Original Article

Study of clinico- epidemiological profile of COVID-19 positive pregnant females in a tertiary care hospital of Kumaon region

Mahima Rani[1], Mohd Najmul Aqib Khan[2], Shahzad Ahmad[3], Mohd Maroof[2], Prabhat Pant[4], Sadhana Awasthi[2]

Departments of [1]Obs. and Gynae, [2]Community Medicine, [3]ENT and [4]Pathology, Govt. Medical College, Haldwani, Uttarakhand, India

Abstract

Introduction: Pregnant females are considered as a high-risk group for the prevention and control of various communicable diseases. Therefore, this research was undertaken to study the clinic-epidemiological profile and biochemical parameters of COVID-19-positive pregnant females in a tertiary care hospital. **Methods:** This hospital-based retrospective study was done on COVID-19-positive pregnant females admitted during April 2020–March 2021. A total of 139 patients were included in the study. Clinical, epidemiological, hematological, and biochemical profiles were described using frequency, percentages, mean, standard deviation using Microsoft Excel software. **Results:** The mean age of study participants was 25.36 ± 3.79 years, mean duration of pregnancy was 37.53 ± 3.31 weeks. The majority of the patients were asymptomatic (89.2%). Abdominal pain was the most common symptom (66.7%) among symptomatic. All patients were managed conservatively. **Conclusion:** The study showed the mild nature of COVID-19 among pregnant females as the majority of them pregnant were asymptomatic and few presented with mild symptoms.

Keywords: Clinical profile, COVID-19, epidemiological profile, Kumaon, pregnant females

Introduction

Pregnant women do not have a higher risk of COVID-19 infection but are at higher risk of severe disease if infected than nonpregnant females and the risk of preterm birth is higher in babies born to COVID-19 infected females.[1] COVID-19 infection during pregnancy can lead to stillbirth and preterm birth.[2-4] Approx. two-thirds of pregnant women with COVID-19 are asymptomatic, mild cold or flu-like symptoms are the most common among symptomatics.[5] Most of the published literature related to

COVID-19 and pregnancy comes from China and other developed countries. There is a paucity of studies in India. The study was done in a dedicated COVID-19 tertiary care hospital which alone caters to the entire population of the Kumaon region of Uttarakhand. The study will add to evidence about clinico- epidemiological profile of pregnant females that will help the physicians involved in patient care to take rational and timely decisions regarding the management of cases. Therefore, the research was designed to study clinic-epidemiological profile and biochemical parameters of COVID-19 positive pregnant females in a tertiary care hospital.

Materials and Methods

The study was a descriptive hospital-based retrospective study conducted among pregnant females admitted in Susheela Tiwari

Address for correspondence: Dr. Mohd Maroof, Department of Community Medicine, Govt. Medical College, Haldwani, Uttarakhand - 263 139, India. E-mail: maroof2k5@gmail.com

Access this article online

Quick Response Code:

Website:
www.jfmpc.com

DOI:
10.4103/jfmpc.jfmpc_1762_21

How to cite this article: Rani M, Khan MNA, Ahmad S, Maroof M, Pant P, Awasthi S. Study of clinico- epidemiological profile of COVID-19-positive pregnant females in a tertiary care hospital of Kumaon region. J Family Med Prim Care 2022;11:336-9.

hospital, Haldwani during April 2020–March 2021. All COVID-19 positive pregnant females admitted in the study period were included in the study. A total of 139 patients were included in the study. The study questionnaire collected information regarding epidemiological profile, clinical features, risk factors, hematological profile, and biochemical profile of study participants. The study approval was obtained from Institution Ethics Committee, Govt. Medical College, Haldwani. The privacy and confidentiality of study participants were ensured. The data were entered and analyzed using Microsoft Excel. Frequency, percentages, mean, and standard deviation (SD) were calculated for descriptive analysis.

