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Original Research Article

Clinical profile and outcome of COVID positive obstetric patients in a tertiary care hospital: a retrospective study

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ABSTRACT

Background: To study clinical profile, maternal and fetal outcome in COVID positive pregnancies.

Methods: A retrospective observational study was done at Lalla ded hospital, Kashmir, a tertiary care centre. 70 COVID positive pregnant women who were admitted from May 2020 to January 2021 were included in the study.

Results: The incidence of COVID positive patients in our study was 11.47%. 60% of patients in our study belonged to 26-30 years age group. 50% patients were primigravida, 20% were second gravid. Among the study population, 31 (44.3%) patients were term while 22 (31.4%) were preterm. Most patients were asymptomatic (61.4%). Among symptomatic patients, maximum had fever (17.1%) followed by cough (10%) and shortness of breath (4.3%). Associated comorbidity was seen in 33 patients (47.1%). Hypertensive disorders of pregnancy were seen in majority i.e. 15.7%, followed by anaemia (11.4%), GDM (8.5%) and hypothyroidism (7.1%). Out of total study population of 70, emergency cesarean delivery (LSCS) was done in 29 patients (41.5%). 21 patients delivered vaginally (30%). Two post-LSCS patients were shifted to designated COVID Intensive care unit (ICU). One patient from the study group died. There were total of 50 deliveries, 10 babies had Neonatal ICU admission (20%), Low birth weight in 9 (18%). Low APGAR score was in 6 (12%). There were 2 stillbirths in the study population.

Conclusions: COVID presents as milder disease in pregnancy, but it may be severe in those with associated comorbidities. More studies on susceptibility of pregnant women to infection by COVID-19 are required.

Keywords: COVID-19, Maternal outcome, Fetal outcome

INTRODUCTION

Corona viruses are a group of single stranded RNA, non-segmented, enveloped viruses that can cause illness in humans and animals. Novel CoV (SARS-CoV-2) is a newly discovered strain of coronavirus causing covid-19. Other human coronavirus infections cause mild to moderate upper respiratory illness like common cold, Middle East respiratory syndrome (MERS-CoV) and severe acute respiratory syndrome (SARS-CoV).¹ Outbreak of COVID-19 was first noticed in a seafood market in Wuhan city in Hubei province of China in December 2019 and has now spread worldwide, leading

to an ongoing pandemic.² WHO declared it as the 6th public health emergency of international concern on 30th January 2020. Subsequently, WHO declared COVID-19 as a pandemic on 11th march 2020.³ Most global cases of COVID-19 have evidence of human to human transmission, known to occur most often through close contact with an infected person (within 2 meters) or from contaminated surfaces. The incubation period varies from 2 days to 2 weeks following exposure to the virus.⁴ COVID-19 is still an emerging and actively spreading disease worldwide. An important population that deserves meticulous consideration during the COVID-19 pandemic is the pregnant.

Pregnant women do not appear more likely to contract infection than general population.⁵⁻⁷ Most pregnant women will experience only mild to moderate cold or flu. Cough, fever, shortness of breath, running nose, headaches and anosmia are other relevant symptoms.⁸ Pregnancy is regarded as an immune compromised state in some aspects, especially since maternal immunity is altered to tolerate fetal antigens by suppressing cell-mediated immunity.⁹ A whole cluster of systemic effects which propagate the risk of complications from respiratory infections arise due to altered physiological and immunological state that is typical component of pregnancy. The cardiovascular and respiratory component of these changes along with development of an immunological adaptation that allows the maternal body to tolerate antigenically diverse fetus, inflate the risk toward development of severe respiratory disease.¹⁰ The changes in the immune system of pregnant women make them more susceptible to infectious processes, in addition to the manifestations of the infection, with the risk of adverse maternal and neonatal complications, premature birth, spontaneous abortion, application of endotracheal intubation, restriction of intrauterine growth, hospitalization in an intensive care unit, renal failure, intravascular coagulopathy, and transmission to the fetus or newborn.¹¹ To date, there is no conclusive evidence of vertical transmission of Covid-19.^{12,13} Although transmission of virus to fetus or baby during delivery or pregnancy has not been proven, presence of antibodies has already been identified namely specific IgG for viruses in neonatal serum samples.¹⁴ Current studies on the susceptibility of pregnant women to infection by COVID-19 are still incipient. This study aims to add to the limited knowledge we have with regards to COVID-19 infection and pregnancy.

