Original Research Article

Indications of Obstetric interventions in COVID-19 pneumonia in pregnant patients at Latifa hospital Dubai- UAE

Abstract

Severe acute respiratory syndrome coronavirus-2 is emerged pandemic. Two-thirds of identified pregnant women have no symptoms.

Objective:

Todetermine the indications of Obstetric interventions in COVID-19 pregnant at Latifa hospital. Dubai, UAE

Material

The study included all cases of COVID- 19 who underwent intervention during their pregnancy

Methods

This is total coverage cross sectional analytic study for COVID- 19 pregnant women in Latifa Hospital December 2020- June 2021.

The data were collected analysed and layout using computer facilities and Statistical Package for Social Sciences version 26.

Results

Among the group 28 cases dyspnoea was seen in 19 patient (67.9%) cough and fever 17 cases for each (60.7%).

Most were Multiparous women.

The main indication was maternal deterioration 15 patients (53.6%). Fetal distress 7 patients (25%), and 2 patients (7.1%) for each: failed induction, pre- eclampsia, abruptio placenta with fetal distress

Conclusion.

Maternal condition deterioration is main indication for intervention

Keywords: Obstetric interventions, Covid 19, Severe acute respiratory syndrome, Nucleic acid amplification

Introduction

Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is the novel coronavirus first out broke in Wuhan, China which causes coronavirus disease 2019 (COVID-19). Pneumonia caused by the Novel coronavirus disease 2019 (COVID-19) is a highly infectious disease and the ongoing outbreak has been declared as a Pandemic by the World health organization.(1,2)

Nasopharyngeal swab is test of choice in which Nucleic acid amplification testing (NAAT), most commonly with a reverse-transcription polymerase chain reaction (RT-PCR) assay and Antigen tests, to detect SARS-CoV-2 RNA from the upper respiratory tract is the preferred initial diagnostic test for COVID-19. Serological testing to detect antibodies to SARS-CoV-2 can identify patients who had suffered from the infection in the recent past or within 2 weeks duration (3)

Pregnant women appear no more or less likely to contract SARS-CoV-2 than the general population, and more than two-thirds of identified pregnant women have no symptoms. The most common symptoms of COVID-19 in pregnant women are cough and fever.

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There is limited data available for COVID-19 in pregnancy as the disease has newly emerged. Most of the data came from clinical observations, case series, and case studies. There is lack of enough evidence-based data and cohort studies published to give a complete picture of the disease spectrum in pregnancy. Pregnant women have been at higher risk for severe morbidity and mortality during prior epidemic respiratory illnesses, with data from seasonal influenza, the 2009 H1N1 pandemic, and the severe acute respiratory syndrome epidemic showing higher rates of intensive care unit admission, intubation, and death compared with non-pregnant patients. (4,5)

The maternal immune system faces challenges in establishing and maintaining tolerance to the foetus and simultaneously defending against microbial challenges. Physiological changes that occur in the respiratory and circulatory systems during pregnancy, such as an elevated diaphragm, enhanced oxygen consumption and oedema of the mucosa of the respiratory tract, reduce tolerance to hypoxia and can worsen clinical outcomes when infected with a virus. This makes the women more vulnerable to severe symptoms from viralinfections, as seen in studies of the common flu, severeacuterespiratory syndrome (SARS) and Middle East respiratory syndrome.(6,7)

Vaccination in pregnancy against COVID-19 is strongly recommended and should be offered at the same time as the rest of the population based on age and clinical risk, COVID-19 vaccines can be given at any time in pregnancy.

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In the United States, the National Institutes of Health (NIH) have categorized degrees of disease severity in nonpregnant persons as follows (8)

The body of evidence suggests that pregnancy does not increase susceptibility to SARS-CoV-2 infection but appears to worsen the clinical course of COVID-19 compared with nonpregnant females of the same age (9, 10)

However, at least one study has reported a higher rate of SARS-CoV-2 infection in pregnant people compared with similarly aged adults (11) and one has reported a lower rate of in-hospital mortality in pregnant patients hospitalized with COVID-19 and viral pneumonia compared with nonpregnant female patients of reproductive age (12). Limitations of available data include difficulties in distinguishing behavioural from biological determinants of infection susceptibility and differences in infection assessment.