Results

The study was done to study the clinical- epidemiological profile of pregnant females admitted in a tertiary care hospital. The mean age of study participants was 25.36 ± 3.79 years. Most of the patients were admitted in the third trimester (98.6%) where the mean duration of pregnancy in the study population was 37.53 ± 3.31 weeks [Table 1].

As per the clinical profile, the majority of the patients were asymptomatic (89.2%). Most of the symptomatic patients presented with only one symptom (73.3%) [Table 2]. Abdominal pain was the most common symptom (66.7%) followed by cough (20%), fever (13.3%), loss of smell and taste (13.3%) [Figure 1].

As per the risk factors, comorbidity was present in only two (1.4%) patients (hypothyroidism-1, epilepsy-1). A total of 25.9% of them had a history of the previous operation in which lower segment cesarean section (LSCS) was the commonest (72.2%) [Table 2, Figure 2]. All patients were managed conservatively.

As per the hematological parameters, mean Hb was 9.96 ± 1.48 g/dL, mean platelets count was 2.06 ± 0.83 lacs, and TLC was 9032.26 ± 3604.72. Mean BT and mean CT were 3.04 ± 1.25 s and 5.28 ± 0.42 s, respectively. As per the biochemical profile, mean SGOT and SGPT were 44.08 ± 44.39 and 34.70 ± 37.55, respectively, mean s. urea was 19.49 ± 12.70, mean s. creatinine was 0.63 ± 0.24, whereas mean serum electrolytes Na and K were 137.28 ± 4.11 and 4.51 ± 0.82, respectively [Table 3].

Discussion

The mean age of our study population was 25.36 ± 3.79 years. The study done by Yan et al.[6] reported that the mean age of

the study population was 30.8 ± 3.8 years. The study done by Dashraath et al.[7] showed that the study participants belonged to the age group 23–40 years. The study done by Chen et al.[8] highlighted that the mean age of study participants was 29.89 ± 4.83 years. The study done by Yu et al.[9] reported the mean age of study participants was 32.14 ± 2.12 years. The study done by Chen et al.[10] showed that the median age of study participants was 31 years (IQR, 28- 34). The study done by Bachani et al.[11] reported that the mean age of study participants was of 26.7 ± 4.5 years. The study done by Liu et al.[12] highlighted that the mean age of study participants was 32 ± 5 years. The study done by Breslin et al.[13] reported mean age of study participants was 33.86 ± 4.60 years. The study done by Cardona-Perez et al.[14] showed that the median age of COVID-19 positive pregnant females was 26 years (range, 13-45).

Most of the patients were admitted in the third trimester (98.6%), and the mean gestational age in the study population was 37.53 ± 3.31 weeks in our study. The study done by Yan et al.[6]
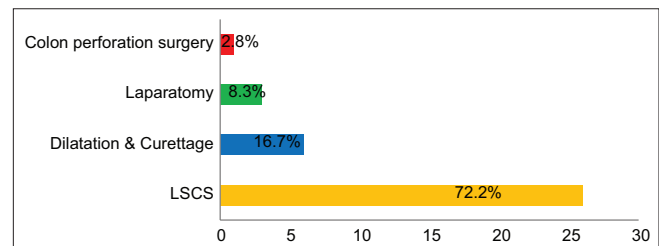
Table 1: Epidemiological profile of study participants

	(Mean±SD)/n (%)
Age in years (n=139)	25.36±3.79
Gestational age in weeks (n=139)	37.53±3.31
Duration of pregnancy	
1st trimester	0 (0)
2nd trimester	2 (1.4)
3rd trimester	137 (98.6)

