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Case Report

Cerebral embolism after vaccination against COVID-19: a case report

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Abstract

Coronavirus disease-2019 (COVID-19) is threatening world health back since 2019 by undergoing various mutations in the world day by day. However, various measures and treatment options are being developed against the disease. Among these, first of all, mask, distance, cleaning and immunization with vaccines come. Of course, unknown complications are beginning to emerge in newly developed vaccines, and these complications make people nervous. We wanted to share a case of cerebrovascular embolism, which we think developed secondary to BNT162b2 mRNA vaccine after routine surgery.

Keywords: Cerebral embolism, COVID-19, vaccination.

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INTRODUCTION

Due to many presently unidentified mechanisms that may lead to arterial and venous thrombosis, the 2019 coronavirus disease (COVID-19) seems to be linked with a substantial thrombotic propensity. Risk estimates for these problems, however, are still in their early stages (1-3). However, it is unclear whether the problem will materialize and when since the early and late consequences of the vaccination choices developed after the COVID-19 sickness are not thoroughly understood (4).

In this case our aim is to discuss the first case side effect of the COVID-19 vaccination associated with cerebral embolism.

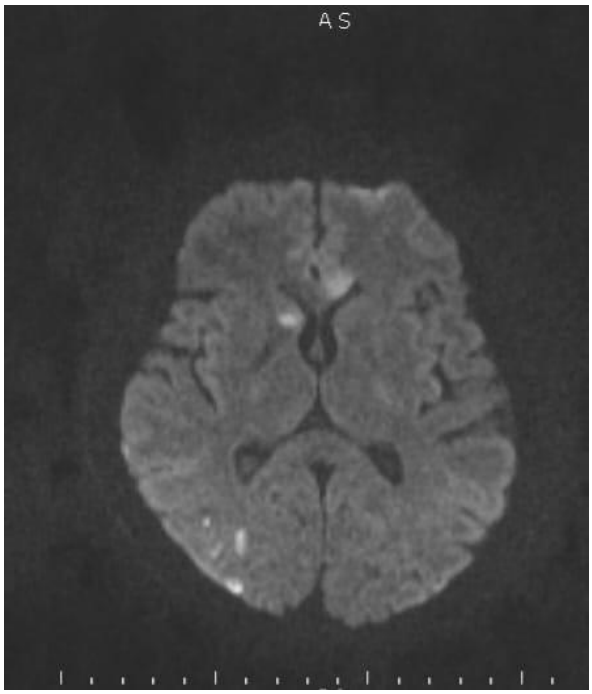

Figure 1. Regions of intracerebral occlusion on MR image sections- occipital and frontal lobes

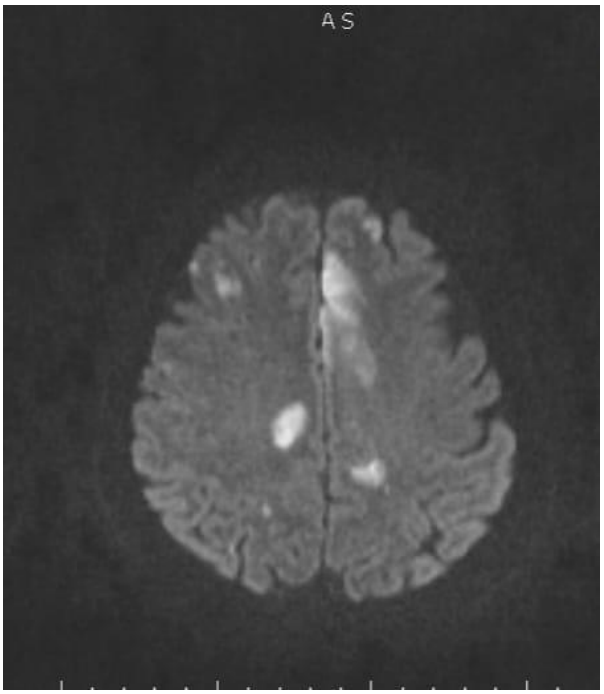

Figure 2. Regions of intracerebral occlusion on MR image sections-parietal and frontal lobes

CASE REPORT

A 49-year-old female patient with diabetes mellitus and hypertension was admitted to the general surgery outpatient clinic with right upper quadrant pain and dyspeptic complaints. As a result of the examinations, laparoscopic cholecystectomy was planned with the diagnosis of multiple gallstones, the largest of which was 4 mm, in the gallbladder of the patient. It was learned that the patient had previously been treated for cholecystitis. After the routine preparations were completed, the patient was taken to surgery. After the routine surgery, the patient was taken to bed. The patient's Glasgow coma score was evaluated as 10, as the patient's state of consciousness did not return at the 4th postoperative hour. Multiple ischemic areas were detected in both hemispheres in cranial Magnetic Resonance Imaging (MRI) (Figure 1, 2, 3, 4). According to the information received from the relatives of the patient, it was understood that the patient had the second dose of BNT162b2 mRNA vaccine 2 days before the surgery day and we were not informed. It was learned that the patient did not use any anticoagulant. Cranial examination revealed left hemiplegia and regression in cognitive functions. The patient was treated with the diagnosis of cranial ischemia. The patient

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was started on 25.000 Units/day heparin therapy for 2 days. Left hemiplegia resolved on the 3rd day of follow-up. One week later, the patient's cognitive functions partially returned. The patient who was mobilized was discharged with an appointment for physiotherapy.

