ECRONICON OPEN ACCESS

EC GYNAECOLOGY
Research Article

Impact of Asymptomatic Covid 19 Infections in Pregnancy: An Observational Study in Tertiary Medical College

Madhurima Roy[1]*, Rajib Roy[2], Priya Singh[2], Inisha Sarkar[1] and Sreelatha S[2]

[1]Senior Resident, Department of Obstetrics and Gynaecology, ESIPGIMSR, ESIC MC, Joka, Kolkata, India

[2]Professor, Department of Obstetrics and Gynaecology, ESIPGIMSR, ESIC MC, Joka, Kolkata, India

***Corresponding Author:** Madhurima Roy, Senior Resident, Department of Obstetrics and Gynaecology, ESIPGIMSR, ESIC MC, Joka, Kolkata, India.

Received: May 03, 2024; **Published:** May 24, 2024

Abstract

Background: COVID 19 has been declared as a global pandemic during 2020 with over 640 million confirmed cases and over 891000 deaths. India has been one of the most severely affected country. However, there are very less study related to sero-prevalence among asymptomatic pregnant population.

Aims and Objectives: To study the prevalence of asymptomatic infection in pregnant women and it's outcome.

Materials and Methods: This is a prospective study done in Department of Obstetrics and Gynaecology of ESI-PGIMSR and ESI- MC, Joka and Department of Microbiology, between April 2020 to March 2021.A total of 200 pregnant female of all age group and parity were included.

Results: Among 200 pregnant women fifty-two (26%) were seropositive and 148(74%) were negative for anti SARS CoV2 antibody. Pregnancy complication like anaemia (HB < 10), GDM, PIH, APH, IUGR were studied among sero-positive group. Pregnancy outcome like PPROM, preterm labour, mode of delivery and post-partum complication as well as neonatal outcome was studied.

Conclusion: Covid 19 antibody testing to be done routinely in all pregnant woman to isolate asymptomatic infection and to know about burden of infection in this population.

Keywords: *Asymptomatic Infection; Pregnant Women; SARS-CoV-2; Covid 19*

Introduction

The novel human coronavirus SARS-CoV-2 has been responsible for a global pandemic during 2020 [1]. It was first broke out in Wuhan and has been spreading in whole China and world. India has been one of the most severely affected by SARS-CoV-2 pandemic with an official report of 44834859 cases confirmed by real-time PCR (RT-PCR) on nasopharyngeal swabs (NFS) till date. However, sero-epidemiological study, conducted in Delhi by National Centre for Disease Control [NCDC] showed the real number of infections was much higher due to lack of detection of asymptomatic cases [2].

Coronavirus (CoV) is an enveloped, positive-stranded ribonucleic acid (RNA) virus of the family of Coronaviridae and belonging to the Nidovirales order, generally causing respiratory and gastrointestinal infections that might range from mild, self-limiting conditions to more serious disorders, such as viral pneumonia with systemic impairment [3].

The SARS-CoV-2 infection in pregnancy has direct and indirect consequences. Current knowledge is mainly derived of cases diagnosed by RT-PCR in women with suggestive symptoms or in those asymptomatic or symptomatic hospital-based population. This shows that first, maternal complications appear to be similar to non-pregnant women in the same age group, although pregnant women might be at increased risk of admission to an intensive care unit, second, there is an increased risk of preterm birth and caesarean section, and third, vertical transmission is considered rare [4]. However, the full spectrum of SARS-CoV-2 infection during pregnancy remains unknown and therefore the study was planned to overcome the lacunae of existing knowledge.

Aims and Objective of Present Study

1. To determine the sero-prevalence of anti SARS CoV-2 IgG antibody in asymptomatic pregnant populations in our study.
2. To know pregnancy and neonatal outcome in seropositive pregnant woman.

Materials and Methods

This prospective study was done in Department of Obstetrics and Gynaecology and Department of Microbiology, ESI-PGIMSR and ESIC MC, Joka, between April 2020 to March 2021. A total of 200 pregnant female of all age group was selected according to inclusion and exclusion criteria and followed up till delivery.

Inclusion criteria

Pregnant woman of age group 18 - 40 year and parity attending OPD, antibody testing were done and seropositive were followed up till term.

Exclusion criteria

Seronegative patients: In this prospective observational study 200 cases were recruited according to the inclusion and exclusion criteria after getting informed consent. The pregnant women attending antenatal clinic were tested for SARS-CoV-2 antibody status. 3 ml to 5 ml venous blood was drawn in serum separator tube and sent to microbiology department for testing for detection of Anti SARS-CoV-2 IgG antibody and again antibody titre was repeated in seronegative population at 34 weeks. The COVID 19 status of all women in the study group was determined immediately on admission for delivery either by RT PCR or rapid antigen tests. The nasopharyngeal and oropharyngeal swabs were collected by ICMR recommended method and sent for RTPCR in the department of Microbiology after proper packaging. RNA extraction and RT-PCR was done following kit manufacturer's instructions maintaining recommended bio-safety. Rapid antigen tests (RAT) was performed following manufacturer's instructions for cases admitted on emergency basis and was followed up next day with RTPCR tests if the RAT results appear negative. Feto-maternal outcome was monitored and documented on case record Performa. The statistical analysis was done using SPSS version 28.0.1.1(15). P value < 0.05 was considered statistically significant.

