

Case Report

Development of Intrauterine Growth Restriction Following Covid 19 Infection in Third Trimester of Pregnancy

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ABSTRACT

The novel coronavirus termed SARS-CoV-2 (COVID-19) has become a major public health challenge all over the world. However, till now there are only a few studies in pregnant woman highlighting the clinical course and outcomes of COVID-19 infection during pregnancy and the potential risks to the unborn child. We describe a case report where 27 years old primigravida developed COVID 19 infection at 32 weeks of her gestation. She was on regular antenatal follow-up with normal fetal development upto 32 weeks of gestation. She was euthyroid, non-Diabetic, and was found to be having normal hemoglobin levels and her TORCH screening was negative. Since patient was asymptomatic, she was quarantined at home and advised to follow the treatment protocol given by ICMR. At her 36 weeks of gestation her baby weight was calculated to be around 2435 gms (+15%) with adequate liquor with normal Color Doppler report. At the gestational age of 38 weeks 4 days, the pregnant woman was admitted to hospital with less fetal movement. On the day of admission, she underwent cesarean delivery. During delivery liquor was almost nil with meconium staining on the baby. Clinical features were suggestive of an IUGR baby. The baby had a typical “old man” look with birth weight less than 10th percentile for the gestational age. In the absence of any potential risk factor for IUGR in third trimester, we presume COVID 19 infection to be the cause of IUGR in the newborn.

Key words: IUGR, outcome, SARS-CoV-2

INTRODUCTION

The novel coronavirus, termed SARS-CoV-2 (COVID-19), is a major public health challenge all over the world. Since December 2019 the outbreak of COVID-19 infection has become a major epidemic all over world.^{1,2} However till now there has been only few

studies in pregnant woman relating to the clinical course and outcomes of COVID-19 infection during pregnancy and the potential risks to the unborn child. Studies have so far shown that the clinical, radiological and

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Received: 18 October 2020

Revised: 04 December 2020

Accepted: 06 December 2020

Published online: 01 January 2021

Citation: Kumar PS, Kumar B, Saha MM. Development of Intrauterine Growth Restriction Following Covid 19 Infection in Third Trimester of Pregnancy. J West Bengal Univ Health Sci. 2021; 1(3):71-75.

laboratory characteristics of COVID-19 infection in pregnant women is similar to those reported for non-pregnant patients.^{3,4,5} Moreover, till now there is a limited evidence of intrauterine vertical transmission of SARS-CoV-2 infection in pregnant women with COVID-19.^{6,7} As the COVID-19 outbreak unfolds, prevention, management and control of COVID-19 infection in pregnant women and the potential risk to the mother and baby have become a matter of major concern. More evidences are needed to develop effective preventive and management strategies. Here we have presented a case where IUGR developed in the fetus following COVID 19 infection of the mother in the 3rd trimester of pregnancy.

Case presentation

We describe a case report from Medisky Hospital, Dankuni, West Bengal where a 27 yrs old primigravida developed COVID 19 infection at 32 weeks of her gestation. She was on regular antenatal followup with normal fetal development upto 32 weeks of gestation. She was euthyroid, non-Diabetic and was seen to be having normal hemoglobin levels and her TORCH screening (done as per routine protocol) was negative. She was tested for COVID -19 infection after her husband developed fever and cough and was tested positive for COVID 19 Infection. She was diagnosed as a clinically confirmed case of COVID-19 infection after her nasopharyngeal and oropharyngeal swab tested positive for COVID 19 on RT-PCR. Since the patient was asymptomatic, she was quarantined at home and advised to follow the treatment protocol given by ICMR. She received adequate hydration, nutritious diet, Vitamin C and Zinc supplementation. As she was asymptomatic repeat RT-PCR was not done as per ICMR protocol. After 14 days of home quarantine she was tested for SARS-COV-2 IgG antibody and it was found positive in high titer. At her 36 wks gestation her baby weight was found to be around

2435 gms (+15%) with adequate liquor with normal color Doppler report. In this ultrasonogram the approximate gestational age was around 34 wks 3 days whereas by clinical examination her fundal height was equivalent to 34 weeks of gestation. At the gestational age of 38 wks 4 days, the pregnant woman was admitted to Medisky hospital with complaints of less fetal movements. The admission check showed that her body temperature was 36.4°C, heart rate was 86 beats per minute, respiratory rate was 20 per minute. Blood pressure was 128/74 mm of Hg. No abnormalities were heard on cardiopulmonary auscultation. Her fundal height was reduced with irregular fetal heart rate. Dribbling was absent.

