



ORIGINAL RESEARCH PAPER

Obstetrics & Gynaecology

OBSTETRICALLY HIGH-RISK PREGNANCY LEADING TO PRETERM CAESAREAN DELIVERY IN A CONFIRMED CASE OF COVID-19: A SUCCESSFUL JOURNEY FROM COVID-19 BILATERAL PNEUMONIA TO COMPLETE RECOVERY

KEY WORDS: COVID-19, pneumonia, preterm, caesarean section, severe pre-eclampsia, oxygen therapy, non-invasive ventilation, isolation ward

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ABSTRACT

The ongoing pandemic of COVID-19 pneumonia is globally concerning. In depth knowledge of hazards of COVID-19 in pregnancy are unknown. We present a case report of a pregnant women having obstetric high-risks factors, such as severe pre-eclampsia culminating in preterm caesarean delivery with milder form of covid-19 infection progressed to bilateral COVID-19 pneumonia; later successful management leading to complete recovery of patient. Pneumonia was diagnosed by means of chest radiography in a confirmed case of COVID-19. The patient required intensive care unit with ventilatory support; which was later weaned off and discharged home in good condition. Baby born to her tested negative for COVID-19 infection also doesn't developed symptoms of pneumonia. Close monitoring, early recognition of symptoms and prompt management with multidisciplinary team approach in COVID-19 cases has successful outcome in pregnant women. To predict the course of COVID-19 infection in pregnant women, in depth research is utmost needed.

INTRODUCTION

Coronavirus disease 2019 (COVID-19) is a global pandemic with rapid increase in cases and deaths since its first identification in Wuhan, China, in December 2019. Coronaviruses are single-stranded RNA, non-segmented, enveloped viruses. Data available about COVID-19 during pregnancy are sparse. COVID-19 results in illness ranging in severity from the common cold to severe pneumonia and death. Common manifestations include fever, cough, shortness of breath, myalgia, headache and diarrhoea. Currently no coronavirus specific treatments have been approved by the US Food and Drug Administration. Management should optimally be in a health care facility with close maternal and foetal monitoring; as this disease might increase the risk of pregnancy complications. Principles of management of COVID-19 in pregnancy include early isolation, aggressive infection control procedures, early oxygen therapy, avoidance of fluid overload, consideration of empiric antibiotics (due to risk of secondary bacterial infections), laboratory testing of virus and coinfection, foetal and uterine contraction monitoring, early mechanical ventilation for progressive respiratory failure, individualised delivery planning, and a multidisciplinary team based approach. We present a case report of a pregnant women having obstetric high-risk factors such as severe pre-eclampsia culminating in preterm caesarean delivery with milder form of covid-19 infection progressed to bilateral covid-19 pneumonia; later successful management leading to complete recovery of patient.

CASE REPORT

A 26-year-old female, gravida 2, abortion 1, with secondary infertility conceived after ovulation induction, at 30 weeks of gestation, with no history of underlying medical condition referred from a private hospital to our tertiary care dedicated covid-19 institution with real time Reverse Transcriptase Polymerase Chain Reaction test of nasopharyngeal swab detecting COVID-19 status for further management. She was resident of containment area of Pune, declared as a red zone. There was no history of a recent travel or contact with a COVID-19 confirmed case. Patient was admitted to a private hospital 3 days back, in view of severe pre-eclampsia (BP-160/110mmHg, proteinuria 3+, brisk deep tendon reflexes [DTR]). There was absence of any premonitory symptoms. Injection magnesium sulphate administered according to Zuspan regimen and injection labetalol added for acute blood pressure (BP) control. Steroid doses were given to enhance foetal lung maturity to prevent respiratory distress

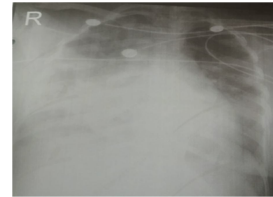
syndrome in a new-born if an emergent delivery is needed. She was also having moderate anaemia (haemoglobin 7.4 gm%) with RBCs showing microcytic, hypochromic picture, requiring 1-pint Packed cell volume, which was transfused uneventfully. Injectable antibiotics were added due to the presence of urinary tract infection with urine microscopy showing abundant pus cells. Her LFTs, RFTs and LDH were within normal limits. On day 3 of admission, she had one fever spike of 100.8-degree F. Patient was then shifted to isolation ward and swab for COVID-19 was sent. Dengue IgG, IgM; rapid malarial test and malarial parasite were negative. After she tests positive for COVID-19, referred to our institution for further management.

