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ORIGINAL RESEARCH

Demographic profile and outcomes of pregnant patients admitted with Covid-19 infection in a tertiarycare hospital in Himachal Pradesh, Indiaduring the first wave.

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ABSTRACT

Aim: To determine the demographic profile of pregnant females with COVID-19 infection. The outcome and prognosis in pregnant women with COVID-19 infection was also evaluated.

Method and material: The study included 38 pregnant women with COVID-19 infection and hospital admission for at least 24 hours. Cause of admission was classified as obstetric and COVID-19-related. All the patients were COVID positive and were referred from other centres/ hospital to this facility andwas admitted to this hospital for delivery. Primary outcomes included maternal admission to intensive care unit (ICU), COVID-19 pneumonia, maternal mortality. The information on socio-demographic factors, pre-gestational chronic diseases (including cardiac, renal, endocrine, psychiatric, hematologic and autoimmune disease, cancer and HIV)and mode of delivery was collected.

Results: The mean age of the patients was 28.8±6.2 years. The mode of delivery for 60.5%patients(23) was normal vaginal delivery and lower segmentcaesarean section in 39.5%(15) patients.94.7%(36) patients were asymptomatic in the present study. Maximum patients in the present studywere hospitalized for 3-5 days.

Conclusion: COVID-19 infection was associated with higher rates of caesarean section in pregnant women. However, COVID-19 cannot be considered as an indication for caesareansectiondelivery. Patients with increased age have more days of hospitalization than younger patient.

Keywords: COVID 19, pregnancy, caesarean section

INTRODUCTION:

The coronavirus disease 2019 (COVID-19) pandemic has represented a major impact to health systems and societies worldwide. The generation of knowledge about the disease has occurred almost as fast as its global expansion.[1] In India, the first case of COVID-19 was identified on January 30, 2020 and the number has been increasing steadily due to local transmission and foci of community transmission. As of April 14, 2020, the number of cases

in India was 11,485 with overall reported mortality of 396.[1] Delhi recorded 1,561 cases till April 14, with 30 deaths.[2]

Covid 19, an extremely contagious infection that affectsthe entire population and has a predilection for people with immunosuppressive disorders, old age and those who havecomorbidities. Pregnancy is an immunosuppressant state that is associated with altered immune status like lymphopenia and increase in certain inflammatory markers.[3,4] Other than this, physiological cardiopulmonary adaptations such as lower functional residual capacity in the lungs and higher oxygen intake also make pregnant females at higher risk for COVID-19.

There is a little evidence of perinatal transmission, Sars-CoV 2 is thought to have a higher affinity for the angiotensin converting enzyme 2 (ACE2) receptors.[5] The maternal-fetalinterface cells and villous and extravillous trophoblastic portions of the placenta have higher levels of these receptors. The receptors are also expressed in the foetal heart, lungs, and liver.[6,7] Thus Pregnant women and neonates are often categorized as being at high risk from the (COVID-19). Some research suggests that pregnant women with COVID-19 are also more likely to have a premature birth and caesarean section delivery.[8,9]

Therefore the present study was conducted to determine the clinical and demographic profile of pregnant females with COVID-19 infection. Also the outcome and prognosis in pregnant women with COVID-19 infection was evaluated.

AIM AND OBJECTIVES:

To determine the demographic profile of pregnant females with COVID-19 infection. The outcome and prognosis in pregnant women with COVID-19 infection was also evaluated.

MATERIALSAND METHODS:

This study was a prospective observational study conducted at Maharishi Markendeshwar Medical College and Hospital, Solan, H.P. after obtaining ethical approval from the Institutional Ethical Committee.

The study included 38 pregnant women with COVID-19 infection and hospital admission for at least 24 hours. Cause of admission was classified as obstetric and COVID-19-related.All the patients were COVID positive and were referred from other centres/hospitalsto thisinstituteand admitted to thishospital for delivery. Primary outcomes included maternal admission to intensive care unit (ICU), COVID-19 pneumonia, maternal mortality. We collected information on socio-demographic factors, pre-gestational chronic diseases (including cardiac, renal, endocrine, psychiatric, hematologic and autoimmune disease, cancer and HIV) and mode of delivery.

RESULTS

In this present study it was observed that maximum patients belonged to the age group of 21-30 years which consisted of 55.30%(n=21) of the total study subjects,followed by 28.9%(n=11) ,10.50%(n=4) and 5.3%(n=2) in age groups of 31-40yrs,<20 yrsand <40yrs respectively.The mean age of the patients was 28.8±6.2 years. The mode of delivery for 60.5%patients(n=23) was normal vaginal delivery and lower segmentcaesareansection in 39.5%(15) patients.94.7%(36) patients were asymptomatic in the present study. Out of all the patients only 2(5.3%) patients were on steroid and 2(5.3%) patient were given low flow oxygen. Out of these patients only 1(2.6%) patient went on high flow oxygen and then mechanical ventilator support and later on expired after 8 day.Maximum patients in the present study were hospitalized for 3-5 days.