On the day of admission, she underwent cesarean delivery. During delivery liquor was almost nil with meconium staining on the baby. Baby cried at birth. The birth weight of the newborn was only 1900 gms, and the 1-minute and 5-minute Apgar scores were both 10/10 and the features were suggestive of an IUGR baby. The baby had a typical “old man” look. Chest X-ray of the baby was normal. The pharyngeal swab test for COVID 19 of the newborn was negative. During hospitalization, she was afebrile and asymptomatic all through. Five days after cesarean delivery she was discharged.

DISCUSSION

The health of pregnant women needs to be carefully monitored during this rapidly changing coronavirus scenario. World Health Organization (WHO) has reported that there are no apparent differences in the risk of developing clinical symptoms between non-pregnant and pregnant women of reproductive age.⁸ It seems the latter is also not at a higher risk of developing severe disease as per the available evidences. Patients most commonly present with mild symptoms like fever, cough, shortness of breath and easy fatigability; however,

some may remain asymptomatic.⁹ In a retrospective review by Liu H *et al*¹⁰ a comparison of 59 patients including both pregnant and non-pregnant adults was carried out. This review reported that there were no significant differences between the various groups regarding the development of the clinical features of COVID 19 infection.

There is not enough evidence to conclude any definite detrimental effect of COVID 19 infection during pregnancy. Three studies have reported no maternal complication.¹¹ However, various other studies have reported both maternal and fetal complications including preterm delivery, respiratory distress, fetal distress, and PROM.⁹ According to the Royal College of Obstetricians and Gynecologists (RCOG), vertical transmission from a woman to her baby may be possible, as suggested by new evidence. Taking all the available evidences into consideration, there are only a small number of reported cases to conclude whether there is possible intrauterine vertical transmission of SARS-CoV-2 or not.

Shanes *et al*¹² examined the placentas of 16 women with severe COVID-19 infection. The study found that pregnant women who were infected with COVID-19 and delivered in the third trimester were more likely to have placentas that showed features of maternal vascular malperfusion and intervillous thrombi. No pathognomonic features were however identified. These findings suggest an abnormal maternal circulation reflecting a systemic inflammatory or hypercoagulable state influencing placental physiology and associated with adverse perinatal outcomes.

This case report highlights a pregnant woman who was RT-PCR positive for COVID-19. She was asymptomatic and hence home quarantined. After 14 days of her home quarantine she was tested for SARS-CoV-2 IgG antibody and it was found to be positive in high titer. Although the patient did not have any risk factor for IUGR and the

normal growth of the fetus was documented upto 34 weeks, IUGR developed around 36 weeks of gestation.

IUGR has been defined as the rate of fetal growth that is below the 10th percentile of the average for the gestational age.¹³ It has also been defined as a deviation from or a reduction in an expected fetal growth pattern and is usually the result of innate reduced growth potential or because of multiple adverse effects on the fetus.

The terms “IUGR” and “small for gestational age (SGA)” have been used synonymously in medical literature, but there exist subtle differences between the two. The term SGA has been used for those neonates whose birth weights are less than the 10th percentile for that particular gestational age or two standard deviations below the population norms on the growth charts, and the definition considers only the birth weight without any consideration of the in-utero growth and physical characteristics at birth.

An IUGR is a clinical definition and applies to neonates born with clinical features of malnutrition and in-utero growth restriction, irrespective of their birth weight percentile. Hence, appropriate for gestational age (AGA) infants can be labeled as IUGR if they have features of in-utero growth restriction and malnutrition at the time of birth. In our case the ratio between head circumference and abdominal circumference was less than 1 at 34 wks scan with normal color Doppler study. After delivery physical feature of the baby was characteristic of the classical ‘Old man look’. Also the birth weight of the baby was less than 10th percentile for the gestational age. So we diagnosed the case as asymmetric IUGR.

The possible factors for IUGR such as anemia, diabetes, thyroid abnormalities, TORCH infection were all excluded.¹⁴ The

clinical course of development of IUGR after 32 weeks of gestation following COVID-19 infection *could* possibly be attributed to the infection. Once more and more data are available we will be able to co-relate the adverse effects of COVID-19 infection on pregnant mother and the fetus.

Liu H et al¹⁰ and Fan C et al¹⁵ reported that most pregnant women acquired COVID-19 infection in the third trimester. Most cases were usually associated with a higher rate of LSCS, preterm births, low Apgar indices, and low birth weights. Similar findings were noted in our patient too.

