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Symptomatology and course of COVID-19 infection among vaccinated and unvaccinated pregnant women admitted to a referral hospital

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Abstract

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by a novel strain of Coronavirus (2019-nCoV). India is one of country which is largely affected by COVID-19 during 1st and 2nd wave of COVID-19. This study includes the pregnant women who are vaccinated before pregnancy or antenatally, who later developed COVID 19 infection. In these women interval between vaccination and COVID 19 positive, and outcome among vaccinated.

Methodology: 3 months prospective hospital based cross sectional study in designated COVID hospital under care of Government Maternity Hospital, Tirupati, to compare outcome of pregnant women with COVID 19 infection who are vaccinated to the unvaccinated pregnant women. Sample size was 27.

Results: From the present study it can be seen that the course of COVID 19 infection is mild in case of fully vaccinated women and stormy in case of some unvaccinated women but even partial vaccination with one dose offers some amount of protection from morbidity and mortality.

Conclusion: Because these studies were carried out in months of July, August, September, most of women could receive only first dose. The sample size in this study is a limitation. We need studies with a larger vaccinated population to draw solid conclusions. There is also need for separate studies regarding different brands of vaccine.

Keywords: Symptomatology, COVID-19 infection, unvaccinated pregnant women

Introduction

- Coronavirus disease 2019 (COVID-19) is an infectious disease caused by a novel strain of Coronavirus (2019-nCoV). During the end of December 2019, the initial cases of COVID-19 emerged in Wuhan City, Hubei Province of China ^[1].
- India is one of country which is largely affected by COVID-19 during 1st and 2nd wave of COVID-19.
- In a major development, on January 3, 2021, DCGI approved two COVID-19 vaccines for restricted emergency use in the country ^[2]. Covishield and Covaxin are the vaccines produced in India and approved.
- Serum Institute of India (SII), Pune, now producing at a large scale, the Oxford-AstraZeneca Adenovirus vector-based vaccine AZD1222 (which goes under the name "Covishield" in India), and it has stockpiled about 50 million doses ^[3].
- Free vaccination against COVID-19 started in India on January 16, 2021, and the government has started first among health care workers, later senior citizens age above 50 years were included, later all age groups were included.
- Pregnant women are the most vulnerable group in 1st and 2nd wave of COVID-19 where the deaths are more among pregnant women because of rapid deterioration of health among them and effect the baby also.
- India has started vaccinating pregnant women from month of July, after releasing guidelines by MOHFW of India.
- So, this study includes the pregnant women who are vaccinated before pregnancy or antenatally, who later developed COVID 19 infection. In these women interval between vaccination and COVID 19 positive, and outcome among vaccinated.

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Since the nationwide immunization drive was launched on 16 January, over 227,000 pregnant women in India have received their first dose of a COVID-19 vaccine.

Aim

- To compare outcome of pregnant women with COVID 19 infection who are vaccinated to the unvaccinated pregnant women.

Objectives

- To know incidence of COVID infection among vaccinated and unvaccinated pregnant women.
- To determine the interval between vaccination and COVID 19 infection
- To know type of COVID 19 vaccine taken.
- To compare maternal outcome of pregnant women with COVID 19 infection who are vaccinated to the pregnant women who are not vaccinated.

Materials and Methods

Study area: Designated COVID hospital under care of Government Maternity hospital, Tirupati

Study design: A Hospital based cross sectional study.

Study population: Pregnant women with COVID 19 infection

Study duration

3 months (01.07.2021 to 31.09.2021)

Sample size

27

Study method

Government maternity hospital is a large referral center for chittoor district and also for neighbouring districts. Part of it is converted to designated COVID hospital since May 2020. All COVID positive pregnant women from Chittoor district are admitted in this hospital irrespective of gestational age.

The data was collected in Government maternity COVID hospital, Tirupati. 27 COVID positive women who are vaccinated against COVID 19 vaccine are included in study after informed consent. Information was collected by taking history of patient through proforma. 27 age and parity matched pregnant women who are not vaccinated and COVID 19 positive are included in the study. Symptomatology treatment given need for oxygen and ICU admission are included in the study. Both groups are followed till discharge and outcome of mother are noted.

