



A massive stroke in a pregnant woman following COVID-19 infection: A case report

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Abstract

Background and aims: COVID-19 infection increases the risk of pathological thrombotic events in venous and arterial circulation. COVID-19 patients are reported, a wide range of neurovascular symptoms is highlighted, such as cerebral vascular accident. This study aimed to report a massive stroke in a pregnant woman with COVID-19 infection.

Case Report: We report a 41-year-old pregnant woman, gravid 5 para 2 living 2 abortion 2 at gestational age 22 weeks and 4 days with Covid-19 infection, which developed into a massive stroke in the Basilar artery despite receiving a therapeutic dosage of Enoxaparin Sodium.

Conclusion: The possibility of thrombosis should be considered in COVID-19 patients with symptoms indicating an increase in intracranial pressure (ICP) such as decreased consciousness, strabismus, and agitation. Considering the higher risk of thrombotic events in COVID-19 patients, cerebral venous sinus thrombosis (CVST) could be a possible consequence. Thus, the precise observation of neurologic manifestations in covid-19 patients, especially in pregnant women, is recommended.

Keywords: Pregnant, COVID-19 infection, Massive stroke

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Introduction

The novel infection of COVID-19 caused by SARS-CoV-2 has been announced as a global health emergency of international concern (1). Studies suggest that COVID-19 infection increases the risk of pathological thrombotic events in venous and arterial circulation due to systemic inflammation, platelet activation, endothelial dysfunction, and stasis (2,3).

It is well documented that respiratory infections increase the short-term risk of cerebrovascular accidents (CVA) (4). As more case reports and series of COVID-19 patients are reported, a wide range of neurovascular symptoms is highlighted, such as CVA (2). Almost five percent of all patients with COVID-19 experience CVA (95% confidence interval: 2.8–8.7%) (4). CVA is a significant cause of severe long-term disabilities in women of childbearing age, too (4). Some case reports address thrombosis events in pregnant women (5). This study aimed to report a massive stroke in a pregnant woman with COVID-19 infection despite receiving therapeutic dosage with dramatic evolution.

Case Presentation

On 8 April 2020, a 41-year-old pregnant woman, gravid 5 para 2 live 2 abortion 2 at gestational age 22 weeks and 4 days, presented to the emergency department

with a chief complaint of cough and myalgia for 2 days before admission, was admitted to a hospital in Isfahan, Iran. COVID-19 polymerase chain reaction (PCR) was positive. She did not have any comorbidities. Her two children were born through a cesarean section, and one of her abortions was terminated by surgical curettage. Two days after hospitalization, she was referred to a tertiary hospital due to a deterioration in the patient's tachycardia and lung involvement in computed tomography (CT) scan.

Her vital sign at admission to the second hospital was as follows: blood pressure (BP): 112/75 mm Hg, pulse rate (PR): 122, temperature (T): 39°C. Oxygen (O₂) saturation with oxygen administration was 97%, and without it was 89%. In a cardiac exam performed by a cardiologist, both S1 and S2 heart sounds were normal without soufflé. However, crackles were heard in the lower bases of both lungs. Her test results showed D-dimer: 879, which increased to 4800 and then decreased to 2300; Blood urea nitrogen (BUN=5), Cr=0.8, Na=145, K=4.2, ferritin=297, fibrinogen=317, U/A=normal.

Her treatment was started with enoxaparin sodium 60 mg twice a day, metoprolol 25 mg twice a day, aspirin, N-acetyl cysteine, and diphenhydramine.

The latest ultrasound showed 19 weeks and 5 days pregnancy with normal fluid volume, posterior placenta,

and a fetus with 300 g weight.

A day after admission, ceftriaxone, dexamethasone, and remdesivir were initiated after consultation with an infectious disease specialist. Methylprednisolone, enoxaparin sodium 60 mg twice a day, and an Insulin scale, in addition to fluticasone spray and salmeterol, were prescribed by a pulmonologist. Based on a psychologist consultation, the patient's agitation led to the administration of haloperidol, 0.5 mg, twice a day. Echocardiography has performed its results as follows: Ejection fraction (EF): 60%, pulmonary artery systolic pressure (PAP) 25, NO, pulmonary embolism (PE).

Six days later, on 14th April, she got intubated due to respiratory distress and a drop in O₂ saturation. Since the fetal heart rate was not detected the day after, ultrasonography was performed, and fetal heart rate (FHR) was not detected. Oxytocin was administered to induce abortion, and 24 hours later, a dead boy-fetal was born by vaginal delivery.

On the same day, due to a deterioration in the patient's condition and fixation in the pupil, a multi-disciplinary meeting was held with the contribution of obstetricians, neurologists, infectious specialists, and an anesthesiologist concerned with involving the brain stem. For this reason, performing an MRI was recommended. However, the anesthesiologist disagreed with it because of the instability of the patient's condition. Instead, an emergency CT scan showed a massive stroke without intracerebral hemorrhage. Neurologist consultation revealed multiple hypodense areas in the post fossa, left cerebellum, occipital, and thrombosis in the basilar, indicating a poor diagnosis.

On 24th April, another medical commission was held, and a CT angiography was performed. The narrowing of the basilar artery, partial obstruction of the basilar artery, and normal contrasting filling of both posterior cerebral artery (PCA) were seen. CT angiography of cervical arteries was normal.

A brain CT scan revealed a new intracranial contralateral bleeding, most likely following contralateral venous thrombosis, despite being correctly treated with intravenous heparin.

Discussion

Since an increasing body of studies is highlighting the possibility of neuro-invasion due to COVID-19, more evidence of neurological complication is required (6), especially in high risks groups such as women in pregnancy or postpartum. Ischemic and hemorrhagic strokes were the second most common central nervous system disorders related to COVID-19 infection (6).

We report the case of a pregnant woman with COVID-19 infection who presented with myalgia and cough as an example of a massive stroke even with receiving a therapeutic dosage of enoxaparin. This should bring more attention to considering various thrombotic events when assessing patients with COVID-19.

Other researchers highlighted the importance of exclusion of thrombotic events and other diseases in the shadow of COVID-19 diagnosis (7). In a study by Li et al, 219 COVID-19 positive patients were assessed retrospectively, ten had ischemic complications, and one of them (0.5%) showed hemorrhagic cerebrovascular disease 10 days after the onset of COVID-19 (8). A case report in the United States revealed that COVID-19 is an independent risk factor for increasing ischemic CVA (9).

Considering the higher risk of thrombotic events in COVID-19 patients, cerebral venous sinus thrombosis (CVST) could be a possible consequence. Thus, the precise observation of neurologic manifestations in COVID-19 patients, especially in pregnant women, is recommended. Gunduz reported a pregnant woman diagnosed with venous sinus thrombosis after developing a headache and hemiparesis (2). Various cases of CVA reported headaches as the main complaint (4,10). However, our patient did not have any headache, and a fixation in the pupil led to performing a CT scan, indicating that thrombosis may not be associated with typical symptoms and signs.

Conclusion

Thrombosis could be associated with various symptoms rather than typical symptoms. The possibility of thrombosis should be considered in COVID-19 patients with symptoms indicating an increase in intracranial pressure (ICP) such as decreased consciousness, strabismus, and agitation.

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Authors' Contribution

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Competing Interests

The authors declare that there is no conflict of interest.

Ethical Approval

Ethical considerations in this study included obtaining permission from the Ethics Committee of Isfahan University of Medical Sciences (Ethical IR.MUI.MED.REC.1399) and obtaining written consent to participate in the study from the participants.

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