On admission, she complained of dry cough, shortness of breath and blurring of vision. On examination, she was conscious, oriented to time, place and person, afebrile, pulse rate 90/min, BP 160/110 mmHg, DTR brisk, respiratory rate (RR)-36/min (tachypnoeic) with (oxygen saturation) SpO2 92% while breathing ambient air and 98% on oxygen (O2) by mask. Respiratory system (RS) examination revealed air entry bilaterally equal with no added sounds. Cardiovascular system showed no abnormality. Uterus 28-30 weeks size, relaxed, with good foetal heart sounds on per abdominal examination. Per vaginal examination revealed posterior, uneffaced and closed cervical os. Central fundus showed papilledema in bilateral eyes. After explaining high risk consent to relatives, she was posted for emergency caesarean section in view of impending eclampsia, under spinal anaesthesia. Third level measures of medical protection were implemented in the operation theatre, including handwashing, medical standard mask (N95), disposable surgical cap, goggles, head visor/ face shield, disposable protective clothing, disposable gloves and shoe covers. The N95 masks were fit tested to effectively prevent aerosol or fluid secretions. Caesarean section was uneventful with blood loss of 350ml. A male child of 1.4 kgs delivered with APGAR score at 1 and 5 minutes were 8 and 9, respectively. Baby was separated from mother immediately after birth; handed over to neonatologist and kept in neonatal isolation intensive care unit due to low birth weight and to minimize potential risk of infection. Cord blood and nasopharyngeal swab of baby were taken; later tested negative for COVID-19.

Postoperatively, patient was shifted to COVI-19 isolation wards. On postoperative day (POD)-3, patient became severe tachypnoeic with RR- 32/min, SpO2-92% on O2mask at the rate of 5 lit/min. She was then shifted to covid-19 intensive

care unit. Inj. Hydrocortisone 100 mg IV stat given and antibiotics were stepped up (inj. Piptaz 4.5g IV TDS). She was started on high flow O₂ with a reservoir bag (12 lit/min) however, due to increasing tachypnoea (RR- 44/min) she was started on non-invasive ventilation (NIV). Electrocardiography and 2D Echo were normal. Chest X ray (CXR) showed radiopacity in right lower zone suggesting infective aetiology. Bilateral rales were heard on auscultation.

On POD-4, CXR picture worsened showing increased radiopacities in bilateral lung. Serum ferritin levels (354ng/L) were raised. On POD-5, CXR showed multiple patchy consolidation in bilateral lung fields more on right side. She was maintaining saturation 98% on NIV with FiO₂ 90%. On POD-6 and 7, NIV discontinued as she was maintaining O₂ saturation of 95% on high concentration face mask with reservoir bag delivering O₂ at the rate of 12 lit/m. (RR-28/min). On POD-8, tachypnoea resolved (RR-18/min), O₂ delivered at 4-6 lit/min by NRBM(non-rebreather mask) to allow deliver higher concentration of O₂. On POD-9, she started feeling better, on room air (RA) SpO₂ was 88% while 95-98% with intermittent O₂; bilateral crepitations were decreased and CXR picture improved than before. On POD-10, she was maintaining SpO₂ 94% on nasal O₂ (4 lit/min). On POD-11 and 12, SpO₂ improving off O₂; 90% on RA and 94% on nasal O₂, RR- 16/min. LSCS sutures site was healthy and sutures were removed on POD 11. On POD-13, SpO₂ 96% maintained on RA, however CXR showed right midzone patch. On POD-14-15, she maintained SpO₂ 98% on RA and CXR showed resolving right midzone patch. On POD-17, patient was discharged home since there was complete resolution of symptoms such as dyspnoea, tachypnoea, absence of fever and there was no requirement of oxygen for last 4 days with 14th and 15th day nasopharyngeal swab reports of COVID-19 were negative.



