CASE SERIES

Maternal and perinatal outcome of pregnant women with COVID 19, a tertiary centre experience in Iraq — A Case Series

Ban Hadi Hameed,[1] Asmaa Rajih Thamir,[2] Hadeel Jassim,[3] Miami Abdul Hassan Ali[4]

Abstract

The clinical course of 26 cases from the time of hospital admission till discharge from Al Yarmouk teaching hospital, Baghdad from June to August 2020 was analysed. The results will reflect on the maternal and perinatal consequences of confirmed cases of Corona Virus Disease during pregnancy. The disease was scored as severe in 11.53% while one case was critical and ended with maternal and foetal death. Five (19.3%) cases delivered vaginally and 15(57.69%) delivered by Caesarean section, three of them were delivered preterm due to disease severity. The mean foetal weight was 2.4 kg, APGAR score at 5 min was 6.8, foetal growth restriction 2(7.69%) cases, intrauterine foetal death 3(11.53%), neonatal care unit admission 5(19.23%) and neonatal death in one of the preterm babies. The study showed significant rates of severe maternal and foetal complications which should be considered when managing such a disorder.

Keywords: COVID-19, Maternal outcome, Foetal outcome.

Introduction

The Coronavirus disease 2019 (COVID-19) is a rapidly growing global pandemic with an evolving course as it affects every country within less than a year since it was first documented in December 2019.[1] Despite social isolation distancing and quarantine of affected personell which were taken as a precaution by governments and ministries of health, the disease is still progressing which suggests the high infectivity rate of the disease leading to an outbreak.

In Iraq, the first case was diagnosed in Al Najaf governorate on the 24th of February 2020, and within months the status of the disease by the beginning of August 2020 is as follows: Total Cases: 140,610, mortality: 5,163, recovery: 101,030.[2] The disease course is vague with rapidly changing figures prohibiting strong evidence establishment at present, it varies from being asymptomatic or having just mild symptoms as fever and cough to serious disease with dyspnoea and hypoxia with possible need for intubation and ventilation which is the severe form of the disease.

In the pregnant state, Obstetricians should be aware of the disease course in pregnancy as pregnancy alters the course of infectious diseases in general and viral diseases specifically due to amelioration of the maternal immune system to accommodate the developing foetus. Since the start of the COVID-19 pandemic, many research articles have been published, with some reporting a favourable outcome with a similar course as non-pregnant women.[3-6] Others have suggested an adverse outcome for both the mother and the foetus with a significant maternal and perinatal morbidity and mortality in serious COVID 19 pneumonia cases.[7,8]

However, still, there is a lot of upcoming work to evaluate the disease course and adverse effects in pregnancy and this is the cornerstone of this study which aims to describe the maternal and perinatal outcome of COVID 19 confirmed cases in our hospital settings in trying to build evidence for disease evaluation and management.

Patients and Methods

This prospective case series included confirmed diagnosis of COVID-19 cases admitted to Al Yarmouk teaching hospital \ Baghdad \ Iraq from beginning of June 2020 to end of August 2020. The hospital is a tertiary care referral hospital with an average of 500 deliveries per month. During the assigned study period, a total of 26 pregnant women with a confirmed diagnosis of COVID-19, admitted to the hospital were included in the study. The presenting symptoms, clinical findings, laboratory results, and disease course was analysed.

This study was approved by Medical Ethical Board of the College of Medicine \ Mustansiriyah University, Baghdad, Iraq (MOG 107 on 23rd-6- 2020). Informed written consent was obtained from all participating women.

Clinical evaluation and inclusion criteria: Owing to the high risk of contracting the infection in the era of COVID 19, all patients who attended the hospital were initially evaluated for possible positivity including a detailed history of contact with positive cases and symptoms of

[1,3,4]College of Medicine, Al Mustansiriyah University, [2]AL Yarmouk Teaching Hospital, Baghdad, Iraq.