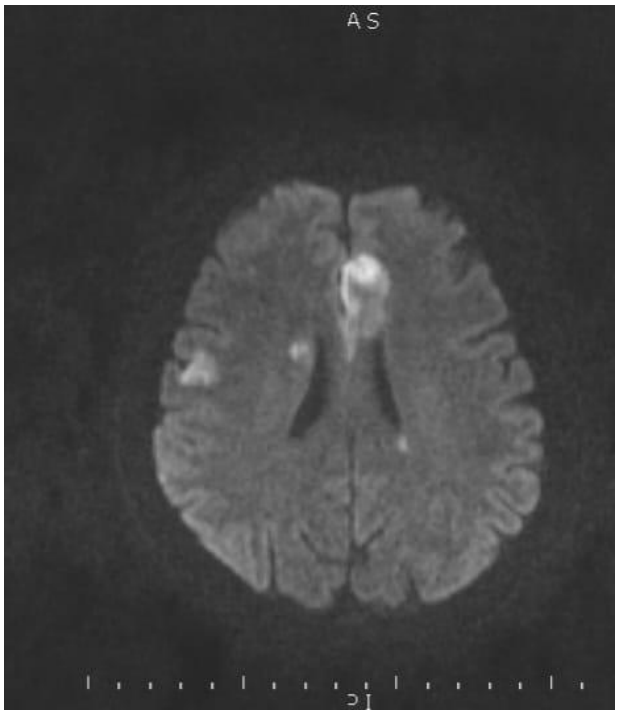

Figure 3. Regions of intracerebral occlusion on MR image sections-central and frontal lobes

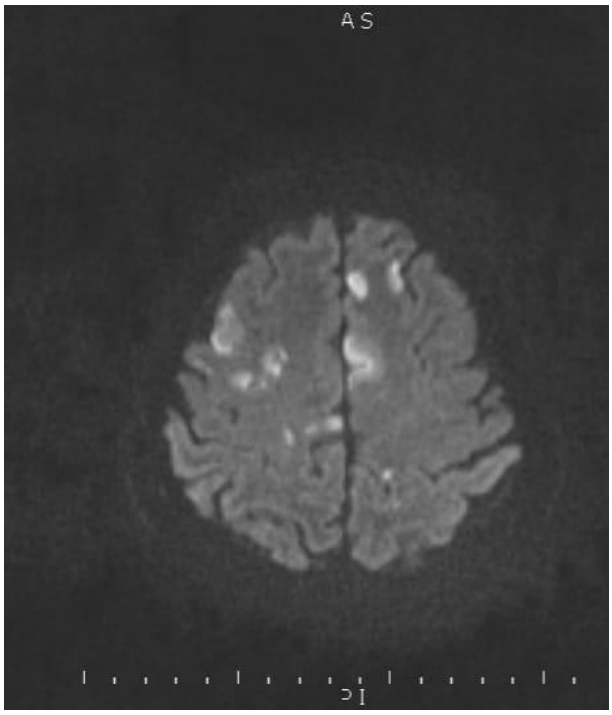

Figure 4. Regions of intracerebral occlusion on MR image sections-occipital, parietal and frontal lobes

DISCUSSION

In studies conducted since the emergence of COVID-19 disease, complications that occur in humans in the early period of the disease have been described. Among these, early death, myocardial infarction (MI), cerebral ischemia and hemorrhage, hepatitis and nephritis are the leading ones, especially due to acute respiratory distress syndrome (ARDS) (5). However, it mimics the COVID-19 disease, albeit mildly, in vaccines that have started to be used in immunization against coronavirus. For this reason, early complications seen in COVID-19 disease can also be seen, especially after thromboembolism vaccination. An increase in the rate of thromboembolism after vaccination was also reported in a study conducted in England on approximately 30 million people vaccinated between 1 December 2020 and 24 April 2023. We believe that cerebral ischemia developed in the patient after the second dose of BNT162b2 mRNA vaccine in the case (6) we presented above. But is this complication a vaccine complication? Or is it secondary to surgery? not fully understood. The improvement of the patient's clinic in the early period suggests that there may be complications related to the vaccine.

CONCLUSION

Considering the current treatments against the COVID-19 pandemic, the most effective protection method today is mask, distance and cleaning. However, it is necessary to vaccinate every individual who is recommended to be vaccinated, within the scope of research, in order to gain herd immunity. However, post-vaccination complications, which may be fatal, should not be

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ignored, and we think and recommend that individuals with co-morbid diseases should be followed up more closely after vaccination.

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