Table 2: Clinical profile and risk factors of study participants

	n (%)
Symptoms	
Asymptomatic	124 (89.2)
Symptomatic	15 (10.8)
No. of symptoms	
1	11 (73.3)
2	2 (13.3)
3	2 (13.3)
Co- morbidity	
No	137 (98.6)
Yes	2 (1.4)
Previous history of operation	
No	103 (74.1)
Yes	36 (25.9)
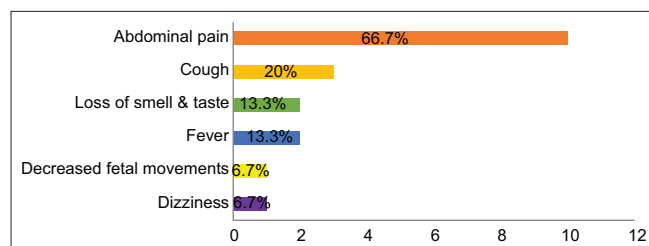
Figure 1: Symptomatic profile of study participants

Figure 2: Types of previous operations

Table 3: Hematological, biochemical profile of study participants	
	(Mean±SD)/Median (IQR)
Hb in gm/dL (*n*=139)	9.96±1.48
TLC *10^9/L (*n*=139)	8.7 (6.6-10.7)
Platelet counts *10^9/mm³ (*n*=139)	192 (153-230)
SGOT (*n*=39)	32 (21-54)
SGPT (*n*=39)	22 (12-41)
S. urea (*n*=31)	19.49±12.70
S. creatinine (*n*=56)	0.63±0.24
RBS (*n*=18)	86.26±21.22
Na (*n*=18)	137.28±4.11
K (*n*=18)	4.51±0.82
BT (*n*=6)	3.04±1.25
CT (*n*=6)	5.28±0.42

showed that the median gestation age in their study population was 38.0 (IQR, 36.0- 39.1) weeks. The study done by Dashraath *et al*.[7] reported that most of the study participants belonged to the third trimester (96.4%). The study done by Chen *et al*.[8] highlighted that all study participants were admitted in the third trimester. The study done by Yu *et al*.[9] reported that all patients were admitted in the third trimester, and the mean gestational age of their study population was 39 weeks and 1 day. The study done by Chen *et al*.[10] reported that most of their study participants were admitted in the third trimester (63.6%). The study done by Liu *et al*.[12] showed that the mean gestational age of their study population was 32 ± 8 weeks. The study done by Breslin *et al*.[13] reported all study patients were admitted in the third trimester. The study done by Cardona-Perez *et al*.[14] showed that most of the COVID-19 positive pregnant females were admitted in the third trimester (90%), and the median gestational age of COVID-19 positive pregnant females was 38 years (range, 16- 41). The study done by Priyadharshini *et al*.[15] showed that most of the study participants were admitted in the third semester (83.5%).

In our study population, the majority of the patients were asymptomatic (89.2%). However, the other studies showed fewer asymptomatic patients among the study population like the study done by Yan *et al.*,[6] Yu *et al.*,[9] Chen *et al.*,[10] Bachani *et al.*,[11] Liu *et al.*,[12] Breslin *et al.*,[13] Kayem *et al.*[16] reported 23.3%, 14.3%, 5.1%, 17.5%, 13.3%, 28.6%, 19.4% asymptomatic patients, respectively. The study done by Priyadharshini *et al*.[15] showed that most of the study participants were asymptomatic 67.2%.

In our study participants, abdominal pain was the most common symptom (66.7%) followed by cough (20%), fever (13.3%), loss of smell and taste (13.3%) among symptomatic patients, whereas the study done by Yan *et al*.[6] reported fever as the most common symptom (50.9%) followed by cough (28.4%), fatigue (12.9%), sore throat (8.6%), etc., The study done by Dashraath *et al*.[7] showed fever as the most common symptom (84%) followed by cough (28%), dyspnea (18%). The study done by Yu *et al*.[9] highlighted fever as the most common symptom (86%), followed by cough (14%), shortness of breath (14%), and diarrhea (14%).