Statistical Analysis

Data analyzed in the MS Excel spreadsheet program and epi info latest version 7.2.4.0.

Table 1: Demographics of study population

Vaccination	Age		Education			Region	
	20-30 yrs	>30 yrs	illiterate	Primary school	High school and above	Urban	Rural
Completely vaccinated	3	0	0	0	3	3	0
Partially vaccinated	21	3	4	5	15	13	11
Unvaccinated	24	3	8	9	10	12	15

Table 2: No of pregnant women vaccinated and COVID 19 positive

Covishield 1 dose	Covaxin 1 dose	Covishield 2 doses	Covaxin 2 doses	COVID 19 positive
17	4	3	0	24
3	0	0	0	3
77%	15%	7%	0	100%

Table 3: Interval between COVID-19 vaccination and infection

Interval	Number	1 month	1-2 mon	>3mon
Completely vaccinated	3	2	1	0
Partially vaccinated	24	13	6	5
		55%	26%	18%

Table 4: Symptomatology of COVID 19 infection among vaccinated and unvaccinated pregnant women

Vaccination	Symptoms	
	Mild	Severe
Completely vaccinated	3	0
Partially vaccinated	22	2
unvaccinated	17	10

Table 5: Maternal outcome in women with COVID-19

Vaccination	Interventions					
	Remdesivir	Dexamethasone	Low molecular Weight heparin	On oxygen	ICU Admissions	Deaths
Completely vaccinated	0	0	0	0	0	0
Partially vaccinated	2	5	5	4	2	1
Unvaccinated	7	10	8	7	5	5

Discussion

Present study was undertaken in COVID hospital attached to GMH during the period July, August, September. Study

population included 54 pregnant women with COVID infection, among whom 27 were not vaccinated, 24 were partially vaccinated, 4 were fully vaccinated.

Demographics**Age**

Most of the women belong to age group of 20-30 years, few were about 30 years of age. There is no difference in age between the 3 groups.

Educational status

Majority of women completed high school and higher education. There is no difference in educational status between the 3 groups.

Area of residence

Study population was equally distributed between rural and urban areas. This is similar to general obstetric population attending our hospital.

Vaccine status

Out of the study population (54), 3 were fully vaccinated with covishield, 20 received only first dose of covishield, 4 received first dose of covaxin.

Interval between vaccination and infection

Among completely vaccinated group 75% developed infection with in one month of last dose, one women developed between 1-2 months of vaccination but sample size is low to derive any conclusion.

Among the partially vaccinated women, majority developed infection, within one month. This shows that complete vaccination protects women after 1-2 months.

Symptomatology

All 3 women who were completely vaccinated had very mild symptoms. Among partially vaccinated women majority had only mild disease 90%, only 2 women 10% had severe infection. Among unvaccinated 63% had mild disease and remaining 27% had severe disease?

This shows that complete vaccination had very mild course of disease when compared to unvaccinated women. But even a single dose offers some amount of protection.

Maternal outcome

No women who has received complete vaccination needed Remdesivir, Dexamethasone, Low molecular weight heparin. Among partially vaccinated 8% needed Remdesivir, 18% needed steroids and heparin. Among unvaccinated 26% needed Remdesivir, 37% needed steroids, 30% needed heparin.

No women who has received complete vaccination needed oxygen or ICU admission. Among the partially vaccinated 16% needed oxygen administration, 8% needed ICU admission, whereas there was one death in this group. In unvaccinated 26% needed oxygen, 18% needed ICU admission and there were 5 deaths.

From the present study it can be seen that the course of COVID 19 infection is mild in case of fully vaccinated women and stormy in case of some unvaccinated women but even partial vaccination with one dose offers some amount of protection from morbidity and mortality.

Conclusion

Because these studies were carried out in months of July, august, September, most of women could receive only first dose. The sample size in this study is a limitation. We need studies with a larger vaccinated population to draw solid conclusions. There is also need for separate studies regarding different brands of

vaccine.

Ethical issues

This study was undertaken after permission from the ethics committee of the institution. Respon's anonymity and confidentiality are ensured. At the beginning of the questionnaire, consent was sought in terms of yes or no for willingness to participate.

Acknowledgement

Not available

Author's Contribution

Not available

Conflict of Interest

Not available

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How to Cite This Article

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