Case Report

Peripartum cardiomyopathy mimicking COVID-19 infection

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Abstract

A pregnant patient presented with fever and desaturation, without breathlessness. She was suspected to have COVID-19 but SARS-CoV-2 was negative. She developed fetal distress and underwent an uneventful Cesarean section. Postoperatively, she developed respiratory distress and needed mechanical ventilation support. The clinical features suggested COVID-19 infection and antiviral treatment were empirically initiated. Repeat SARS-CoV-2 was negative. Echocardiography, computed tomography scans, and biochemical investigations supported a diagnosis of peripartum cardiomyopathy. She was successfully managed with decongestive therapy and could be discharged home on the fifth day.

Keywords: Pregnancy; peripartum cardiomyopathy; COVID-19

Introduction

The world is in midst of the coronavirus disease 2019 (COVID-19) pandemic. During pregnancy, women experience immunological and physiological changes making them more susceptible to viral respiratory infections than the general population. Pregnant patients with co-morbidities are at higher risk for severe illness. We describe the case of a pregnant patient, who presented with fever and desaturation and later developed respiratory distress.

Case Report

A 33-year-old primigravida, with 35 weeks amenorrhea, presented to the hospital with fever from 2. She had conceived with the help of in-vitro fertilization and had a di-chorionic di-amniotic twin pregnancy. She developed breathlessness and headache after hospitalization. She had developed intrahepatic cholestasis at 30 weeks of gestation and was managed conservatively. She had received vaccination for tetanus, was taking iron supplements and oral ursodeoxycholic acid 300 mg twice daily.

On examination, her weight was 81 kg, body mass index 34.2 kg/m², heart rate (HR) 100/min, blood pressure (BP) 120 / 84 mmHg, respiratory rate (RR) 24/min. Her peripheral oxygen saturation (SpO₂) was 93% on room air and temperature 38°C. The uterine size corresponded to the stated gestation and both fetal HRs were normal. Investigations revealed hemoglobin of 7.5 g/dL, total leukocyte count 25.3 × 10⁹/L, blood urea 74 mg/dL, serum creatinine 2.1 mg/dL, aspartate transaminase 57 IU/dL, alanine transaminase 50 IU/dL, and alkaline phosphatase 208 IU/dL. The coagulation profile was normal. Urine showed pus cells. Urine culture and antibiotic sensitivity tests were sent.

The patient had a pedal edema. Her SpO₂ fell to 82-86% after a few hours, but she did not complain of breathlessness. There was no history of sore throat or cough. An internal medicine consult was sought. Respiratory examination revealed bilateral basal crepitations. Given the ongoing COVID-19 epidemic, real-time quantitative polymerase chain reaction (RT-qPCR) for SARS-CoV-2 and X-ray chest were ordered. Chest X-ray showed prominent vascular markings. RT-qPCR of the nasopharyngeal and oropharyngeal swabs was, however, negative for SARS-CoV-2. She was advised head-up position and administered oxygen by face mask @ 4L/min. She was also administered frusemide 20 mg IV and nebulized with salbutamol. Her SpO₂ improved to 98%.

The patient complained of reduced fetal movement the next morning, and her fetal heart rate of one fetus was found to have dips to up to 90 beats/min. She was shifted for an emergency cesarean section to the operating room (OR). On arrival in the OR, she was comfortable, had normal hemodynamics, and her SpO₂ was 98%. Spinal anesthesia was administered with bupivacaine 9 mg. Fentanyl 20 mcg was added as an adjuvant.
to the spinal drug. Two live female neonates were delivered. The first-born neonate did not cry at birth and had a heart rate of <100/min but she was successfully resuscitated within 30 s with 100% oxygen by bag and mask. The second neonate had an APGAR score of 8/10 at birth. The surgery was uneventful.

Postoperatively, after about 45 min, the patient developed severe breathlessness. Her vitals were HR 150/min, BP 150 / 110 mmHg, and RR 28/min. Her SpO₂ fell to around 65%, despite high flow oxygen administration by face mask. The sensory block level had regressed to L1L2 level by then, and motor function had returned considerably. She was administered frusemide 40 mg and fentanyl 50 mcg intravenous. She was immediately shifted to the intensive care unit (ICU), receiving oxygen on high flow @10 L/min.

In the ICU, non-invasive ventilation (NIV) support was initiated. She was prescribed restricted fluid, frusemide, and antibiotic cover with tazobactam was started. An emergent echocardiogram revealed findings suggestive of dilated cardiomyopathy, moderate mitral regurgitation, mild tricuspid regurgitation, moderate pulmonary arterial hypertension, mild left ventricular (LV) dysfunction, and right ventricular dysfunction. The LV ejection fraction was 46%. Chest X-ray revealed soft fluffy opacities in both lungs with perihilar and lower lobe predominance. The peripheral fields were spared [Figure 1].