METHODS

A retrospective, observational study was conducted in the Lalladed hospital which is a tertiary care hospital of Kashmir, India from May 2020 to January 2021. All pregnant women who were admitted in this hospital during the study period and who turned out COVID positive by RT-PCR test irrespective of their period of gestation were included in the study. An isolation facility, separate from the main hospital had been set up to cater to the COVID positive pregnant women amid the ongoing pandemic. A total of 610 patients who were suspected to have COVID-19 presented to the isolation facility. Out of these, 70 patients were COVID positive by RT-PCR test and were included in this study. Various clinico-epidemiological parameters, maternal and fetal outcome were thoroughly studied among the selected patients.

RESULTS

In our study 610 pregnant patients presented to isolation facility who were suspected to have COVID infection during the study period. Among these, total admitted

pregnant women who came out to be COVID positive by RT-PCR were 70. So the incidence of COVID positive patients in our study was 11.47%.

Table 1: Age distribution.

Age (years)	N	%
20-25	7	10
26-30	42	60
31-35	17	24.3
Above 35	4	5.7

Table 2: Parity.

Parity	N	%
Primigravida	35	50
G2	14	20
G3 and above	21	30

Table 3: Residence.

Residence	N	%
Urban	15	21.4
Rural	55	78.6

Table 4: Period of gestation.

Period of gestation	N	%
Before viability	9	12.9
Preterm	22	31.4
Term	31	44.3
Post-dated	8	11.4

Majority of patients in our study belonged to 26-30 years age group i.e. 60%. This was followed by 31-35 years age group which made 24.3% of all the study population. In our study, 50% patients were primigravida, 20% were second gravida. Rest were third gravida and above. Majority of our study population was rural i.e.78.6%. Among the study population, 31(44.3%) patients were term while 22 (31.4%) were preterm. 9(12.9%) presented before age of viability while as 8 (11.4%) were post-dated. Most patients were asymptomatic (61.4%) and had no symptom specific of COVID-19. Among symptomatic patients maximum had fever (17.1%), followed by cough (10%) and shortness of breath (4.3%). Other relevant symptoms were chills, headache and running nose. Majority of patients who had no COVID specific symptoms, came with labour pains (32.6%). This was followed by decreased perception of fetal movements (23.3%), leaking per vaginum (18.7%) and bleeding per vaginum (13.9%). Two patients (4.6%) had USG documented ruptured ectopic while three (6.9%) had missed abortion.

Associated comorbidity was seen in 33 patients (47.1%) among the study population. Hypertensive disorders of pregnancy were seen in majority i.e.15.7%, followed by

anaemia (11.4%), GDM (8.5%) and hypothyroidism (7.1%). Asthma was found in 2 patients (2.8%) and 1 patient had history of anti-tubercular therapy intake. Out of total study population of 70, emergency cesarean delivery (LSCS) was done in 29 patients (41.5%). LSCS was done for obstetric indications, most common being acute fetal distress. 21 patients delivered vaginally (30%). Thus incidence of LSCS was more than vaginal delivery in our study. Hysterotomy was done in 1 patient for chorioamnionitis. 3 patients underwent dilatation and curettage for missed abortion. Emergency laparotomy was done in 2 patients for ruptured ectopic. Eleven patients, who were remote from term, were managed conservatively according to laid guidelines.

Table 5: Presenting symptoms.

Presenting symptoms	N	%
Asymptomatic but with obstetric complaints	43	61.4
Fever	12	17.1
Shortness of breath	3	4.3
Cough	7	10
Chills	2	2.9
Headache	2	2.9
Rhinorrhoea	1	1.4

Table 6: Obstetric complaints in asymptomatic.

Obstetric complaints	N	%
Bleeding per vaginum	6	13.9
Leaking per vaginum	8	18.7
Decreased fetal movements	10	23.3
Labour pains	14	32.6
USG documented ruptured ectopic pregnancy	2	4.6
Missed abortion	3	6.9

Table 7: Associated comorbidity.

Associated condition	N	%
Hypertension/pregnancy induced hypertension	11	15.7
Gestational diabetes mellitus/diabetes mellitus	6	8.5
Anaemia	8	11.4
Asthma	2	2.8
Hypothyroidism	5	7.1
History of anti-tubercular therapy intake	1	1.4
Total	33	47.1

Two post-LSCS patients who required advanced inotropic support and critical care were shifted to designated COVID Intensive care unit (ICU). There was one death during the whole study period. The said patient was COVID positive with provisional diagnosis of severe pre eclampsia with pulmonary edema. During the study

period, there were total of 50 deliveries which included both cesarean and vaginal deliveries. Among them 10 babies required neonatal ICU admission (20%). Low birth weight was seen in 9 (18%). Low APGAR score was found in 6 (12%). There were 2 stillbirths which comprised 4% of total births in the study population.

