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

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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 clinico-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

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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] highlighted that the mean age of study participants was 29.89 ± 4.83 years. The study done by Yu et al.[8] reported the mean age of study participants was 32.14 ± 2.12 years. The study done by Chen et al.[9] reported the mean age of study participants was 26.7 ± 4.5 years. The study done by Yu et al.[10] highlighted that the mean age of study participants was 32 ± 5 years. The study done by Breslin et al.[11] reported mean age of study participants was 32.86 ± 4.60 years. The study done by Cardona-Perez et al.[12] 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] reported the mean age of study participants was 25.36 ± 3.79 years. The study done by Yan et al.[6] reported that the mean age of study participants was 30.8 ± 3.8 years. The study done by Dashraath et al.[7] highlighted that the mean age of study participants was 29.89 ± 4.83 years. The study done by Chen et al.[8] reported the mean age of study participants was 32.14 ± 2.12 years. The study done by Yu et al.[9] reported the mean age of study participants was 26.7 ± 4.5 years. The study done by Liu et al.[10] highlighted that the mean age of study participants was 32 ± 5 years. The study done by Breslin et al.[11] reported mean age of study participants was 32.86 ± 4.60 years. The study done by Cardona-Perez et al.[12] showed that the median age of COVID-19 positive pregnant females was 26 years (range, 13-45).

**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

| Parameter     | Median (IQR)     | Mean±SD (n) |
|---------------|------------------|-------------|
| Hb (g/dL)     | 9.06±1.48 (n=139) |             |
| TLC (*10⁹/L)  | 8.7 (6.6–10.7) (n=139) |             |
| Platelet counts (*10⁹/mm³) | 192 (153–230) (n=139) |             |
| SGOT (IU/L)   | 32 (21–54) (n=39)  |             |
| SGPT (IU/L)   | 22 (12–41) (n=39)  |             |
| S. urea (mg/dL) | 19.49±12.70 (n=31) |             |
| S. creatinine (mg/dL) | 0.63±0.24 (n=56)  |             |
| RBS (mg/dL)   | 86.26±21.22 (n=18) |             |
| Na (mEq/L)    | 137.2±8.4 (n=18)  |             |
| K (mEq/L)     | 4.5±0.82 (n=18)   |             |
| BT (*10⁹/L)   | 3.04±1.25 (n=6)   |             |
| CT (*10⁹/L)   | 5.28±0.42 (n=6)   |             |

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.¹⁴ 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 g/dL. The study done by Chen et al.¹⁰ reported median Hb to be 11.6 g/dL in their study population. The study done by Bachani et al.¹¹ showed mean Hb to be 10.25 ± 1.98 g/dL in the study population.

The median platelet count in our study population was 192 (153–230) *10⁹/mm³. The study done by Chen et al.¹⁰ reported median platelet count was 190 (IQ, 152–244) *10⁹/mm³ in their study participants. The study done by Bachani et al.¹¹ showed median platelet count was 16570 (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) *10⁹/mm³ in their study population.

The median total leucocyte count (TLC) in our study population was 8.7 (6.6–10.7) *10⁹/L. The study done by Yan et al.⁶ reported median TLC was 7.9 (IQR, 5.9–10.6) *10⁹/L in their study participants. The study done by Chen et al.¹⁰ showed median TLC of 7.63 (IQR, 8.6–9.65) *10⁹/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) *10⁹/L in their study participants. The study done by Bachani et al.¹¹ reported median TLC to be 9.7 (IQR, 5.3) *10⁹/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) *10⁹/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.¹⁰ reported median SGOT to be 24 (IQR, 21.5–73.5) whereas median SGPT to be 16 (IQR, 10.5–58).

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 should be encouraged.
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.

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Conflicts of interest
There are no conflicts of interest.

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