CASE REPORT

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Fatality in a pregnant woman with COVID-19 after a cesarean section: A case report

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ABSTRACT

Background: SARS-CoV-2 can infect anyone, including pregnant women. Pregnant women with COVID-19 experienced fetal hypoxia and reduced amniotic fluid; therefore, a cesarean section was performed. This study aimed to report a case of fatality in pregnant women's G3P1A1 status with COVID-19 after a cesarean section.
Case Report: The patient was a 33-year-old female 36-37 weeks pregnant with G3P1A1 status and infected with SARS-CoV-2. A cesarean section is performed to save the mother and fetus in cases of pregnancy complications. Due to fetal hypoxia and reduced amniotic fluid, a cesarean section was performed, thereby changing the patient status from G3P1A1 to P2A1. The baby survived, healthy and normal after the cesarean section, while the mother underwent COVID-19 treatment. However, the patient still experienced shortness of breath and acute respiratory distress syndrome. Unfortunately, she experienced more symptoms, including hematuria, respiratory failure, acute respiratory distress syndrome, and cardiac arrest on cardiopulmonary resuscitation, before her eventual death.
Conclusion: The pregnant mother G3P1A1, successfully underwent a cesarean section, and the baby is healthy and normal. The pregnant woman's condition worsened during treatment for COVID-19, and she died.

Keywords: COVID-19, G3P1A1, cesarean section, acute respiratory distress syndrome.
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INTRODUCTION

SARS-CoV-2 is highly infectious to individuals, especially pregnant women. Previous studies conducted during the outbreak of COVID-19 reported that pregnant women infected with SARS-CoV-2 had mild or no symptoms. A previous study also showed that most pregnant women (90.6%) infected with SARS-CoV-2 were asymptomatic at admission to the hospital.[1] Therefore, chest CT must be performed when pregnant women are admitted to the hospital to detect asymptomatic and latent COVID-19, thereby reducing the risk of nosocomial transmission of SARS-CoV-2 infection.[2]

It is recommended that pregnant women infected with COVID-19 be treated until they are cured, especially if there are no pregnancy complications. Subsequently, this opinion is based on the results of previous studies, which found no evidence of vertical transmission of COVID-19 in the late stages of pregnancy. Moreover, there has been no proof of COVID-19 transmission from mothers to babies delivered through the vagina.[3] Other studies have also found no SARS-CoV-2 positive neonates infected by mothers who tested positive.[1] If there are pregnancy complications, a cesarean section is performed to save both the mother and the fetus, especially with increased risk to the mother and fetus.[4] Reports stated that COVID-19 is not an indication for cesarean section.[2] However, the cesarean section rate of women with confirmed COVID-19 infection has been reported to range from 42.9% to about 91-92%.[5,6] This article reported fatality case in pregnant women's G3P1A1 status with COVID-19 after a cesarean section

CASE REPORT

The patient was a 33-year-old female who was about 36-37 weeks pregnant with G3P1A1 status. The patient checked into *Ibu dan Anak Sayang Bunda* Hospital, Bekasi, West Java, Indonesia, then wanted to be referred to Pasar Minggu Regional General Hospital in South Jakarta. She was referred on 27th January 2021. The chief complaint presented by the patient was coughing up phlegm for over five days, decreased appetite, sore throat, and runny nose, with the absence of olfactory disturbances, fever, or diarrhea. The test result for the PCR of SARS-CoV-2 was positive, prompting hospital admission. The general health condition of COVID-19 patients (**Figure 1** dan **Table 1**), which showed the GCS 15. According to the medical history, the patient previously had an abortion in 2017 and now was the third pregnant. On 28th January 2021, the patient presented with a cough, runny nose, and shortness of breath. The thoracic X-ray showed an impression of pneumonia (**Figure 2. A.**). Meanwhile, the CT scan of the thorax showed multifocal ground-glass opacities, which were subpleural, situated at the upper and lower fields

Figure 1. The trends of vital sign of COVID-19 patients in a Pregnant woman
Abbreviations: COVID-19 = corona virus disease 2019, °C = degrees Celsius, % = percent, mmHg = millimeters of mercury, bpm = beats per minute, tpm = times per minute, % = percent