Table 8: Maternal outcome.

Outcome	N	%
Emergency cesarean delivery	29	41.5
Vaginal delivery	21	30
Dilatation and curettage	3	4.2
Hysterotomy	1	1.4
Emergency laparotomy	2	2.8
Conservative management	11	15.9
Shifted to COVID intensive care unit	2	2.8
Death	1	1.4

Table 9: Fetal outcome.

Fetal outcome	N	%
Birth weight < 2500g	9	18
APGAR score <7 at 0 min	6	12
Neonatal ICU admission	10	20
Stillbirth	2	4

DISCUSSION

COVID-19 is a new and emerging disease, caused by a novel coronavirus that has not previously been seen in humans. The COVID-19 pandemic has been the biggest global public health crisis in this century. Pregnancy is a state that is particularly susceptible to infectious diseases, and it is unsurprising that viral infections may affect pregnancy outcomes; previous literature has revealed that viral respiratory illnesses may lead to a higher risk of obstetric complications and adverse perinatal outcome, primarily due to changes in the immune response.¹⁴⁻¹⁶ But the course of the disease has been found to be milder in pregnant women in most case series from across the globe.¹⁷

This study was a retrospective observational study in which 70 COVID positive pregnancies were studied in terms of various clinicodemographic factors, maternal as well as fetal outcomes. The incidence of COVID positive patients in our study was 11.47%. Majority of patients in our study belonged to 26-30 years age group i.e. 60%. In a study done by Vivanti et al mean age of COVID positive pregnant patients was 33.7 years while as in other study done by Yan et al mean age was 30. 3 years.^{18,19} Most of the patients i.e. 50% were primigravida. Among the study population, 31 (44.3%) patients were term while 22 (31.4%) were preterm. Among symptomatic patients maximum had fever (17.1%), followed by cough (10%) and shortness of breath (4.3%). In a study of pregnant women by Jeong et

al the proportions were 28%, 51%, and 21%, respectively.²⁰ Other relevant symptoms in our study were chills, headache and running nose. Associated comorbid conditions were also found in the study population. Hypertensive disorder of pregnancy was seen in majority i.e. 15.7%, followed by anaemia (11.4%), gestational diabetes mellitus (8.5%) and hypothyroidism (7.1%). Prevalence of hypertension and diabetes were found to be 3.7% and 4.2% in the study by Yee et al whereas those in a study done by Richardson et al were 56.6% and 33.8% respectively.^{20,21} In current study population of 70, emergency LSCS was done in 29 patients (41.5%). LSCS was done for obstetric indications, most common being acute fetal distress.²¹ patients delivered vaginally (30%). Thus incidence of LSCS was more than vaginal delivery in our study. Nayak et al conducted a study in which rate of cesarean section was 50% while Savasi et al reported a rate of 38.6%.^{22,23} Studies done by Chen et al and Yu et al reported similar results.^{24,25} Emergency laparotomy was done in 2 patients for ruptured ectopic. Eleven patients, who were remote from term, were managed conservatively according to laid guidelines. Two post-LSCS patients who required advanced inotropic support and critical care were shifted to designated COVID care ICU. There was one death during the whole study period. The said patient was COVID positive with provisional diagnosis of severe pre eclampsia with pulmonary edema. Among 50 deliveries in the study population, 10 babies required Neonatal ICU admission (20%). Low birth weight was seen in 9 (18%). Low APGAR score was found in 6 (12%). There were 2 stillbirths accounting for 4% of total births in the study population. Thus indicating that COVID-19 infection does not majorly effect the fetal outcome.

CONCLUSION

The COVID-19 pandemic has been the biggest global public health crisis in this century. The spread and impact of COVID-19 worldwide has been both devastating and unprecedented, and many key questions remain, especially in the context of women's health. This study is a little effort to add to the limited knowledge regarding the ongoing COVID-19 pandemic and pregnancy. Though COVID-19 presents as milder disease in pregnancy, but it may be severe in those with associated comorbidities. ACOG recommends that pregnant individuals have access to COVID-19 vaccines. Pregnant women were not part of the trials for the vaccines currently available under EUA; therefore the safety information available is limited. So further studies regarding COVID infection in pregnancy and efficacy and safety of vaccine is required.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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