

Fetal demise in COVID-19 pregnant patient with preeclampsia – case report

Morte fetal em grávida com pré-eclâmpsia e COVID-19 – caso clínico

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Abstract

The aim of this report is to contribute to the pool of data on clinical outcomes in SARS-CoV-2 infected pregnant patients. We present a case of fetal demise in an asymptomatic infected women, admitted at 39 weeks gestation with severe preeclampsia and late-onset fetal growth restriction. Higher incidence of preeclampsia among infected patients has been reported. Similar clinical, laboratorial and histopathological findings between systemic infection and preeclampsia suggest a common theme of endothelial damage and abnormal maternal circulation resulting in placental hypoperfusion, possibly leading to adverse obstetric outcomes. Further studies urge to assess the impact of COVID-19 in pregnancy.

Keywords: COVID-19; Fetal demise; Preeclampsia; Fetal growth restriction; preeclampsia-like.

INTRODUCTION

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus¹. A current outbreak is being responsible for thousands of deaths worldwide. Affected people can develop symptoms such as fever, dry cough and fatigue. Most cases are asymptomatic but, up to 14% of patients, can evolve to severe pneumonia and 5% to severe acute respiratory syndrome (SARS), both requiring intensive respiratory support². Transmission is thought to occur mainly through close human-to-human contact. To date there is no conclusive evidence of vertical transmission³. Pregnant women are more likely to be hospitalized and are at increased risk for intensive care unit (ICU) admission and mechanical ventilation than nonpregnant adults. Risk of death is similar for both groups⁴. Regarding a recent meta-analysis, SARS-CoV-2 infection was associated with higher rate of preterm birth⁵, preeclampsia, delivery by cesarean section and perinatal death⁶. SARS-CoV-2 invades the

host through cell entry receptor angiotensin-converting enzyme 2 (ACE2), causing endothelial dysfunction and affecting multiple organs. Besides respiratory impairment, it can cause systemic effects such as hypertension, kidney disease, thrombocytopenia and liver disease^{7,8}. COVID-19 patients also have higher risk of thromboembolic disorders⁹. Preeclampsia is one of the hypertensive disorders of pregnancy, characterized by hypertension associated with proteinuria, thrombocytopenia, impaired liver function, renal insufficiency, pulmonary edema and cerebral and visual disturbances¹⁰. Clinical features of preeclampsia are consequences of maternal endothelial damage originated by placental oxidative stress and antiangiogenic status^{10,11}. It has been reported an overlap of clinical, laboratory and anatomopathological features between systemic SARS-CoV-2 infection and pre-eclampsia. This findings can be a diagnostic challenge and suggest a common theme for abnormal maternal circulation^{11,12}.

CASE REPORT

This case refers to a 27 year-old woman, gravida 3 para 2 term vaginal births with fetal growth

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restrictions – 39 weeks weighting 2410 grams and 40 weeks and 5 days weighting 2740 grams. She had medical antecedents of anemia, her body-mass-index was 23,4 kg/m² and had no history of preeclampsia in previous pregnancies. Her pregnancy was surveyed by the family doctor and there were no major occurrences registered. She had two remote appointments due to COVID-19 pandemy. First and second trimester laboratory screenings were normal. She missed third trimester laboratory tests. No alterations were reported on ultrasounds. At 33 weeks and 3 days, estimated fetal weight was 2164 grams (50th percentil). Preeclampsia and fetal growth restriction screenings were not performed. She presented to the obstetrics emergency department at 39 weeks with absent fetal movements, frontal headache and uterine contractions. Fetal heart beats were inaudible and an ultrasonographic scan revealed intrauterine fetal demise. Her blood pressure level on admission was 170-110 mmHg. Blood work revealed Hb 13.1 g/dL, thrombocytopenia ($21 \cdot 10^9/L$ platelets), uric acid 8.7 mg/dL, AST 50 UI/L, ALT 31 UI/L, LDH 478 UI/L and 400 mg/dL proteinuria. Severe preeclampsia was diagnosed, labour was induced with misoprostol, blood pressure controlled with labetalol and nifedipine, magnesium sulfate was administered for neuroprophylaxis and thrombocytopenia was managed with dexametasonone. COVID-19 infection symptoms and context were accessed and screening polymerase chain reaction (PCR) test was performed with a nasopharyngeal swab. She had a positive result, was asymptomatic and admitted cohabiting with an infected family member. 4 hours later, vaginal delivery of an appearingly normal fetus was performed. There were no visible changes in the amniotic fluid nor in the umbilical cord. PCR test for SARS-Cov2 was performed to the fetus and a negative result was obtained. Regarding preeclampsia, the patient clinically and analytically improved but developed dry cough on her second inpatient day. Chest X-Ray and IL-6 levels were normal. The patient was discharged after 4 days and post partum follow up was held by her family doctor and a nurse, at home. Fetal autopsy revealed a growth restricted fetus weighting 2050 grams with signs of fetal anoxia probably due to placental insufficiency. The placenta weighted 258 grams (< Percentil 3 for gestational age) and had infarctions on 60% of its surface. Chorioangioma was detected so as multiple signs of maternal vascular malperfusion.

DISCUSSION

Our aim is to report a case of pre-eclampsia and fetal demise in a patient with mild COVID-19. It is the first case of fetal death among infected patients in our department. In contrary to what has been reported in literature¹¹ – cases of preeclampsia-like syndrome in patients with severe COVID-19 infection – our patient was asymptomatic on admission, posteriorly developed cough and apparently had no signs of systemic infection. Preeclampsia-like syndrome is a condition that results from the widespread inflammation caused by systemic SARS-CoV-2 infection. A process named “cytokine storm”⁹ causes endothelial damage and harm to multiple organs. Patients can develop symptoms such as headache, vomiting, nausea, proteinuria and elevated liver enzymes that are also often present in preeclampsia. Differential diagnosis, using sFlt1/PIGF and UtAPI assessment, as suggested by Mendonza *et al*, is crucial for pregnancy management since preeclampsia-like syndrome may resolve spontaneously after recovery from severe pneumonia allowing for a more conservative management than preeclampsia¹¹. Placental pathological findings such as decidual arteriopathy and other maternal vascular malperfusion features, intervillous thrombi and chorioangiomas have been reported with higher incidence in series of COVID-19 patients¹². These changes may reflect a systemic inflammatory or hypercoagulable state influencing placental function¹². These features are also associated with preeclampsia, suggesting a common theme of abnormal maternal circulation¹². From this case report some lessons can be taken: she should have been referred to the hospital for pregnancy surveillance due to her obstetric antecedents; because of COVID-19 pandemy she might not have had an optimal follow up which ultimately could have indirectly contributed to the final outcome. It remains to be clarified if her immune response to SARS-CoV-2 infection could have been a trigger or an adjuvant factor to a growth restricted fetus and an underperfused placenta resulting in fetal demise or if it could have been an independent finding in a pregnant patient with preeclampsia. Further studies are urgently required to investigate the association between COVID-19 and preeclampsia. This assessment is important to understand if pregnant patients are exposed to higher risks when infected, either mildly or severely, by SARS-CoV-2.

PROTECTION OF HUMANS AND ANIMALS

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association.

DATA CONFIDENTIALITY

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

PATIENT CONSENT

Obtained.

COMPETING INTERESTS

The authors have declared that no competing interests exist.

FUNDING SOURCES

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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RECEBIDO EM: 26/01/2021

ACEITE PARA PUBLICAÇÃO: 15/11/2021