

Pregnancy Outcome in COVID 19 Infected Patients: In a COVID Dedicated Hospital of Chattogram, Bangladesh

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Abstract

Background: Corona Virus Disease (COVID-19) a pandemic has become a global health concern. Pregnant women are at an increased risk due to physiologic changes in their immune, cardiopulmonary and coagulation systems. This study was designed to evaluate the fetomaternal outcome of the pregnant patients with COVID-19.

Materials and methods: This cross-sectional type of observational study was conducted in Obstetric and Gynecology Department of Chittagong Medical College Hospital from July 2021 to September 2021. Total 51 hospitalized pregnant patients with confirmed COVID-19 were enrolled. Relevant data were recorded in a preformed data collection sheet and analyzed by SPSS version 26.

Results: Total patients were 51 with a mean age of 28 years, 73.5% patients were in third trimester, 35.3% were in >37 weeks of gestation. Common symptoms were fever(33.3%), cough (19.6%) and respiratory distress(29.4%). There were two maternal deaths who were treated in ICU. There were 2 spontaneous abortions. 69.23% underwent caesarean section, 30.77% underwent Normal Vaginal Delivery (NVD) 9.8% patients underwent premature termination of pregnancy. Ongoing pregnancy were 19 (37.3%). There were 17 live births and 3 Intrauterine Deaths (IUD) and 2 neonatal deaths. Among

the mothers, 29(56.8%) had no associated complications, 19.65% had Preeclampsia and 5.9% had Gestational Diabetes Mellitus. About 10 babies had birth weight less than 2.5 kg and were transferred to NICU.

Conclusion: During this study, it was found that pregnancy outcome was not good in COVID positive pregnant women. For the infected mothers early medical supervision and availability of ICU in critical condition is needed for better pregnancy outcome.

Key words: Corona virus; COVID-19; Pregnancy outcome.

Introduction

On March 11, 2020 World Health Organization (WHO) declared Corona Virus Disease (COVID-19) as a public health emergency of international concern since its outbreak in Wuhan, China.¹ In Bangladesh 1,19,198 persons are detected corona positive from 8 March, 2020 till 23 June, 2020 and died 1545 persons.² There have been extensive studies on the HRCT and clinical manifestations of patients with COVID-19 infection and treatment monitoring but studies of pregnant women with COVID-19 infection remains relatively rare. Still it is doubtful whether clinical characteristics of pregnant women with COVID-19 infection differ from those of nonpregnant women with COVID-19 infection, whether pregnancy and labor aggravate COVID-19 symptoms and whether antiviral therapy is essential for COVID-19 affected pregnant women. According to the guidelines from the Royal College of Obstetricians and Gynecologists (RCOG) pregnant women do not appear more likely to contract the COVID-19 infection than the general population.³ The Centre for Disease Control and Prevention (CDC) report that pregnant women manifest a more severe illness when infected with viruses from the same family as the SARS CoV-2 virus and from other respiratory tract viruses such as the influenza virus.⁴ This depicts that once the coronavirus has been infected this can theoretically lead to more severe symptoms, since it is known that in pregnant women there is alteration of the immune

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system and response to viral infections. These findings of increased severity of clinical manifestations in pregnancy are more prominent towards the end of pregnancy. Hence, there is a possibility that pregnant women infected with COVID-19 may potentially develop more severe symptoms such as pneumonia and marked hypoxia, similar to people who are elderly and immuno suppressed or have existing morbidity such as diabetes, cancer or chronic lung disease. The RCOG guidelines have contrastingly reported that the absolute risk of this is low.⁵ The purpose of this study was to describe the clinical manifestations and feto-maternal outcome of pregnant women infected with COVID-19, monitor for changes before and after delivery and provide some initial evidence for guiding the management of pregnant women with COVID-19 infection.

