of anticoagulation, but also because of SARS-CoV-2 associated hypocoagulability

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Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. García-Ortega A, de la Rosa D, Oscullo G, Castillo-Villegas D, López-Reyes R, Martínez-García MA. Coagulation disorders and thromboembolic disease in COVID-19: Review of current evidence in search of a better approach. J Thorax Dis 2021;13:1239-55.
2. Mekheal N, Roman S, Michael P. Multiple arterial thrombosis in a COVID patient with no known comorbidities with mild elevation of D-dimer. Cureus 2021;13:e13207. doi: 10.7759/cureus. 13207.

3. Dong S, Liu P, Luo Y, Cui Y, Song L, Chen Y. Pathophysiology of SARS-CoV-2 infection in patients with intracerebral hemorrhage. Aging (Albany NY). 2020;12:13791-802.

4. Fayed I, Pivazyan G, Conte AG, Chang J, Mai JC. Intracranial hemorrhage in critically ill patients hospitalized for COVID-19. J Clin Neurosci 2020;81:192-5.

5. Thu SS, Matin N, Levine SR. Olfactory gyrus intracerebral hemorrhage in a patient with COVID-19 infection. J Clin Neurosci 2020;79:275-6.

6. Cezar-Junior AB, Faquini IV, Silva JLJ, de Carvalho Junior EV, Lemos LEAS, Freire Filho JBM, et al. Subarachnoid hemorrhage and COVID-19: Association or coincidence? Medicine (Baltimore) 2020;99:e23862. doi: 10.1097/MD.00000000000023862.

7. Lang CN, Dettinger JS, Berchtold-Herz M, Utzolino S, Bemtgen X, Zotzmann V, et al. Intracerebral hemorrhage in COVID-19 patients with pulmonary failure: A propensity score-matched registry study. Neurocrit Care 2021;34:739-47. doi: 10.1007/s12028-021-01202-7.