

Coronavirus disease 2019 in pregnancy: Case report on maternal death in Sagar City of Central India

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Abstract

Background: The infection by SARS-COV-2 leading to coronavirus disease has become a worldwide pandemic. It is not clear whether the coronavirus disease (COVID-19) and its severity differ in pregnant compared to the nonpregnant outcome.

Concerns: Out of four, three pregnant women were discharged with mild symptoms but one pregnant woman admitted at 24 weeks gestation with 3 days of vomiting, breathlessness, and cough had fatal outcome.

Diagnoses: After the medical staff prepared for isolation and protection, the patients quickly underwent with series of diagnostic tests, such as laboratory, imaging, and SARS-COV-2 nucleic-acid examinations.

Outcomes: Among all four SARS CoV-2 infected pregnant women, three discharged after recovery and delivered healthy babies but one had severe COVID-19 disease. The women began to exhibit fever, reduced blood oxygen saturation, and despite the interventions, she could not be saved and succumbed to death. There is an early requirement of effective management strategies for pregnant women with COVID-19.

Key words: coronavirus disease, COVID-19, pregnancy.

Introduction

The infection by new corona virus which is known as SARS-COV-2 leading to coronavirus disease (COVID-19) has become a global pandemic.¹ Approximately 33 552 625 people have been infected so far with this disease which has led to the death of more than 1 006 381 patients as of September 29, 2020. The fate of COVID-19 is highly variable depending on host immune response and comorbid-illnesses. There are many drug molecules under-trials are in phase I and II. The numerous possible candidates for vaccine development against this infectious virus are also in the pipeline. Although, so far no molecule as a therapeutics or vaccine for prevention has been approved.² The fate of COVID-19 is highly variable depending on

host immune response and comorbid-illnesses. It is not clear whether the COVID-19 disease and its severity differ in pregnant compared to nonpregnant women.³ According to recent analysis and update by Gillian A. Ryan et al, “it does not appear that pregnant women are at increased risk of severe infection than the general population”.⁴ However, in another recent systematic review by Akhtar H. et al, observed that “COVID-19 infection in pregnancy leads to increased risk in pregnancy complications such as preterm birth, and may possibly lead to maternal death in rare cases”.⁵ There is an urgent need of larger study for the management of SARS-COV-2 infection in pregnancy. Here, we are reporting one case of pregnant women who diagnosed with COVID-19 and she has fatal outcome.

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Material and Method

Study design and patients

Due to the government's community investigation and mandatory hospitalization interventions, there were only four pregnant women with COVID-19 in Sagar city, which has a resident population of approximately 0.4 million people, from January 20, 2020, to September 29, 2020. Four pregnant women spent the entire diagnosis and treatment process in the isolation ward of Bundelkhand Medical College (BMC) Hospital under the care of medical staff. We retrospectively reviewed the electronic medical records of the one pregnant woman with COVID-19 who had fatal outcome. The diagnosis of COVID-19 was confirmed by RT-PCR based on the diagnostic criteria of the COVID-19 Prevention and Control Program by Government of India. As this study is a retrospective case study, informed consent was waived by the ethical committee.

Clinical data information

This study analyzed the results of the four pregnant women's ages, pregnancy times, gestational weeks, clinical manifestations, laboratory test results, X-ray results, SARS-COV-2 nucleic acid detection, treatments, and outcomes.

Case series

In Sagar city, central India from January 20, 2020, to September 29, 2020, four pregnant women diagnosed with COVID-19 during the third trimester were hospitalized. We present the details of four cases of COVID-19 positive near term pregnant females from January to September 2020, with different outcomes in a dedicated COVID tertiary care institute situated in Sagar city of central India. Table 1 shows details of all the cases, the first three of these presented with mild symptoms of cough, fever, and sore throat, they were given the standard treatment regimen. Symptoms in these patients subsided within 4–5 days from their onset of symptoms. They remained uneventful throughout the admission period, delivered full-term healthy babies and were discharge on recovery.