Although most (>90 percent) infected pregnant persons recover without undergoing hospitalization, rapid clinical deterioration can occur, and symptomatic pregnant patients appear to be at increased risk of severe disease and death compared with symptomatic nonpregnant females of reproductive age (13). Risk factors for severe disease and death in pregnancy include older mean age (especially ≥35 years), obesity, pre-existing medical comorbidities (particularly hypertension and diabetes or more than one comorbidity), and being unvaccinated (14). For example, among the 15 maternal deaths from COVID-19 in Mississippi (nine deaths per 1000 SARS-CoV-2 infections in pregnant patients versus 2.5 deaths per 1000 SARS-CoV-2 infections in nonpregnant females of reproductive age), 14 of the 15 patients had comorbidities and zero of the 15 patients was fully vaccinated (15).

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Methods

This is total coverage cross sectional analytic clinical observational study for the pregnant women diagnosed with COVID- 19 and admitted Latifa Hospital during COVID- 19 pandemic December 2020- June 2021.

The study is conducted at Latifa Hospital, Dubai Health Authority(DHA), Dubai, United Arab Emirates(UAE) which is the main tertiary hospital for obstetrics and gynecology at Dubai Emirate and has large catchment area from the surrounding northern Emirates. It has a capacity of 441 bed. It serves women 24/7 with consultants led teams and all paramedical services are available with well-equipped operation theater.During the COVID-19 pandemic, internal arrangement successfully done and created outstanding setup for COVID-19 patients' needs,at emergency department on arrival, special tracts for admission and inpatient wards, intensive care units as well development of the electronic system for the COVID-19 patients' files and records. Updating policies and guidelinesstep by step with the international ones. This system gives the credits to hospital for COVID- 19 management, PCR testing and vaccination with support of the Dubai health Authority.

Ethical approval was obtained from Dubai Scientific Research Ethics Committee (DSREC), Dubai Health Authority – Dubai-UAE.All persons gave their informed consent prior to their inclusion in the study.

The data were collected using specific data collection sheet designed for this purpose. The data were entered, analysed and layout using computer facilities and Statistical Package for Social Sciences (SPSS) version 26.

Results

During the study period the COVID- 19 hospital admission was 680 cases, 421 case admitted during antenatal period (62%). 29 cases were postnatal admission (4.2%) and 230 cases with gynaecologicaldiagnosis (33.8%). Among the antenatal cases 28 patients required obstetric intervention which is 4.1%. Table (1).

The presenting symptoms wereoverlapped and usually the case had more than one symptom. Among the studied group 28 cases dyspnoeawas the most common presenting symptom seen in 19 patient (67.9%)followed by cough and fever 17 cases for each (60.7%). Table (2)

With respect to the parity, the multiparous women represented the bulk of the patients 17 (60.7%),primigravidaewere nine cases (32.1%) and the grandmultiprouswere two cases (97.1%). Table (3).

The main indication for the obstetric intervention was deterioration in maternal COVID symptoms seen in 15 patients (53.6%).Fetal distress was seen in 7 patients (25%), and two patients (7.1%)for each of the following: failed induction,pre- eclampsia and abruptio placenta with fetal distress. Table (4).

The COVID-19 patients needed obstetrical intervention at term among the study group were 11 patients (28%) and 17 patients (60.7%) required preterm delivery. Table (5).