Materials and methods

This cross sectional study was conducted from July 2021 to September 2021 in Obstetric and Gynecology Department of Chittagong Medical College Hospital . Total 51 admitted pregnant patients in whom RNA of SARS CoV-2 was detected by RT PCR and their neonates were included in the study. Patients, who were treated as out-patient basis, were excluded from the study. History, examination findings, complications and biochemical and radiological parameters of pregnancy and neonatal outcome were recorded in a preformed data collection sheet. Data were analyzed by SPSS version 26: The study was approved by Ethical Review Committee of Chittagong Medical College.

Results

Total patients were 51 with a mean age of 28 (Range 16-38) years. Among them 60.8% were multigravida, 72.6% were infected with SARS-CoV-2 in the third trimester and 35.3% had gestational age >37 weeks during delivery. Common co-morbidities were Preeclampsia (19.6%) and gestational diabetes mellitus (5.9%). Common symptoms were fever (33.3%) respiratory distress (29.4%) and cough (19.6%). There were two maternal deaths who were treated in ICU. There were 2 spontaneous abortions. Among the patients 69.23% underwent Caesarean section, 30.77% underwent Normal

Vaginal Delivery (NVD) 9.8% patients underwent premature termination of pregnancy. Ongoing pregnancy were 19 (37.3%). There were 17 live births and 3 Intrauterine Deaths (IUD). Among the mothers 29(56.8%) had no associated complications, About 10 babies had birth weight less than 2.5 kg and were transferred to NICU. Among the patients 3.9% needed ICU support. Approximately 45.1% of the patients' postnatal period was uneventful. About 9.8% patients had preterm labor.No patient of this study was vaccinated.

Table I Demographic and clinical characteristics and clinical outcome of COVID -19 pregnant women

Demographic and Clinical characteristics	Number of patients	Percentage (%)
Age of the patients		
16-20	6	11.8
21-25	13	25.5
26-30	18	35.3
31-35	11	21.6
36-38	3	5.9
Occupations of patients' husbands		
Service	30	58.8
Small business	14	27.5
Day labour	1	2.0
Abroad	1	2.0
Physician	2	3.9
Rickshaw puller	1	2.0
Engineer	2	3.9
Family income of patients		
5000-10000	2	3.9
11000-15000	5	9.8
16000-20000	8	15.7
20-25000	14	27.5
>25000	22	43.1
Gravidity		
Primi	20	39.2
Multi	31	60.8
Period of gestation on admission		
First Trimester	2	3.9
Second Trimester	12	23.5
Third Trimester	37	72.6
Symptoms of patients		
Fever(100 F)	17	33.3
H/O Fever	1	2.0
Respiratory Distress	15	29.4
Only cough	10	19.6
Loss of smell	5	9.8
Sore throat	2	3.9
Diarrhoea	1	2.0
Associated complications of patients		
None	29	56.8
Pre eclampsia	10	19.6

Diabetes	3	5.9
Anaemia	1	2.0
Oligohydramnios	3	5.9
COPD	2	3.9
APH	1	2.0
Obstructed labour	1	2.0
P/H/O/C/S	1	2.0
Need of ICU		
Did not need	49	96.1
Needed	2	3.9
Vaccination Status of the patients		
Yes	0	00
No	51	100.0

Table II Pregnancy outcome of patients

Fate of Pregnancy	Number of patients	Percentage (%)
Abortion	2	3.9
IUD	3	5.9
Preterm labour	5	9.8
Term labour	18	35.3
Foetal distress	3	5.9
Continue	19	37.3
Ectopic pregnancy	1	2.0
Mode of delivery n= 26		
Vaginal Delivery	8	30.77
Caesarean Section	18	69.23
Period of gestation during delivery		
<28 weeks	13	25.5
28-34 weeks	11	21.6
34-37 weeks	7	13.7
>37 weeks	18	35.3
continued	2	3.9
Events in Postnatal Period		
Uneventful	23	45.1
PPH	3	5.9
Eclampsia	1	2.0
Refd to ICU	2	3.9
Continue	19	37.3
Red zone	1	2.0
laparotomy	1	2.0
Diabetes	1	2.0
Maternal Outcome		
Alive	49	96.1
Dead	2	3.9