Figure 1: Age groups of pregnant females with Covid-19 infection

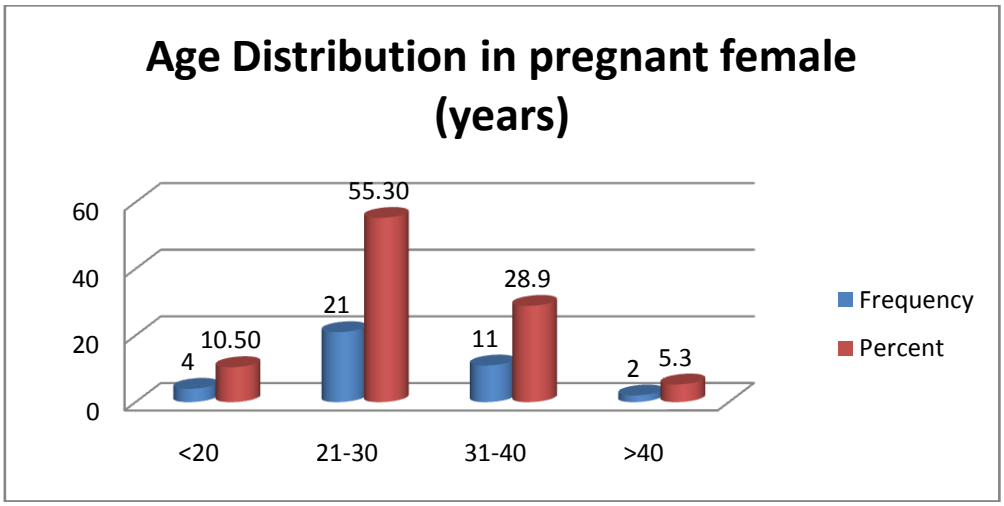

Figure 2: Mode of Delivery

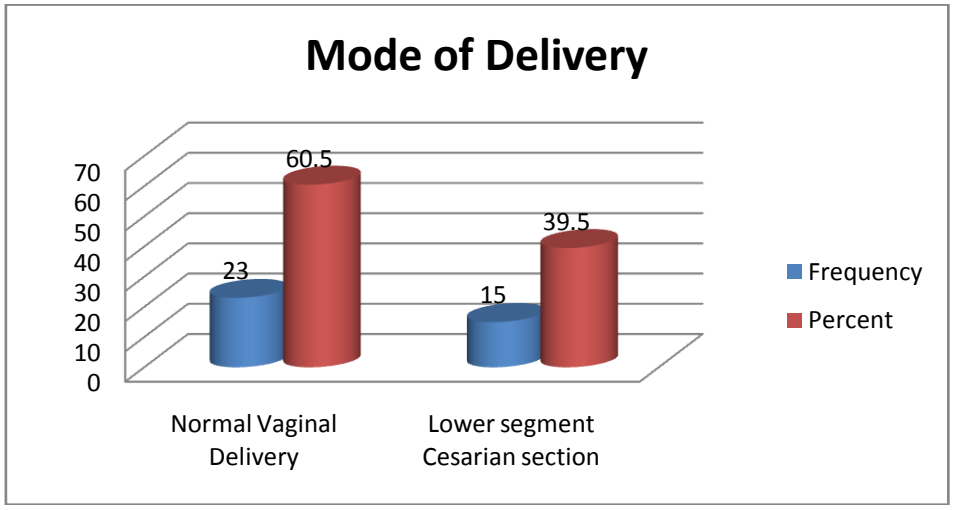

Figure 3: Days of Hospitalization

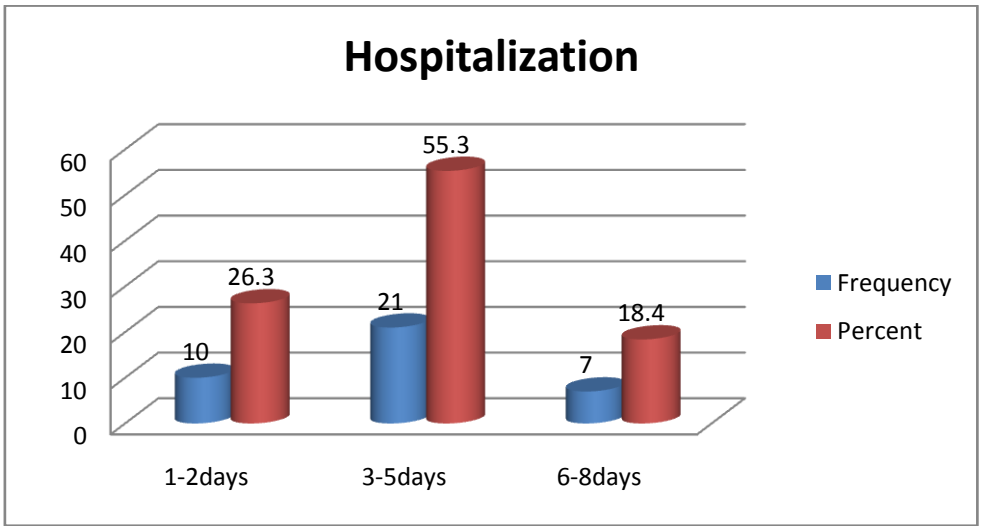

Table 1: Correlation between hospitalization Days and Age group

Hospitalization days	1-2 Days		3-5 Days		6-8 Days		Total		Chi square
Age group									
19-20	4	40.00%	0	0.00%	0	0.00%	4	10.50%	.013
21-30	3	30.00%	12	57.10%	6	85.70%	21	55.30%	
31-40	3	30.00%	7	33.30%	1	14.30%	11	28.90%	
41-50	0	0.00%	2	9.50%	0	0.00%	2	5.30%	
	10	100.00%	21	100.00%	7	100.00%	38	100.00%	

Significant correlation was observed between hospitalization days and age group with patients who were less than 20 years. They were admitted to hospital only for 1-2 days while higher age groups had more day of stays. No correlation between age and mode of delivery, hospitalization and age recovery. The mortality rate of thispresent series was 2.5%.

DISCUSSION:

During the first wave of the Covid-19 pandemic in the India, total 223 patients of COVID 19 were analysed in MaharishiMarkendeshwarMedical College and Hospital, including 38 pregnant women. In this study, we analysed pregnant women who were Covid19-positive.

In the present study, the mean maternal age of all pregnant women admitted for delivery was 28.8 years which was similar to Gupta et al.,[10] who reported mean age of patients to be 25 years. Smith et al.,[11] in 2020 conducted a systemic review reported the mean maternal age of 30 years in pregnant women at term. Hassan et al.,[12] and Breslin et al.,[13]reported the mean age of the study group to be 27.3±4 years and 29.7 years respectively which was again similar to the present study.

94.7%(36) patients were asymptomatic in the present study. Out of all the patients 2(5.3%) patients were on steroid and 2(5.3%) patient were given low flow oxygen support. Out of these patients 1(2.6%) patient went to high flow oxygen and gradually mechanical ventilator support and later on expired after 8 days. Maximum patients in the present study were hospitalized for 3-5 days. The results of the present study were similar to the study by Gupta et al.,[10]where 90.6% of total pregnant women were asymptomatic at the time of admission. In a study by, Sutton et al.,[14] Maru et al.,[15] and Vintzileos et al.,[16]

at time of admission 85%, 72% and 77% of admitted pregnant women for delivery were asymptomatic.