Chest X ray images showing resolution of COVID-19 pneumonia picture

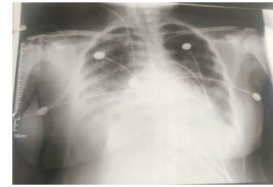


Image (1)



Image (2)



Image (3)

Hb	WBC	RBC	PLATELET	HCT	neutrophilia	Lymphocytosis	S. Creat	S. urea	SGOT	SGPT	T. bil.	ALP
11	11.6	5.2	1,74000	36	83%	11%	0.8	44	81	24	0.4	64

Fig. 1) Lab report of patient when shifted to COVID-19 ICU

DISCUSSION

The ongoing outbreak of COVID-19 pneumonia is globally concerning. Pregnant women are more susceptible to infectious diseases due to the immune suppression.¹ Currently, there are no statistical data regarding pregnant women infected with COVID-19. A retrospective review has indicated the clinical characteristics of nine pregnant women with COVID-19.² Previous studies found that there was a male-dominated tendency and few cases occurred in children for COVID-19 pneumonia.³ There are few published data involving the clinical and chest CT findings of COVID-19 pneumonia in pregnant women and children.^{2,4} In the study conducted by HuanhuanLiu et al,⁵ all the pregnant women with COVID-19 were stratified as the mild or common types. No pregnant woman was admitted to the intensive care unit (ICU), and no clinical abnormalities were observed in the infants. Atypical clinical findings of pregnant women with COVID-19 could increase the difficulty in initial identification. Consolidation was more common in the pregnant groups. The clinically-diagnosed cases were vulnerable to more pulmonary involvement. The ongoing outbreak COVID-19 pneumonia demonstrated a relatively high contagion; meanwhile there are no specific therapeutic drugs and vaccines for the COVID-19. Early identification of COVID-19 is important for the patients as well as the healthy population. Currently, the patients should be isolated for treatment from the healthy people for controlling the epidemic. It has been reported that chest CT is superior to RT-PCR in sensitivity for early detection of COVID-19.⁶ In our case we serially monitored CXR to assess patient's condition and response to the treatment given.

guidelines for delivery times and methods in patients with COVID-19. Yudin and colleagues⁷ reported a pregnant woman with SARS at 31 weeks of gestation; the patient stayed for 21 days in the hospital and did not require intensive care admission or ventilatory support, and a healthy baby girl was delivered by vaginal birth. It is unknown whether vaginal delivery increases the infection risk. Further research is needed to assess the risk and to produce guidelines for delivery times and methods in patients with COVID-19.

As per the study conducted by Lam CM et al⁸, although all mothers and infants showed good outcomes, all enrolled pregnant women were in the third trimester, and all had only mild symptoms. Hence, the effect of SARS-CoV-2 infection on the foetus in the first or second trimester or in patients with moderate to severe infection is unknown. It also reported that, SARS coronavirus infection during pregnancy might cause preterm birth, intrauterine growth restriction, intrauterine death, and neonatal death.

Considering that the potential of SARS-CoV-2 to cause severe obstetric and neonatal adverse outcomes is unknown, rigorous screening of suspected cases during pregnancy and long-term follow-up of confirmed mothers and their neonates are needed. In the study by Yu and colleagues,⁹ three neonates were tested for SARS-CoV-2, of whom two were negative. One neonate was positive, but the viral nucleic acid tests of the placenta and cord blood in this case were negative. Neonate in our case, tested negative for SARS-CoV-2. No reliable evidence has been provided in support of the possibility of vertical transmission of COVID-19 infection from mother to baby.^{10,2} But all these studies only assessed a small number of cases. Future studies should include a larger number of

Further research is needed to assess the risk and to produce

samples across multiple centres to establish whether vertical transmission can occur between mother and child.

CONCLUSION

Special attention, as well as prioritized care, should be offered to a pregnant woman based on their health status. Initiation of early oxygen therapy lead to a good outcome in our case. Close monitoring, early recognition of symptoms and prompt management with multidisciplinary team approach in covid-19 cases has successful outcome in pregnant women. To predict the course of covid-19 infection in pregnant women, in depth research is utmost needed.

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