Table III Perinatal Outcome

Perinatal outcome	Numbers of Patients	Percentage (%)
Alive	17	33.3
IUD	3	5.9
LBW	3	5.9
NICU	6	11.8
Continue	19	37.3
Weight of new born babies n=29		
<1 kg	2	6.9
1,5- 2 kg	6	20.7
2-2,5 kg	4	13.8
>2.5 kg	17	58.6

Discussion

Coronavirus is a new pathogen of high contagious abilities. Pregnant women are at an increased risk due to physiologic changes in their immune, cardiopulmonary and coagulation systems. But several authors suggested that pregnancy did not aggravate the symptoms or CT features of COVID-19 pneumonia.⁶ A previous review including 108 infected pregnant women in the third trimester described fever (68%) and cough (34%) as the most frequent symptoms of COVID-19 and elevated C-reactive protein (70%) and lymphopenia (59%) as the most commonly altered maternal laboratory parameters.⁶ In our study common symptoms were fever (33.3%) respiratory distress (29.4%) and cough (19.6%).

In a case series including three pregnant women infected by SARS-CoV-2, one of the infants was born preterm with Low Birth Weight (LBW).^{7,8} Other publication presented the case of a 30-week pregnant woman with COVID-19 that gave birth to a LBW but healthy baby.^{10,11} In our study prematurity was found in 9.8% of cases.

In a study published preprint in the non-peer-reviewed journal medRxiv in April 2020, which is a systemic review covering 23 studies from various countries mostly from China, finds that most of the pregnancies (Almost 9/10) ended in delivery by caesarean section and preterm delivery occurred in 23%. Many women had other medical conditions as well, such as Diabetes and hypertensive disorders of pregnancy (11% and 9% respectively).^{12,13} This study also revealed that 69.23% patients' pregnancy was terminated by caesarean section and associated common complications were Preeclampsia (19.6%) and Gestational Diabetes Mellitus (5.6%).

In a study at Mugda Medical College, Dhaka from April to June 2020, four maternal deaths were reported. One died suddenly after 48 hrs of CS due to thromboembolism and another after 2 hours of CS due to severe respiratory distress. In the third mortality, the patient was admitted already in a critical condition, which she could not recover and died 2 hours after vaginal delivery. Regarding the fourth death, the patient had respiratory distress from the admission and distress increased more after delivery and died 48 hours after CS. The second and fourth patient needed ICU which they could not get.^{14,15} Our study showed two maternal deaths who were treated in ICU.

Limitations

This study has certain limitations, which include

- Sample size in the present study was small that may not reflect generalization of the findings to reference population.
- Observational type of the study may have lowered its strength.
- The study was conducted in a single Hospital.

Conclusion

The majority of pregnant women hospitalized with COVID-19 were in third trimester, indicating the need for continued social distancing in later pregnancy. The maternal outcome was not good. And prematurity leading to high perinatal mortality is a great concern. So, for the infected mothers early medical supervision and availability of ICU in critical condition are needed for better pregnancy outcome.

Recommendations

Although pregnant women do not seem to present an increased susceptibility to COVID-19 or more severe complications than non-pregnant adults, the available studies suggest that they may be at risk of adverse pregnancy outcomes, mostly pre-term delivery, fetal distress, respiratory symptoms and LBW in the newborns. Further research is urgently needed to understand the real effect of COVID-19 on pregnant women and neonates, and to guide the most appropriate recommendations for obstetricians. Only an integrated multi-angle assessment of the current knowledge about viral characteristics, epidemiology, disease immunopathology, potential preventive and therapeutic strategies, together with clinical observations, will help to understand the exact impact of COVID-19 infection during pregnancy.