Correspondence: Ban Hadi Hameed. Email: banhadi@uomustansiriyah.edu.iq

the disease namely: fever, cough, dyspnoea, fatigue, vomiting, diarrhoea and body pain. A thorough physical examination inclusive of general, chest, and Obstetrical examination was carried out taking into consideration the social distancing measures in addition to the safety precautions as personal protective equipment, wearing a mask, hygiene, and cough prestige. Any case suspected of having the disease was isolated in quarantine for further evaluation and management according to WHO and local guidelines.[9] Upper respiratory and throat swab specimens were obtained from all suspected patients at admission and were tested for SARS-CoV-2 infection by real-time Polymerase chain reaction (RT-PCR) and accordingly all positive cases were assigned for inclusion in this study.

Laboratory tests and radiological evaluation included: Complete blood count with differential count, renal function test, liver function test, Coagulation screen in seriously ill patients and admission cardiotocography with ultrasound according to each case findings.

Chest CT scan with shielding was performed for cases suspected of having pneumonia.

All cases were triaged and classified according to the clinical evaluation into mild (symptomatic patient with stable vital signs), severe (respiratory rate ≥30/min, resting Oxygen saturation ≤93%, arterial blood oxygen partial pressure ≤300 mmHg), or critical (shock with organ failure and respiratory failure) cases.[9] The cases had been managed by a multidisciplinary team of physicians, obstetricians, pulmonologists, anaesthetists, and neonatologists. They were followed till discharge from the hospital, their illness course, mode of delivery, maternal and neonatal outcome were registered and analysed.

Statistical analysis: Statistical analysis was carried out using SPSS, version 20. Data were expressed as mean (±SD), median (Interquartile range), or frequency (centile) where appropriate. Categorical variables were expressed as number (n) and centile.

Results

The demographic and clinical parameters of the cases are summarised in Table-1. All patients were in the younger age group with a mean age of 27.1 ± 8 years. Of the total women at the time of presentation, only 14 (53.85%) reached term gestation which is the optimal time for foetal delivery, 11 (42.3%) had preterm delivery and only one case had a miscarriage at 9 weeks gestation. Contact with positive cases was seen in 19 (73.1%) cases while the others recorded no history of contact. The average duration of complaint and hospitalization were 2.4 ± 1.8 and 2.5 ± 1.7 days respectively. Fever and tachycardia were found in the average of the vital signs for all cases with normal blood pressure, foetal heart rate, and Oxygen saturation records. All included cases had positive PCR for viral nucleic acid. The haematological investigations showed leukocytosis with normal lymphocyte count and haemoglobin value. Other biochemical tests revealed normal renal function tests, liver function tests, and coagulation screen. Maternal comorbidities were distributed as follows: Multiple gestation 3 (11.5%) cases including one triplet and two twin pregnancies, prelabour rupture of membranes 5(19.23%) cases, hypertensive disorders 3(11.5%) cases including gestational hypertension one case, preeclampsia one case and eclampsia one case, placental abruption 1 (3.8%) case as well epilepsy and urinary tract infection with the same frequency.

The symptoms of the cases at the time of recruitment followed the current pattern of frequency and centile: Fatigue 16 (61.53%), fever 14 (53.84%), cough 11 (42.3%),

Table-1: The demographic and clinical criteria of the cases.