The study done by Chen *et al*.[10] reported fever as the most common symptom (75%) followed by cough (73.2%), chest tightness (17.9%), fatigue (17%), etc., The study done by Bachani *et al*.[11] showed fever as the most common symptom (78.9%) followed by cough (5.3%), respiratory distress (5.3%), diarrhea (3.5%). The study done by Liu *et al*.[12] highlighted fever as the most common symptom (100%) followed by cough (69.2%), fatigue (30.8%), myalgia (23.1%). The study done by Breslin *et al*.[13] reported cough (42.8%) and myalgia (42.8%) as most frequent symptoms followed by fever (28.6%), headache (28.6%), and chest pain (28.6%). The study done by Kayem *et al*.[16] showed that the most frequent symptoms were cough followed by, fever, anosmia, and dyspnea, etc., The study done by Priyadharshini *et al*.[15] showed that the most common symptom was fever (56%), followed by cough (28.8%), etc.

The mean hemoglobin (Hb) in our study population was 9.96 ± 1.48 gm/dL. The study done by Chen *et al*.[10] reported median Hb to be 11.6 gm/dL (IQR, 10.8– 12.8) among the study population. The study done by Bachani *et al*.[11] showed mean Hb to be 10.25 ± 1.98 gm/dL among the study population.

The median platelet count in our study population was 192 (153– 230) *10^9/mm³. The study done by Chen *et al*.[10] reported median platelet count was 190 (IQR, 152– 244) *10^9/mm³ in their study participants. The study done by Bachani *et al*.[11] showed median platelet count was16570 (IQR, 92500) in their study population. The study done by Breslin *et al*.[13] reported median platelet count was 200.5 (167.25– 260.25)*10^9/mm³ in their study population.

The median total leucocyte count (TLC) in our study population was 8.7 (6.6–10.7) *10^9/L. The study done by Yan *et al*.[6] reported median TLC was 7.9 (IQR, 5.9– 10.6) *10^9/L in their study participants. The study done by Chen *et al*.[8] showed median TLC of 7.63 (IQR, 8.6–9.65) *10^9/L in their study participants. The study done by Chen *et al*.[10] observed median TLC to be 6.6 (IQR, 4.9 8.5) *10^9/L in their study participants. The study done by Bachani *et al*.[11] reported median TLC to be 9.7 (IQR, 5.3) *10^9/L in their study participants. The study done by Breslin *et al*.[13] reported median TLC to be 6.65 (IQR, 5.18- 7.32) *10^9/L.

The median serum glutamic oxaloacetic transaminase (SGOT) in our study population was 32 (IQR, 21–54), whereas the median serum glutamic pyruvic transaminase (SGPT) was 22 (IQR, 12–41). The study done by Chen *et al*.[8] reported median SGOT to be 24 (IQR, 21.5–73.5) whereas median SGPT to be 16 (IQR, 10.5–58).

Conclusion

The study concludes that the majority of the patients were asymptomatic, whereas the rest presented with minor symptoms with average normal hematological and biological profiles, but still, some studies showed an increased risk of severe disease therefore, COVID-appropriate behavior and vaccination among

pregnant females remain the mainstay of focus to decrease mortality and morbidity among pregnant females as well as to ensure the safety of the unborn child.

Summary

The present study highlights the clinicoepidemiological profile of COVID-19 positive pregnant females showing asymptomatic/mild symptomatic, managed conservatively, providing add-on evidence thereby will guide the treating physician in providing evidence-based care to the patients.

Financial support and sponsorship

Conflicts of interest

There are no conflicts of interest.

References

1. World Health Organization (WHO). Coronavirus Disease (COVID-19): Pregnancy and Childbirth. WHO; 2020. Available from: https://www.who.int/news-room/q-a-detail/coronavirus-disease-covid-19-pregnancy-and-childbirth. [Last accessed on 2021 Aug 13].

2. Woodworth KR, Olsen EO, Neelam V, Lewis EL, Galang RR, Oduyebo T, *et al.* Birth and infant outcomes following laboratory-confirmed SARS-CoV-2 infection in pregnancy—SET-NET, 16 jurisdictions, March 29–October 14, 2020. MMWR Morb Mortal Wkly Rep 2020;69:1635-40.