of both lungs, and accompanied by the consolidation of viral pneumonia (**Figure 2. B.**). The CTG showed that the conceived fetus by the patient had fetal tachycardia (category-2 CTG). Subsequently, the patient was still experiencing shortness of breath on 29th January 2021. The laboratory examination results showed hypoalbuminemia (2.71 g/dL), high AST (45 U/L), normal ALT (11 U/L), normal lactate (1.9 mmol/L), and normal uric acid (3.6 mg/dL). Similarly, other laboratory test showed normal PT (11.6 seconds), normal APTT (29.90 seconds), normal INR (0.85), normal calcium (8.5 mg/dL), and normal magnesium (2.2 mg/dL). Meanwhile, a cesarean was performed on the patient since there were indications of fetal hypoxia and reduced amniotic fluid, changing the patient's status from G3P1A1 to P2A1. Consequently, the baby survived, healthy, and normal after the cesarean section, while the mother underwent COVID-19 treatment. However, the patient still experienced shortness of breath and ARDS on the 30th and 31st of January 2021. The laboratory examination conducted on 31st January 2021 showed normal PT (13.10 seconds), normal APTT (30.50 seconds), and normal INR (0.97). On 1st February 2021, there was no improvement in the patient symptoms, where she still presented with shortness of breath and ARDS. The laboratory examination showed that the PT, APTT, and INR were 14.00 seconds, 35.00 seconds, and 1.04, respectively. Subsequently, the patient developed respiratory failure and ARDS on 2nd February 2021, where the laboratory examination showed prolonged PT (15.30 seconds), normal APTT (34.40 seconds), and slightly high INR (1.14).

Table 1. The examination of COVID-19 patients in a Pregnant woman

Variables	Date of hospitalization							
	27th January 2021	28th January 2021	29th January 2021	30th January 2021	31st January 2021	1st February 2021	2nd February 2021	3rd February 2021
PCR SARS-CoV-2	+	+	+	+	+	+	+	
RDT (IgM)						+		

Abbreviations: COVID-19 = corona virus disease 2019, PCR = polymerase chain reaction, SARS-CoV-2 = severe acute respiratory syndrome coronavirus 2, RDT = rapid diagnostic test, IgM = Immunoglobulin M, + = positive.

Table 2. Therapy carried out during treatment of COVID-19 patients in a pregnant woman

Date	Therapy
27th and 28th January 2021	dexamethasone 2x10 mg IV, Vitamin C 1x400 mg IV injection, paracetamol 3x500 mg orally (if fever), Oseltamivir 2x75 mg (5 days), NAC 3x1 tablet, betadine mouthwash (2 times per day), wash the nose with 0.9% Na Cl (1x per day). Patients were allergic to ceftriaxone, ciprofloxacin, ranitidine, and cefadroxil.
29th, 30th, and 31st January 2021	O_2 5 liters per minute (lpm), NAC 3x400 mg, levofloxacin 1x750 mg IV injection, omeprazole 2x40 mg IV injection, vitamin C 2x1000 mg IV injection, paracetamol 3x500 mg, oseltamivir 2x75 mg, zinc 2x20 mg, vitamin D3 1x2000 IU.
1st February 2021	O_2 5 lpm, NAC 3x400 mg, levofloxacin 1x750 mg IV injection, omeprazole 2x40 mg IV injection, vitamin C 2x1000 mg IV injection, paracetamol 3x500 mg, oseltamivir 2x75 mg, zinc 2x20 mg, vitamin D3 1x2000 IU, melatonin 2x12 mg, grammar as 0.4mg/kg weight, and recolfar 2x0.5 mg orally.
2nd February 2021	O_2 5 lpm, remdesivir 1x100mg drip, Inj cefotaxime 3x1g IV, Inj Vit C 2x1000mg IV, Zinc 2x20mg, Vit D3 1x2000 IU and Resfar 1x5 mg drip.

Abbreviations: COVID-19=corona virus disease 2019, mg=milligram, IV=intravenous, NAC=N-acetylcysteine, Na Cl=natrium chloride, IU=international unit, lpm=liters per minute.

The Laboratory examination conducted on 3rd February 2021 showed that the prolonged PT (16.60 seconds), prolonged APTT (39.80 seconds), and high INR (1.24). COVID-19 treatment was carried out on the patient (Table 2), but she still experienced hematuria, respiratory failure, ARDS, and cardiac arrest on CPR, before her eventual death.