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Contribution of authors

FIC-Conception, acquisition of data, drafting & final approval.

FS-Acquisition of data, critical revision & final approval.

NS-Data analysis, drafting & final approval.

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Disclosure

All the authors declared no competing interests.

References

1. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J et al. China novel coronavirus investigating and research team. A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med.* 2020;382:727-733.
2. Health Bulletin. DGHS, Ministry of Health and Family Welfare, Government of People's republic of Bangladesh, Dhaka, Bangladesh. 23-6-2020.
3. Masters PS, Perlman S. Coronaviridae. In: Knipe DM, Howley PM, eds. *Fields virology.* 6th ed. Lippincott Williams and Wilkins. 2013;825-858.
4. Centers for Disease Control and Prevention. Coronavirus Disease (COVID-19). People who need extra precautions: Pregnancy and Breastfeeding. 2020 <https://www.cdc.gov/coronaviru>. [Accessed on 13th April 2020.]
5. Royal College of Obstetricians Gynaecologists, Royal College of Midwives. Coronavirus infection in pregnancy: Information for healthcare professionals. <https://www.rcog.org.uk/global...> Published April 9, 2020. [Accessed on 13th 2020.]
6. Wong SF, Chow KM, Leung TN, Ng WF, Ng TK, Shek CC, Ng PC, Lam PW, Ho LC, To WW, Lai ST. Pregnancy and perinatal outcomes of women with severe acute respiratory syndrome. *American journal of obstetrics and gynecology.* 2004;191(1):292-297.
7. 0. Chen S, Huang B, Luo DJ, Li X, Yang F, Zhao Y, Nie X, Huang BX. Pregnancy with new coronavirus infection: Clinical characteristics and placental pathological analysis of three cases. *Zhonghuabing li xuezhazhi= Chinese journal of pathology.* 2020;49(5):418-23.

8. Wang X, Zhou Z, Zhang J, Zhu F, Tang Y, Shen X. A case of 2019 Novel Coronavirus in a pregnant woman with preterm delivery. *Clinical infectious diseases*. 2020 Feb 28.
9. Scambia G, Berghella V, D'Antonio F. Outcome of Coronavirus Spectrum Infections during Pregnancy : A Systematic review and meta analysis. *Am J obstet Gynecol MFM*. 2020;2(2):100107. doi-10.1016/j.ajogmf.2020.100107.Epub 2020 Mar 25.PMID: 32292902.PMCID : PMC7104131.
10. Wong SF, Chow KM, Leung TN, Ng WF, Ng TK, Shek CC, Ng PC, Lam PW, Ho LC, To WW, Lai ST. Pregnancy and perinatal outcomes of women with severe acute respiratory syndrome. *American journal of obstetrics and gynecology*. 2004;191(1):292-297.
11. Melo GC, Araujo KCGM. COVID-19 infection in pregnant women, preterm delivery, birth weight and vertical transmission : A Systemic review and meta-analysis. *Cad Saude Publica*. 2020;36(7):e00087320.
12. 10. www.news-medical.net/news/20200416/Pregnancy-and.
13. Hu J, Danielli M, Thomas RC, Melford SE. COVID-19: Women with diabetes and hypertension during pregnancy. *British Journal of Midwifery*. 2020;28(11):800-801. DOI : 10.12968/bjom.2020.28.11.800.
14. Mustafa FN, Yasmin N , ISLAMM, Mehzabin S, Siddique S,alam.Pregnancy outcome in COVID-19 positive women in a COVID dedicated hospital. *J Dhaka Med Coll*. 2020;29(2).
15. Wei SQ, B ilodean-Bertrand M, Liu S, Auger V. The Impact of COVID-19 on Pregnancy Outcome : A Systemic review and meta analysis. *CMAJ*. 2021;193(16):E540-E548. doi : 10.1503/cmaj.202604.Epub 2021 Mar 19. PMID : 33741725.PMCID.