We now describe in detail the fourth case which unfortunately had an adverse outcome. This fourth case was a 31-year-old pregnant lady with 24 weeks gestation, she presented with complains of vomiting, breathlessness, and cough since 3 days. Patient was afebrile with respiratory rate of 18/min, pulse rate 92/min, blood pressure 118/76 mmHg and SpO₂ of

91% on room air. She had no contact history to any known covid-19 patient, on investigation her Hb was 9.6 gm%, total blood counts 10 500/cumm, platelet count of 2.14×10^5 /cumm, C-reactive protein (CRP) was 64.4 mg/dl, serum lactic acid dehydrogenase (LDH) level of 595 IU/L, serum albumin of 2.9 gm/dl. She also had hyponatremia with sodium level of 129.9 mmol/L and hypokalemia with potassium level of 3.3 mmol/L. Her chest X-ray showed consolidation in bilateral lower zone with patchy ground glass changes in bilateral upper zone, and chest computed tomography suggested that the lesions due to SARS-COV-2 infection increased every day (Figure 1). Her swab for COVID-19 was taken following which RT-PCR report for SARS-COV-2 came positive, she was shifted to critical care isolation ward and started treatment as per national guidelines for COVID-19 management on oxygen with nonrebreathing mask (NRM).

Next day patient continued to be afebrile, her SpO₂ dropped to 88% despite administration of 15 L/min O₂ with NRM. Consequently her oxygen flow was increased to 40 L/min with high flow nasal cannula. Heart rate settled to 88/min, respiratory rate was 24/min however blood pressure fell to 109/60 mmHg. Later in the day SpO₂ further dropped to 83%, respiratory rate increased to 28/min following which O₂ flow was increased to 60 L/min. Her ferritin levels were 640 ng/ml and D dimer was 0.79 µgm/ml. Obstetrician opinion was sought, who examined that uterine fundus was approximately 28 weeks with uterus relaxed, internal os was closed, there was no bleeding P/V, fetal heart sounds were heard (134/min) showing no major concerns from their side.

On day 3 her SpO₂ improved slightly to 80% on oxygen, respiratory rate decreased to 23/min, blood pressure was 108/76 mmHg, her sodium level improved slightly to 130.2 mmol/L, albumin levels dropped to 2.4gm/dl, bilirubin was measured to be 1.29 mg/dl, ferritin levels escalated to 1178.0 ng/ml and D dimer to 3.4 µgm/ml. However on day 4 her SpO₂ again fell to 74% on oxygen and blood pressure fell to 110/66 mmHg, the dose of inj. Dexamethasone was escalated along with administration of low molecular weight heparin, oxygen continued at 60 L/min. Patient showed improvement in the evening with blood pressure of 133/86 mmHg, SpO₂ at 83% and respiratory rate at 24/min, however on day 5 she again showed marked deterioration with blood pressure falling to 86/62 mmHg, SpO₂ falling to 68% with patient becoming drowsy and falling respiratory rate. Fetal heart sounds went missing and she was put on

Table 1 Characteristics of patients at admission

Parameters	Case 1	Case 2	Case 3	Case 4
Age (years)	28	25	26	31
Result of SARS CoV-2	Positive	Positive	Positive	Positive
Positive				
Negative				
Inconclusive				
Symptoms	Fever, cough, loss of taste and smell	Mild fever and sore throat	No symptoms	Vomiting, breathlessness and cough
Comorbidities	-	-	-	-
Hospital stay(days)	9	9	10	5
SpO ₂ level (%)	96	94	98	91
Pulse (beats/min)	90	88	82	92
WBC count ($\times 10^9/\mu\text{l}$)	6500	12 100	9400	10 500
N/L ratio	7	11	5	22
LDH (IU/l)	376.2	495	410.3	595
Serum sodium (mmol/L)	134.7	136.2	136.9	129.9
D-Dimer (ng/ml)	NA	790	NA	790
CRP (mg/L)	1.7	14.1	1.2	64.4
Ferritin (ng/ml)	120.5	137.3	NA	640
Chest X-ray	Within normal limits	Prominent broncho- vascular markings	Within normal limits	Patchy ground glass changes
Outcome maternal	Recovered	Recovered	Recovered	Death
Fetal outcome	Healthy alive male (normal vaginal delivery)	Healthy alive male (C-section)	Healthy alive female (normal vaginal delivery)	Intra-uterine death

Abbreviations: CRP, C-reactive protein; WBC, white blood cell.

mechanical ventilation along with inotropic support, despite the interventions she could not be saved and succumbed to death.

Discussion

From our cases it is evident that COVID-19 has posed a challenging situation in current times, raising serious concerns about maternal and fetal safety. The first three of our cases were fortunate to have survived, however one of our cases succumbed to death, and thus highlighting that early identification of such cases along-with timely intervention can be pivotal. This patient also had some unique features like hyponatremia, highly raised neutrophil lymphocyte ratio, CRP and D-dimer levels some of which have been known to be associated with worse outcome.⁶ Newer treatment modalities such as extra corporeal membrane oxygenation (ECMO) should be

considered in such cases by early identification, thus saving precious lives. Since ECMO a resource intensive technique and demands exhaustive handling experience, which is not possible in all the set ups, we need to find a fine balance of early identification, timely referral and treatment administration, while avoiding unnecessary referral of stable cases.