In segregation of cases by indication of intervention with the gestational age; the deterioration of severe COVID- 19 is seen more at term patient (63.6%); (36.4%) were preterm in their gestational age when the intervention was needed.Figure (1) Fetal distress was common among the preterm (35.3%) group and term group was (9.1%). Other's indications had equal distribution between term (9.1%) and preterm (5.9%) groups

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The most alarming morbidity is ventilation. In correlation with symptoms although there was overlapping, we observed that ten patients (58.8%) from each category of the most serious presented symptoms (Dyspnoea, fever, and cough) equally went for mechanical ventilation. This is observation is of value clinical value but has no statical value as P value is not significant. Table (6)

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Discussion

Pregnant women with COVID-19 have different courses of the disease from asymptomatic testing positive women to severe/ critical casesand death. We admitted the moderate, server and critical cases while improving will stepped down and later followed as outpatient as well the asymptomatic and mild symptomatic with good education and health promotion following the designed protocol and guidance. This is the same manner almost worldwide. Although most (>90 percent) infected pregnant persons recover without undergoing hospitalization, rapid clinical deterioration can occur, and symptomatic pregnant patients appear to be at increased risk of severe disease and death compared with symptomatic nonpregnant females of reproductive age (13)

This study focused on COVID-19 issue only, many variables are not included in analysis of this study although they might be of clinical and statistical values and correlation in so **Table (2):** The presenting symptoms among the study population. (N=28)

Outcomes as comorbidities seen in other studies. Risk factors for severe disease and death in pregnancy include older mean age (especially ≥35 years), obesity, pre-existing medical comorbidities (particularly hypertension and diabetes or more than one comorbidity) and being

unvaccinated (16). It looks other variable like parity has no direct effect on the disease course and no significant correlation this might be seen in other multicentre research or in large study group.

These cases being managed with multi- disciplinary team (MDT- involves senior *obstetrician& Gynecologist, anaesthesiologist, physician*), under close monitoring as rapid change and deterioration might happen and its unpredicted in COVID-19. With no exception the decision for obstetric intervention is agreement between the MDT members due to life threatening condition either for the mother or the fetus.

The predominant indication of intervention is deterioration of severe COVID- 19 symptoms which predicts the expected needs for cardio- pulmonary resuscitation almost proved in more than half of the cases the rest shared a common obstetric indication in variable manners. This intervention decision is to give a better chance for ventilation and relief of cardio-pulmonary decompensation for expected successful cardio-pulmonary resuscitation and seen among term pregnancies more than the preterm ones. Although caesarean delivery was observed more the vaginal delivery. These finding goes to some extend with what was reported in literature partially with caesarean delivery but not with gestational age at intervention. Preterm birth and caesarean delivery rates have been increased in many studies but not all (17, 18). likely because initial data were not derived from nationally representative samples, lacked appropriate comparison groups, and were subject to bias (19). The risk of adverse pregnancy outcome is increased in symptomatic patients (20), especially those with severe/critical disease. Looking for details in our result in comparison with literature almost the finding is co-exciting as indication for intervention with accepted statistical variations due to number of studied cases.

As co-finding variable a clinical observation noticed among these cases passed through very successful period of resuscitation and building up condition in at most suitable atmosphere means timed intervention is cornerstone of best outcome for both the mothers and neonates. This goes with the published report.

The symptoms were overlapped whatever the symptom respiratory (*Dyspnoea, cough*), gastrointestinal tract symptoms (*nausea, abdominal pain*) headache is the common shared symptom among all cases and seen of clinically significant with dyspnoea among ventilated cases.

In a study that specifically reported outcome by disease severity, 32 of the 64 pregnant people hospitalized for severe or critical COVID-19 delivered during infection; 9 of 44 people with severe disease and 13 of the 20 people with critical disease were delivered because of the maternal status while only three deliveries were for fetal status (21). Birth was preterm in 9 percent of people with severe disease and 75 percent of those with critical disease.When we compared this with our study its almost has a consisting finding.

Conclusion.

Deterioration of maternal condition remains the main indication for obstetric intervention among pregnant women affected by COVID-19 infection, which might happen among term or preterm pregnancies. The course of the disease is unpredictable,and MDT is core in case management.