Parameter	Mean ± SD	Median (IQR)	Frequency (%) total 26 case
Maternal age (years)	27.1 ± 8	23 (22-35)	-
Gravida	3 ± 2.6	2 (1-5)	-
Para	1.9 ± 2.5	0 (0-4)	-
Abortion	1 ± 0	1 (1-1)	-
Gestational age (weeks)	34.2 ± 6.7	36.7 (33.6-38)	-
Miscarriage < 24	9	9	1(3.84 %)
Preterm 24-<37	30.21±5.8	34 (24-36)	11(42.3 %)
Term 37-<42	38.3 ±1.2	38 (37-40)	14 (53.85 %)
Contact with +ve case	-	-	19 (73.1%)
Duration of complaints (days)	2.4 ± 1.8	2 (1-3)	-
Duration of hospitalization (days)	2.5 ± 1.7	2 (2-3)	-
Temp. C0*	37.8 ± 0.7	37.7 (37-38.8)	-
PR\ min*	107.1 ± 11.9	105 (98-112)	-
SBP(mmHg)*	123.9 ± 11.2	120 (120-140)	-
DBP(mmHg)*	80.4 ± 7.7	80 (80-80)	-
FHR \min	144.9 ± 11.4	142 (136.5-150)	-
O2 sat. %*	96.3 ± 5.9	98 (96-98)	-
PCR +ve*	-	-	26 (100%)
Hb (gm\dl)	11.3 ± 1.4	11.2 (10.6-12.3)	-
WBC\mm3*	15.7 ± 18.4	10.3 (8.7-15.1)	-
LYM.\mm3*	1.9 ± 0.9	1.8 (1.1-2.4)	-
Multiple pregnancies	-	-	3 (11.5%)
PROM*	-	-	5 (19.23%)
Hypertensive disorders	-	-	3 (11.53%)
Epilepsy	-	-	1 (3.85%)
Placental abruption	-	-	1 (3.85%)
Urinary tract infection	-	-	1 (3.85%)

* Abbreviations: Temp.C0= Temperature centigrade degree, PR\min= Pulse rate\minute, SBP= Systolic blood pressure, DBP=Diastolic blood pressure, FHR\min= Foetal heart rate\ minute, O2 sat.= Oxygen saturation percentage, PCR= Polymerase chain reaction, Hb= Haemoglobin, WBC= White blood cells, LYM= Lymphocytes count, PROM=Prelabour rupture of membranes.

Table-2: Maternal and perinatal outcome of the cases.

Parameter	Frequency (%) total 26 case	Mean ± SD	Median (IQR)
COVID 19 severity score			
Mild	22 (84.6%)	-	-
Severe	3 (11.53%)	-	-
Critical	1 (3.85%)	-	-
Maternal morbidity			
CPAP*	1 (3.84%)	-	-
Intubation and ventilation	2 (7.69%)	-	-
Nasal 02 therapy	4 (15.38%)	-	-
Maternal mortality	1 (3.84%)	-	-
Mode of delivery			
Vaginal delivery	5 (19.23%)	-	-
Caesarean section	15 (57.69%)	-	-
Foetal weight (Kg)	-	2.4 ± 0.6	2.4 (2-3)
APGAR score at 5 min	-	6.8 ± 2.2	7 (5-9)
Foetal growth restriction	2 (7.69%)	-	-
Intrauterine foetal death	3 (11.53%)	-	-
NCU admission	5 (19.23%)	-	-
Neonatal mortality	1 (3.85%)	-	-

*Abbreviations: CPAP: Continuous positive airway pressure. NCU: Neonatal intensive care unit.

abdominal pain 9 (34.6%), decreased foetal movement 6 (23%), vaginal discharge 5 (19.23%), dyspnoea 4 (15.4%), diarrhoea and vomiting 2 (7.69%), vaginal bleeding 2 (7.69%), seizures 1 (3.84%), headache 1 (3.84%) and palpitation again in one (3.84%) case.

Table-2 describes the maternal and perinatal outcomes for the cases. The majority 22 (84.6%) cases were mild according to COVID 19 severity score 5, while severe form was seen in 3(11.53%) cases and one case was critical admitted with severe dyspnoea and hypoxia at 24 weeks gestation. Chest CT scan revealed a ground glass appearance with prominent bronchovascular markings involving both lungs. The patient was admitted in the intensive care unit on the ventilator and after two days her condition deteriorated despite cardiopulmonary support and ended with maternal and foetal death. Regarding maternal morbidities with COVID, 19 Continuous positive airway pressure was indicated for one case with severe disease, intubation and ventilation for two cases, one of them recovered while the other case unfortunately died and nasal oxygen therapy was used for four cases.

The mode of delivery was vaginal in 5 (19.23%) cases while Caesarean section in 15 (57.69%) cases, the indications were: multiple previous scars 7 (26.9%), prelabour rupture of membranes with foetal distress 3 (11.52%), multiple pregnancies 2 (7.69%), hypertension 2 (7.69%) and one (3.85%) case with placental abruption. Three of them were delivered preterm due to disease severity. Four cases were not delivered at the time of the study.