Results

In this study of 200 pregnant patients recruited over 12 months during COVID 19 pandemic. All of them were asymptomatic as well as they had no history of exposure to COVID 19 infected person during the time of serum sampling. 52 (26%) among them were seropositive and. Seropositive patients were followed up for pregnancy and neonatal outcome.

SARS CoV2 Antibody status	Number	Percentage
Seropositive	52	26%
Seronegative	148	74%
Total	200	

Table 1: *Distribution according to anti SARS CoV2 antibody status (N = 200).*

Age (in years)	Number	Percentage
18 - 25	20	38.4%
26 - 30	17	32.6%
31 - 35	13	25%
36 - 40	02	3.8%
Total	52	

Table 2: *Age distribution of study population (n = 52).*

In our study maximum patients were in age group 18 years - 25 years, that is 38.4%.

Parameters		Number	Percentage
Residence	Urban	28	53.8%
	Rural	24	46.2%
Occupation	Service	07	13.5%
	Housewife	45	86.5%

Table 3: *Socio-demographic characteristics.*

In our study group 53.8% were residing in urban area and rest were residing in rural area. Only 13.5% were service-holder.

Gravida	Number	Percentage
Primigravida	27	51.9%
Multigravida	25	48.1%
Total	52	

Table 4: *Distribution according to gravida.*

In our study population primigravida were 51.9% and multigravida 48.1%.

Complications	Number	Percentage
Gestational diabetes	11	21.2%
Pregnancy induced hypertension	8	15.4%
Anaemia	24	46.2%
Antepartum haemorrhage	1	2%
Intrauterine growth restriction	3	5.8%
None	5	9.6%
Total	52	

Table 5: *Pregnancy complications in study population (n = 52).*

Sero-positive pregnant women have also been characterized on the basis of obstetric complications, such as anaemia (HB < 10), GDM, PIH, APH. Highest incidence of anaemia (46.2%) was noted in this population, followed by gestational diabetes (21.2%) and pregnancy induced hypertension (15.4%).

Gestational age at delivery	Number	Percentage
< 37 weeks	24	46.2%
37 - 40 weeks	28	53.8%
> 40 weeks	0	0
Total	52	

Table 6: *Distribution according to gestational age at delivery.*

Outcome	Number	Percentage
Premature rupture of membrane	10	19.2%
Preterm labour	20	38.5%
None	22	42.3%
Total	52	

Table 7: *Adverse pregnancy outcome in study population.*

Mode of delivery	Number	Percentage
Emergency LSCS	24	46.2%
Normal vaginal delivery	28	53.8%

Table 8: *Mode of delivery.*

Maternal outcomes such as time of labour onset, mode of delivery (vaginal, caesarean), gestational age at delivery and intrapartum and post-partum complication. Incidence of preterm labour was 38.5%, followed by premature preterm rupture of membrane that is 19.2%. Preterm delivery was observed in 46.2%. Mode of delivery was normal vaginal delivery in 53.8% and rest was terminated by emergency lower segment caesarean section (46.2%).

Indication of caesarean section	Number	Percentage
Cephalopelvic disproportion	2	8.33%
Drained out liquor with foetal distress	6	25%
Breech in labour	2	8.33%
Induction failure	2	8.33%
Meconium stained liquor	5	20.83%
Non progress of labour	2	8.33%
Severe preeclampsia with Iugr and deranged doppler	2	8.33%
Twin in labour with first twin non cephalic	1	4.16%
Foetal distress	2	8.33%
Total	24	

Table 9: *Indication of caesarean section.*

Highest number of caesarean section was done due to drained out liquor with foetal distress (25%) followed by thick meconium stained liquor (20.83%).

Post partum complication	Number	Percentage
Post partum haemorrhage	02	3.9%
Puerperal sepsis	03	4.8%
Wound infection	02	3.9%
Eclampsia	01	1.9%
None	45	86.5%
Total	52	

Table 10: *Distribution according to post-partum complication (n = 52).*

Newborn weight	Number	Percentage
> 2.5 kg	32	61.5%
< 2.5 kg	20	38.5%
Total	52	

Table 11: *Distribution of birth weight.*

Neonatal outcome	Number	Percentage
Nicu admission	25	48.8%
Neonatal sepsis	10	19.2%
Neonatal RDS	10	19.2%
Neonatal Jaundice	18	34.6%

Table 12: *Neonatal outcome.*

Neonatal outcome was observed in seropositive group, it was noted that 61.5% newborn attended satisfactory birth weight and rest was low birth weight (38.5%). Nicu admission required in 48.8% newborn, among them 19.2% had neonatal sepsis, 19.2% had neonatal respiratory distress syndrome and jaundice was seen in 34.6%.