In present study the c section rate was 39.5% which was more than the normal population. The risk of C-section was significantly more in COVID-19 group.[17]The overall rate of caesarean section deliveries in India is around 17%. However, the CDC reported more than 31% of all deliveries in the U.S. were by C-section. In the pregnant patients with COVID in this study, the rate of caesarian section was somewhat higher. Hassan et al., also in their study reported around 60.5% rate of c section in COVID infected mothers. The range of C-section deliveries in the study in previous studies have been around 30%- 84% .[18]

Getting COVID-19 infection increases complex viral infection among women in pregnancy; therefore, C-section is recommended to reduce perinatal and neonatal adverse outcomes.

In present study age of the patients had a positive association with the hospitalization days. Most of the patient in this present study was hospitalized for 3-5 days. It was observed that younger patients were hospitalized for less duration than older ones.

In present study mortality rate was 2.6% which was similar to reported by Smith et al.,[11] who in their systemic review reported the mortality rate to be 3.92%. Knight et al.,[19] reported mortality rate to be 5.8 % which was greater than the results found in the present study. A

study conducted in the UK reported a maternal mortality to be 1-4% which was comparable to the present study.[20,21]

This study has several strengths and limitations. The major merit being that it will make healthcare providers aware of the possible outcomes in pregnant women detected with COVID-19. The major limitations as of now are: it was an observational study based on a single tertiary level Covid-19 care hospital and included a small sample size which belonged to a very limited socio-demographic region.

CONCLUSION

COVID-19 infection was associated with higher rates of caesarean section in pregnant women. However COVID-19 cannot be considered as an indication for caesareansection delivery. Patients with increased age were hospitalised formore days thanyounger patient. Healthcare providers may consider these for effective management of COVID-19 infected pregnant women, which would reduce pregnancy related adverse consequences, including maternal and new-born morbidity and mortality. However, the overall morbidity and mortality in the Covid-19 positive pregnant group was not significantly higher in comparison with the non-pregnant covid-19 positive patients.

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