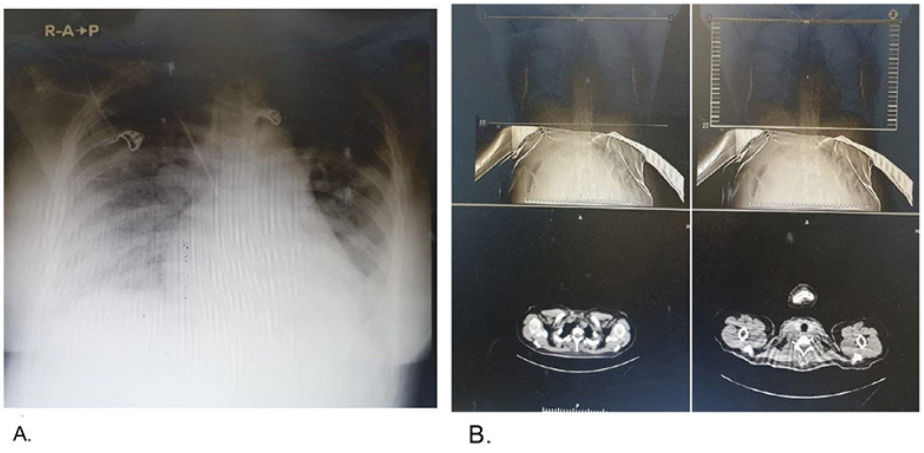

Figure 2. X-ray thorax and Computed tomography (CT) scan of COVID-19 patients in a Pregnant woman. A). X ray thorax dated 28th January 2021, an impression of pneumonia. B). CT scan thorax, dated 28th January 2021, an impression of multifocal ground-glass opacities, subpleural, in the upper to lower fields of both lung fields and accompanied by the consolidation of viral pneumonia typical appearance according to Radiological Society of North America Chest CT classification system.

DISCUSSION

In this case, the patient was treated following the standard treatment for COVID-19 patients because the PCR test result for SARS-CoV-2 was positive. According to the Chest CT Classification System by the RSNA, the chest CT scan in this patient revealed typical features.[7] These case data are consistent with the findings of the RSNA, which discovered that most COVID-19 cases can be confirmed by real-time PCR.[8] Pregnant women with COVID-19 usually come down with other severe diseases, as seen in this patient who presented with pneumonia, which is a sign of severe illness in cardiomyopathic pregnant women with COVID-19.[9] Additionally, this also explains the occurrence of ARDS and a sudden heart attack before the patient's eventual death.[10]

Meanwhile, the patient still experienced shortness of breath on the third day of hospitalization. At the same time, the fetus she was carrying had fetal tachycardia (CTG category-2), prompting a cesarean section since fetal hypoxia and reduced amniotic fluid were indicated. Previous research suggests that the diagnosis of COVID-19 in a patient does not validate the appropriateness of a cesarean section.[11] However, cesarean deliveries for pregnant women with COVID-19 can be carried out in cases of an inconclusive fetal heart rate or an increase in fibrin deposition in intervillositis and perivillous placenta.[12]

Generally, it is stated that there are no adverse effects associated with the amniotic fluid in pregnant women with COVID-19.[13] Meanwhile, the patient still developed haematuria, respiratory failure, ARDS, and cardiac arrest and eventually died, despite being given remdesivir. Previous reports showed that remdesivir given to pregnant women with moderate to severe COVID-19 symptoms produced better clinical improvements.[14] The patient's death adds to the data on COVID-19 patients who died following cesarean delivery and confirms the assertion that there is a high correlation between cesarean section and mortality in pregnant women with COVID-19.[15]

LIMITATIONS

Every action to save the mother and fetus needs to be taken. The decision to determine the course of action depends on each type of case that occurs. The case in this study is a single case, so it cannot be generalized.

CONCLUSIONS

The pregnant woman with G3P1A1 status, who was diagnosed with COVID-19, had to undergo a cesarean section since she presented with fetal hypoxia and decreased amniotic fluid. The baby survived after the cesarean section, while the mother received COVID-19 treatment. Eventually, the patient developed hematuria, respiratory failure, ARDS, and cardiac arrest on cardiopulmonary resuscitation, which led to her death. The pregnant mother G3P1A1, successfully underwent a cesarean section, and the baby is healthy and normal. The pregnant woman's condition worsened during treatment for COVID-19, and she died.

ABBREVIATIONS

COVID-19, Coronavrus Disease 2019; SARS-CoV-2, Severe acute respiratory syndrome coronavirus 2; G3P1A1, gravida 3, para 1, and abortus 1; P2A1, para 2, abortus 1; CT, computed tomography; PCR, polymerase chain reaction; GCS, Glasgow coma scale; CTG, cardiotocography; AST, aspartate aminotransferase; ALT, alanine aminotransferase; PT, prothrombin time; APTT, activated partial thromboplastin time; INR, international normalized ratio; ARDS, acute respiratory distress syndrome; CPR, cardiopulmonary resuscitation; RSNA, Radiological Society of North America; RSUD, Rumah Sakit Umum Daerah (Regional General Hospital).

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CONSENT FOR PUBLISH

The patient's family member signed the informed consent to publish this case report.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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AUTHOR CONTRIBUTIONS

Conceptualized and designed the study: RAD, EA, and EP. Data collection: EA and RAD. Data analysis (interpretation): all authors. Drfating of the manuscript: EP, and RAD. Critical revision of the manuscript: EA, and AG. Approval of the final version of the manuscript: all authors.

ETHICS APPROVAL

Ethical clearance of this study from the Research Ethics Commission of Ibu dan Anak Sayang Bunda Hospital with letter number: 001/KER/RSIA-SB/I/2021.

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