Discussion

Prevalence of seropositive patients in our study was 52 among 200 (26%), which is comparable with a study conducted by ICMR in which serial serosurvey in 70 districts spread across 20 Indian states and 1 union territory prior to the introduction of COVID-19 vaccination indicated that the seroprevalence in India increased from 0.73% (95% CI 0.34% to 1.13%) in May-June 2020 to 6.6% (95% CI 5.8% to 7.4%) in September - October 2020 and 24.1% (95% CI 23.0% to 25.3%) in December 2020 - January 2021 [5]. Gupta P., *et al*. did a retro-prospective study, in which medical records of pregnant women admitted for delivery were reviewed from the largest Covid-19 dedicated Shri Maharaja Gulab Singh (SMGS) maternity hospital, Jammu, Jammu and Kashmir (India) between September 1, 2020 and November 30, 2020. Most of the pregnant women (90.6%) were asymptomatic at the time of admission with a low prevalence (3.4%) of SARS-CoV-2. A higher rate of asymptomatic prevalence (86.1%) was found among SARS-CoV-2-positive pregnant women [6].

In our study seropositive pregnant women group mean age was 27.3 ± 5.4 years and ranged between 18 and 40 years which is comparable with Sharma K A., *et al*. to measure seroprevalence of covid 19 in pregnant population, in AIIMS, Delhi participants had an

average age of 24.0 ± 4.1 years. There was no association of adverse outcome with age [7]. In our study among seropositive population 46.2% were from rural and 53.2% from urban area. Though frequency was little higher in urban area. A seroprevalence study on general population of India conducted by Murhekar MV., *et al*. also found there was no significant difference of seroprevalence in rural and urban areas (p = 0.822) [8]. There was no increase incidence of seropositivity with increased Age. Allotey J., *et al*. have described poorer outcomes of covid 19 with increasing age and in a systematic review and metanalysis including 435 studies, of poorer outcome with maternal basal characteristics was found [9]. In our study population among seropositive group, 25 (48.1%) patients was multipara and 27 (51.9%) patients was primipara. A population-based study in Sweden and Norway was done to look for association of parity with COVID 19 infection. They have not shown clear associations between parity and test-positivity, which is supported by Swedish data. In Norway, there was a positive association with multiparity. They also found that, in Norway, multiparous women were more likely to get tested than nulliparous women [10].

In our study the incidence of gestational diabetes mellitus was 21.2% which was comparable to study done by Radan AP., *et al*. which reported significantly higher rate of GDM among women with SARS-CoV-2 infection during pregnancy, as compared to corresponding controls, suggests that GDM increases the risk of infection [11]. In our study groups 15.4% patients had preeclampsia which is comparable to many study which have reported pre-eclampsia is associated with COVID 19 infection. In our study incidence of anaemia is more (46.2%), which is comparable with few studies reported that there is significant incidence of anaemia in pregnant mother with history of SARS-CoV-2 infection. Prevalence of IUGR in our study was (5.8%). In a case report from COMJNM Hospital, Kalyani, Kumar PS., *et al*. there is increased risk of IUGR if the mother is infected in third trimester of pregnancy. A meta-analysis to estimate the frequency of intrauterine growth restriction with COVID-19 infectivity reported frequencies of IUGR in pregnant women with COVID-19 were 2.6% [12]. In our study prelabour premature rupture of membrane was 19.2%, which was similar to the finding of a retrospective case control study done in Iran [13]. In some studies they have observed increased incidence of PPROM in covid 19 patients. In a meta-analysis of studies which were published before February, 2021 it was found that frequency of PPROM in covid 19 infected patient was 9.9% [14]. In our study group 38.5% patients had preterm labour which is similar to different studies which was done all over the world. Yan., *et al*. have reported a spontaneous PTB rate of 2% before 34 weeks and 21.2% before 37 weeks among 116 pregnant women with COVID-19 [15]. A retrospective study in California reported PTB rate among COVID-19 diagnosed birthing people was 11.8% compared with 8.7% among those without a recorded COVID-19 diagnosis (aRR 1.4, 95% confidence interval (CI) [1.3, 1.4] [16].