References

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Comment [AaM9]: You should add limitations of the study that include no past history of vaccinations or medications was taken. Some authors suggested use of drugs such as ivermectin for prophylaxis and early treatment of COVID-19 cases. These references could be added:

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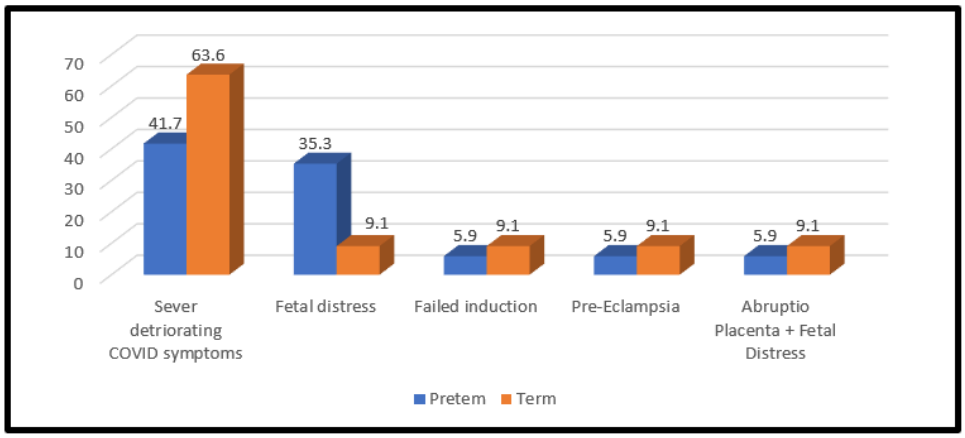

Figure (1) Shows the cases distribution of COVID- 19 patients. (N=28)

Category	**Frequency**	**Percentage**
Antenatal admission	421	62%
Postnatal admission	29	4.2%
Gynecological admission	230	33.8%
Total cases	680	100%
Cases with intervention	**28**	4.1%

Table (1): Shows the cases distribution of COVID- 19 patients. (N=28)

Symptoms	Frequency	Percentage
Fever	17	60.7%
Cough	17	60.7%
Sore throat	1	3.6%
Nasal congestion	2	7.1%
Dyspnoea	19	67.9%
Vomiting	3	10.7%
Diarrhoea	1	3.6%
Chest pain	5	17.9%
Nausea	6	21.4%
Generalized body aches	10	35.7%
Abdominal pain	6	21.4%
Loss of smell	3	10.7%

Table (2): The presenting symptoms among the study population. (N=28)

Parity		Frequency	Percent	Valid Percent	Cumulative percent
valid	Primigravida	9	32.1	32.1	32.1
	Multipara	17	60.7	60.7	9.9
	Grand multipara	2	7.1	7.1	100.0
	Total	28	100.0	10.0	

Table (3) Shows the parity distribution of COVID- 19 patients (N=28)

Indication		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sever deteriorating COVID symptoms	15	53.6	53.6	53.6
	Fetal distress	7	25.0	25.0	78.6
	Failed induction	2	7.1	7.1	85.7
	Pre-Eclampsia	2	7.1	7.1	92.9
	Abruptio Placenta + Fetal Distress	2	7.1	7.1	100.0
	Total	28	100.0	100.0	

Table (4) Shows the indication of obstetric intervention among COVID- 19 patients (N=28)

Fate of the pregnancy		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Preterm	17	60.7	60.7	60.7
	Term	11	39.3	39.3	100.0
	Total	28	100.0	100.0	

Table (5) Shows the cases distribution of COVID- 19 patients at time of intervention (N=28)

Symptom	Ventilation		P-value
	No	Yes	
Fever	7 (63.6%)	10 (58.8%)	0.558
Sore throat	1 (9.1%)	0 (0.0%)	0.393
Cough	7 (63.6%)	10 (58.8%)	0.558
Nasal congestion	1 (9.1%)	1 (9.1%)	0.640
Dyspnoea	9 (81.8%)	10 (58.8%)	0.197
Vomiting	0 (0.0%)	3 (17.6%)	0.208
Diarrhoea	0 (0.0%)	1 (5.9%)	0.607
Chest pain	1 (9.1%)	4 (23.5%)	0.329

Table (6) Shows the ventilation distribution of COVID- 19 patients (N=28)