Our cases provide preliminary results of the effective prevention and control of COVID-19 in pregnant women is very essential. This case report had limitation of sample size, a large number of comprehensive data on pregnant women with COVID-19 are still needed to better understand the impact of COVID-19 on maternal and infant outcomes.

Author Contributions

Sumit K. Rawat: conceptualization, manuscript writing, and data analysis. Talha Saad: data collection.

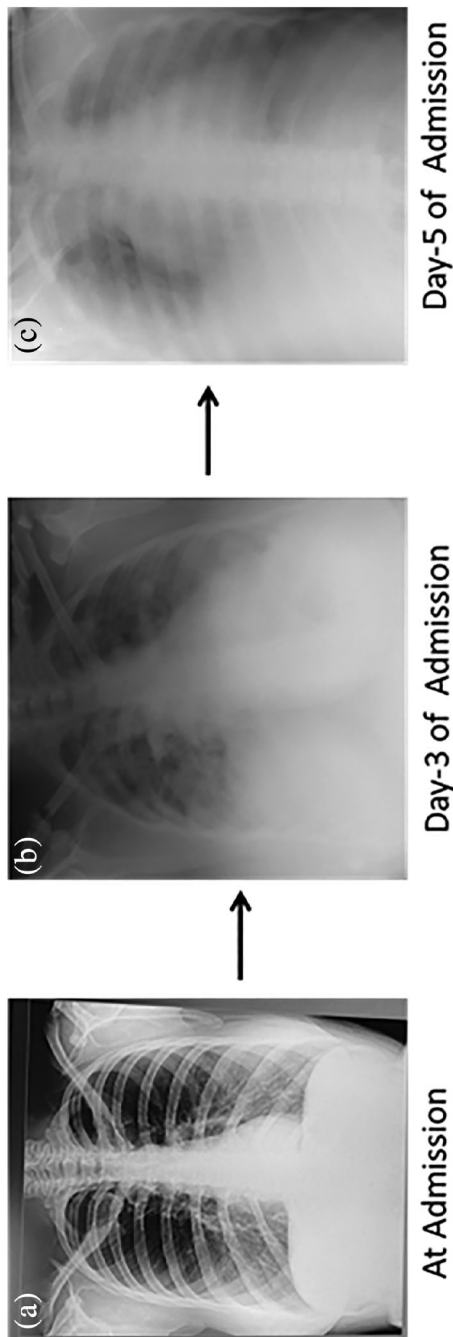


Figure 1 Series of chest X-rays showing rapidly progressing changes in the patient

Ankur Jindal: editing and clinical inputs. Ashish K. Vyas: conceptualization, manuscript writing and data analysis.

References

1. Lai C-C, Shih T-P, Ko W-C, Tang H-J, Hsueh P-R. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and corona virus disease-2019 (COVID-19): the epidemic and the challenges. *Int J Antimicrob Agents.* 2020;55(3):105924.
2. Hoque MN, Chaudhury A, Akanda MAM, Hossain MA, Islam MT. Genomic diversity and evolution, diagnosis, prevention, and therapeutics of the pandemic COVID-19 disease. *PeerJ.* 2020;8:e9689.
3. Breslin N, Baptiste C, Gyamfi-Bannerman C, et al. COVID-19 infection among asymptomatic and symptomatic pregnant women: two weeks of confirmed presentations to an affiliated pair of new York City hospitals. *Am J Obstet Gynecol MFM.* 2020;2(2):100118.
4. Ryeon GA, Purandare NC, McAuliffe FM, Hod M, Purandare CN. Clinical update on COVID-19 in pregnancy: a review article. *J Obstet Gynaecol Res.* 2020;46:1235–45.
5. Akhtar H, Patel C, Abuelgasim E, Harky A. COVID-19 (SARS-CoV-2) infection in pregnancy: a systematic review. *Gynecol Obstet Invest.* 2020;85(4):295–306.
6. Almazeedi S, Al-Youha S, Jamal MH, et al. Characteristics, risk factors and outcomes among the first consecutive 1096 patients diagnosed with COVID-19 in Kuwait. *EclinicalMedicine.* 2020; 24:100448.