In our study 46.2% patients had emergency lower segment caesarean section. All the caesarean section was done only due to obstetrics indication. In a study conducted in China between April 2020 to May 2021 overall caesarean section rate was 37.3% which is almost consistent with our study findings [17]. In seropositive mothers. In a population based study by Yang R., *et al*. done in Wuhan China described no association of low birth weight in new-born of covid 19 infected mothers [18]. In our study group 38.5% newborn was low birth weight. The frequency of NICU admission in seropositive group was 48.8%. In a study by Murphy CA., *et al*. on COVID-19 infection in pregnancy, there was no increase in neonatal intensive care unit admission compared with 5-year hospital data [19].

Conclusion

Covid 19 was significantly associated with mortality, WHO declared it as epidemic initially later as pandemic. Universal screening to be done for all pregnant woman for COVID-19, for early diagnosis and intervention.

Bibliography

1. WHO coronavirus (COVID-19) dashboard (2023).

2. Sero-prevalence study conducted by National Center for Disease Control NCDC, MoHFW, in Delhi, June 2020 (2022).

3. Pal M., *et al*. "Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2): An update". *Cureus* 12.3 (2020): e7423.

4. Allotey J., *et al*. "Clinical manifestations, risk factors, and maternal and perinatal outcomes of coronavirus disease 2019 in pregnancy: living systematic review and meta-analysis". *British Medical Journal* 370 (2022): m3320.

5. Murhekar MV., *et al*. "Seroprevalence of IgG antibodies against SARS-CoV-2 among the general population and healthcare workers in India, June-July 2021: A population-based cross-sectional study". *PLoS Medicine* 18.12 (2021): e1003877.

6. Gupta P., *et al*. "SARS-CoV-2 prevalence and maternal-perinatal outcomes among pregnant women admitted for delivery: Experience from COVID-19-dedicated maternity hospital in Jammu, Jammu and Kashmir (India)". *Journal of Medical Virology* 93.9 (2021): 5505-5514.

7. Sharma KA., *et al*. "Seroprevalence of SARS-CoV-2 antibodies among first-trimester pregnant women during the second wave of the pandemic in India". *International Journal of Gynecology and Obstetrics* 160.1 (2023): 74-78.

8. Murhekar MV., *et al*. "Seroprevalence of IgG antibodies against SARS-CoV-2 among the general population and healthcare workers in India, June-July 2021: A population-based cross-sectional study". *PLoS Medicine* 18.12 (2021): e1003877.

9. Allotey J., *et al*. "Clinical manifestations, risk factors, and maternal and perinatal outcomes of coronavirus disease 2019 in pregnancy: living systematic review and meta-analysis". *British Medical Journal* 370 (2022): m3320.

10. Örtqvist AK., *et al*. "The association between maternal characteristics and SARS-CoV-2 in pregnancy: a population-based registry study in Sweden and Norway". *Scientific Reports* 12.1 (2022): 8355.

11. Radan AP., *et al*. "Gestational diabetes is associated with SARS-CoV-2 infection during pregnancy: A case-control study". *Diabetes and Metabolism* 48.4 (2022): 101351.

12. Bahrami R., *et al*. "Meta-analysis of the frequency of intrauterine growth restriction and preterm premature rupture of the membranes in pregnant women with COVID-19". *Turkish Journal of Obstetrics and Gynecology* 18.3 (2021): 236-244.

13. Taghavi SA., *et al*. "Obstetric, maternal, and neonatal outcomes in COVID-19 compared to healthy pregnant women in Iran: a retrospective, case-control study". *Middle East Fertility Society Journal* 26.1 (2021): 17.

14. Bahrami R., *et al*. "Meta-analysis of the frequency of intrauterine growth restriction and preterm premature rupture of the membranes in pregnant women with COVID-19". *Turkish Journal of Obstetrics and Gynecology* 18.3 (2021): 236-244.

15. Jie Yan., *et al*. "Coronavirus disease 2019 in pregnant women: a report based on 116 cases". *American Journal of Obstetrics and Gynecology* 223.1 (2020): 111.e1-111.e14.

16. Karasek D., *et al*. "The association of COVID-19 infection in pregnancy with preterm birth: A retrospective cohort study in California". *Lancet Regional Health - Americas* 2 (2021): 100027.

17. Zhang J., *et al*. "The associated factors of cesarean section during COVID-19 pandemic: a cross-sectional study in nine cities of China". *Environmental Health and Preventive Medicine* 25.1 (2020): 60.

18. Yang R., *et al*. "Pregnant women with COVID-19 and risk of adverse birth outcomes and maternal-fetal vertical transmission: a population-based cohort study in Wuhan, China". *BMC Medicine* 18.1 (2020): 330.

19. Murphy CA., *et al*. "The effect of COVID-19 infection during pregnancy; evaluating neonatal outcomes and the impact of the B.1.1.7. variant". *Pediatric Infectious Disease Journal* 40.12 (2021): e475-e481.

Volume 13 Issue 6 June 2024