The patient developed severe respiratory distress about 6 h after ICU admission. Her symptoms and signs resembled those of COVID-19 infection. Her trachea was intubated, and mechanical ventilation support was instituted. Tracheal secretion samples were sent for RT-qPCR for SARS-CoV-2 and H1N1 flu. Empirical therapy was initiated with oseltamivir, azithromycin, hydroxychloroquine, tazobactam, and doxycycline. Arterial blood gas analysis revealed respiratory acidosis and hyperkalemia. The patient was administered frusemide and torsemide to decongest the heart and treat hyperkalemia. The patient did not, however, require hemodynamic support.

High resolution computed tomography (HRCT) chest revealed mild bilateral pleural effusion, extensive basal atelectatic changes, large areas of bilateral lower lobe consolidation with clear peripheries, and smooth interlobular septal thickening at places. Hepato-splenomegaly was present [Figure 2]. Doppler of both lower limbs was normal, with no evidence of deep vein thrombosis. Cardiac enzymes levels were troponin-I 0.9 to 2.59 ng/mL; creatine kinase-MB 15.2 IU/L; creatine phospho-kinase-133 IU/L; and NT-pro B-type natriuretic peptide 12200 pg/mL. The total leukocyte count (TLC) was 25.3 × 10⁹/dL, and serum creatinine was 2.3 to 2.4 mg/dL. The RT-qPCR test for SARS-CoV-2 and H1N1, received the next day, were negative.

A diagnosis of peripartum cardiomyopathy with oliguric acute kidney injury, of cardio-renal etiology, was made. Azithromycin and hydroxychloroquine were withdrawn. The patient remained on mechanical ventilation support for 48 h. Her LV ejection factor improved to 55%. Her serum creatinine came down to 1.0 mg/dL, and the TLC to 9.7 × 10⁹/dL. She showed dramatic clinical improvement. On the third day, mechanical ventilation support was weaned off. She maintained 100% SpO₂ on a face mask with an oxygen flow @46L/min. Urine output improved. The patient was discharged home on the sixth day.

Discussion

There is limited literature on pregnant patients with COVID-19 infection. A recent descriptive study of 7 pregnant patients, from a single-center, reported that 6 out of the 7 COVID-19 patients had fever, while just 1 each out of them had sore throat, diarrhea, or shortness of breath. This near-term pregnant patient presented with features of pyrexia and desaturation without complaint of breathlessness. She also had a deranged hepatic function. This clinical presentation, in the ongoing COVID-19 epidemic, suggested a COVID-19 infection.
RT-qPCR for SARS-CoV-2 was sought, which came out negative. The possibility of a false-negative test was considered, as the symptom mimicked a ‘happy hypoxic’ COVID-19 patient with low lung compliance. The initial chest x-ray revealed prominent vascular markings but no areas of consolidation. Basal crepitations were heard bilaterally on chest auscultation. The patient developed fetal distress in the meantime and was taken up for an emergency Cesarean section. An uneventful surgery was performed under spinal anesthesia, taking personal protective measures (PPE) recommended in COVID-19 patients. The patient developed severe breathlessness, about 45 min after surgery, and was placed on mechanical ventilation support.

The clinical features of the patient were similar to those typically seen in COVID-19 patients. COVID-19 is an emerging infectious disease, and multiple therapeutic strategies are being evaluated. Antiviral and antibiotic therapy was initiated empirically, considering the explosive course associated with the COVID-19.

In COVID-19 patients, HRCT demonstrates features of pulmonary edema with perihilar opacities ranging from bilateral pleural effusion, peripheral ground-glass opacities due to multi-lobar and sub-segmental areas of consolidation with a crazy-paving pattern, and air bronchogram. Our patient had pleural effusion but the bilateral opacities were perihilar.

Myocardial injury is reported in 8% of COVID-19 cases. The subsequent myocarditis results in echocardiographic abnormalities and is associated with marked elevation of cardiac enzymes. Our patient had LV dysfunction, but the rise in troponin and other cardiac enzymes was not clinically significant. Cardiomegaly in the appropriate clinical setting is diagnostic of peripartum cardiomyopathy.

The repeat sample for SARS-CoV-2 (tracheal secretions) and the sample for H1N1 were negative. The HRCT images, cardiac enzymes, and echocardiography suggested peripartum cardiomyopathy. Antiviral therapy was withdrawn as a result. The patient improved dramatically with decongestive therapy and supportive care.

To conclude, a patient with peripartum cardiomyopathy presented with clinical features of COVID-19. The clinical presentation misguided the initial management of the patient. She was a successful outcome after the establishment of the diagnosis.

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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Conflicts of interest
There are no conflicts of interest.

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