CONCLUSION

There have been conflicting evidences regarding the effect of COVID 19 infection on pregnancy outcomes. Our case describes the development of IUGR in the newborn of a pregnant lady who developed COVID 19 infections during her third trimester and delivered a significantly IUGR baby by cesarean section. It might be a chance occurrence in this case or, as may be surmised that, Covid-19 infection might have taken its toll on the growth of this fetus *in-utero*. However, further studies need to be done in order to evaluate the effects of COVID-19 infection on the pregnant mother and her unborn fetus.

REFERENCE

1. Huang C, Wang Y, Li X et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 2020 Feb 15;395(10223):497-506. doi: 10.1016/S0140-6736(20)30183-5.
2. Abuelgasim E, Saw LJ, Shirke M, Zeinah M, Harky A. COVID-19: Unique public health issues facing Black, Asian and minority ethnic communities. *Curr Probl Cardiol*. 2020 Aug;45(8):100621. doi: 10.1016/j.cpcardiol.2020.100621.
3. Chen H, Guo J, Wang C et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records [published correction appears in *Lancet*. 2020 Mar 28;395(10229):1038] [published correction appears in *Lancet*. 2020 Mar 28;395(10229):1038]. *Lancet*. 2020;395(10226):809-815.
4. Zhu H, Wang L, Fang C et al. Clinical analysis of 10 neonates born to mothers with 2019-nCoV pneumonia. *Transl Pediatr*. 2020 Feb;9(1):51-60. doi: 10.21037/tp.2020.02.06.
5. Liu Y, Chen H, Tang K, Guo Y. Clinical manifestations and outcome of SARS-CoV-2 infection during pregnancy. *J Infect*. 2020 Mar 4. doi: 10.1016/j.jinf.2020.02.028. Epub ahead of print.
6. Zhang L, Jiang Y, Wei M et al. [Analysis of the pregnancy outcomes in pregnant women with COVID-19 in Hubei Province]. *Zhonghua Fu Chan KeZaZhi*. 2020 Mar 25;55(3):166-171. Chinese. doi: 10.3760/cma.j.cn112141-20200218-00111.
7. Lei D, Wang C, Li C et al. Clinical characteristics of COVID-19 in pregnancy: analysis of nine cases. *Chin J Perinat Med*. 2020;23(03):159-65.
8. Chen H, Guo J, Wang C et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *Lancet*. 2020 Mar 7;395(10226):809-815. doi: 10.1016/S0140-6736(20)30360-3. Erratum in: *Lancet*. 2020 Mar 28;395(10229):1038. Erratum in: *Lancet*. 2020 Mar 28;395(10229):1038.
9. Zhu H, Wang L, Fang C et al. Clinical analysis of 10 neonates born to mothers with 2019-nCoV pneumonia. *Transl*

- Pediatr. 2020 Feb;9(1):51-60. doi: 10.21037/tp.2020.02.06.
10. Liu H, Liu F, Li J, Zhang T, Wang D, Lan W. Clinical and CT imaging features of the COVID-19 pneumonia: Focus on pregnant women and children. *J Infect.* 2020 May;80(5):e7-e13. doi: 10.1016/j.jinf.2020.03.007.
 11. Yu N, Li W, Kang Q et al. Clinical features and obstetric and neonatal outcomes of pregnant patients with COVID-19 in Wuhan, China: a retrospective, single-centre, descriptive study. *Lancet Infect Dis.* 2020 May;20(5):559-564. doi: 10.1016/S1473-3099(20)30176-6.
 12. Shanes ED, Mithal LB, Otero S, Azad HA, Miller ES, Goldstein JA. Placental Pathology in COVID-19. *Am J Clin Pathol.* 2020 Jun 8;154(1):23-32. doi: 10.1093/ajcp/aqaa089.
 13. Peleg D, Kennedy CM, Hunter SK. Intrauterine growth restriction: identification and management. *Am Fam Physician.* 1998 Aug;58(2):453-60, 466-7.
 14. Vandenbosche RC, Kirchner JT. Intrauterine growth retardation. *Am Fam Physician.* 1998 Oct 15;58(6):1384-90, 1393-4.
 15. Fan C, Lei D, Fang C et al. Perinatal Transmission of COVID-19 Associated SARS-CoV-2: Should We Worry? *Clin Infect Dis.* 2020 Mar 17:ciaa226. doi: 10.1093/cid/ciaa226. Epub ahead of print.