3. Delahoy MJ, Whitaker M, O'Halloran A, Chai SJ, Kirley PD, Alden N, *et al.* Characteristics and maternal and birth outcomes of hospitalized pregnant women with laboratory-confirmed COVID-19—COVID-NET, 13 states, March 1–August 22, 2020. MMWR Morb Mortal Wkly Rep 2020;69:1347-54.

4. Panagiotakopoulos L, Myers TR, Gee J, Lipkind HS, Kharbanda EO, Ryan DS, *et al.* SARS-CoV-2 infection among hospitalized pregnant women: Reasons for admission and pregnancy characteristics—eight U.S. health care centers, March 1–May 30, 2020. MMWR Morb Mortal Wkly Rep 2020;69:1355-9.

5. (RCOG) TRC of O and G. Coronavirus infection and pregnancy [Internet]. 2021. Available from: https://www.rcog.org.uk/en/guidelines-research-services/guidelines/coronavirus-pregnancy/covid-19-virus-infection-and-pregnancy/#pregnancy. [Last accessed on 2021 Aug 13].

6. Yan J, Guo J, Fan C, Juan J, Yu X, Li J, *et al.* Coronavirus disease 2019 in pregnant women: A report based on 116 cases. Am J Obstet Gynecol 2020;223:111.e1.

7. Dashraath P, Nielsen-Saines K, Madhi SA, Baud D. COVID-19 vaccines and neglected pregnancy. Lancet 2020;396;e22.

8. Chen H, Guo J, Wang C, Luo F, Yu X, Zhang W, *et al.* Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: A retrospective review of medical records. Lancet 2020;395:809-15.

9. Yu N, Li W, Kang Q, Xiong Z, Wang S, Lin X, *et al.* Clinical features and obstetric and neonatal outcomes of pregnant patients with COVID-19 in Wuhan, China: A retrospective, single-centre, descriptive study. Lancet Infect Dis 2020;20:559-64.

10. Chen L, Li Q, Zheng D, Jiang H, Wei Y, Zou L, *et al.* Clinical characteristics of pregnant women with Covid-19 in Wuhan, China. N Engl J Med 2020;382:e100.

11. Bachani S, Arora R, Dabral A, Marwah S, Anand P, Reddy KS, *et al.* Clinical profile, viral load, maternal-fetal outcomes of pregnancy with COVID-19: 4-week retrospective, tertiary care single-centre descriptive study. J Obstet Gynaecol Canada 2021;43:474-82.

12. Liu D, Li L, Wu X, Zheng D, Wang J, Yang L, *et al.* Pregnancy and perinatal outcomes of women with coronavirus disease (COVID-19) Pneumonia: A preliminary analysis. Am J Roentgenol 2020;215:127-32.

13. Breslin N, Baptiste C, Miller R, Fuchs K, Goffman D, Gyamfi-Bannerman C, *et al.* Coronavirus disease 2019 in pregnancy: Early lessons. Am J Obstet Gynecol MFM 2020;2:100111.

14. Cardona-Pérez JA, Villegas-Mota I, Helguera-Repetto AC, Acevedo-Gallegos S, Rodríguez-Bosch M, Aguinaga-Ríos M, *et al.* Prevalence, clinical features, and outcomes of SARS-CoV-2 infection in pregnant women with or without mild/moderate symptoms: Results from universal screening in a tertiary care center in Mexico City, Mexico. PLoS One 2021;16:e0249584.

15. Priyadharshini CB, Priya S, Selvameena M, Waseemsha S, Muthurajesh E, Shalini M. Demographic profile of COVID-19 positive mothers and their outcome in government Rajaji hospital, Madurai, Tamilnadu – A cross sectional study. Clin Epidemiol Glob Heal 2021;12:100864.

16. Kayem G, Lecarpentier E, Deruelle P, Bretelle F, Azria E, Blanc J, *et al.* A snapshot of the Covid-19 pandemic among pregnant women in France. J Gynecol Obstet Hum Reprod 2020;49:1-5.