The foetal outcome with COVID 19 starting with a mean foetal weight of 2.4 kg which is less than the average normal weight of 2.5-4.5 kg. APGAR score at 5 min 6.8 which is normal, foetal growth restriction 2(7.69%) cases, intrauterine foetal death 3 (11.53%) cases, neonatal care unit admission 5 (19.23%) cases, and neonatal death in 1(3.85%) preterm baby.

Discussion

COVID 19 global pandemic which has generated a significant social burden with disastrous consequences on all health aspects including Obstetric care. This had to be readjusted in all maternity hospitals to accommodate the impact of this rapidly developing new viral infection. Contradicting majority of the early published data on maternal and foetal effects which revealed a comparable outcome in pregnancy to that of the general population,[1-6] this case series shows significant maternal and foetal adverse effects including both morbidity and mortality in those cases diagnosed with COVID 19. All cases were in the younger age group with low parity, preterm delivery was extremely common in the confirmed cases 42% which is much more common than its prevalence in the general population being 12.8 % in its high rates[10,11] and even in cases with COVID 19[12,13] which reached 31% according to Della et al's systemic review.[14] Although the raised prematurity rate can be partially attributed to multiple gestations as the study included three multiple pregnancies, still the rate is high and this can be related to the systemic inflammatory reaction in association with this disease which stimulates preterm delivery.

As this case series had been conducted in a tertiary referral hospital a significant proportion of women had comorbidities namely hypertensive disorders, prelabour rupture of membranes, urinary infection, and epilepsy in addition to multiple pregnancies as these can adversely influence the impact of the disease on maternal and foetal health.

The main symptoms were fever, fatigue, and cough and this agreed with the established presentation of the disease but the reduced foetal movements 23% and ruptured membranes 19.2% were significantly higher than normal pregnancies[10,11] and agreed with the results of studies in women with COVID 19.[6,12,13]

Severe disease was seen in 11.53% while critical disease in 3.85% of the studied women in disagreement to Zaigham et al[6] who showed in their systemic review of 108 pregnancies that 3% of cases had severe disease, whereas

Della Gatta et al[14] published in another systematic review on 51 pregnant women that 9% had severe disease. We faced significant maternal morbidity as two cases required intubation and ventilation in addition to one case that needed CPAP and four cases needed nasal oxygen therapy that resulted in morbid maternal situation and hospitalization but the worse outcome was with one critical case of COVID 19 pneumonia which ended with maternal and foetal death and these results were in concordance with studies in America[15,16] and China[17] which showed an adverse maternal outcome in cases with severe infection. An Irani[8] study showed that seven women died out of nine cases with COVID 19 pneumonia.

Vaginal delivery was the mode of birth in one-fifth of cases while 57.69% of cases were delivered by Caesarean section. The indications were mainly related to obstetric reasons except for three cases whom delivery was expedited for a maternal issue. The reported figures of Caesarean birth varied from high rates as of Chen et al (93%)[18] to a lesser rate as encountered by Schwartz DA, et al and Zaigham M et al.[4,6]

The foetal outcome with COVID 19 in the present study revealed the mean foetal weight to be 2.4 kg which is less than the average normal weight of 2.5- 4.5 kg. This can be explained by the high preterm birth rate and comorbidities mainly prevalence of hypertension, foetal growth restriction and multiple pregnancies while causes of increased birth weight as diabetes[19] and prolonged pregnancy were not encountered in this study. APGAR score at 5 min was 6.8 which is normal, foetal growth restriction 7.69%, intrauterine foetal death 11.53%, neonatal care unit admission 19.23%, and neonatal death in one of the preterm babies was concerning. These results contradicted the results of Yu N et al,[12] Chen et al,[18] Li N et al[20] and Yan J et al[21] who described a favourable foetal outcome with variable figures and no neonatal death. In our study cases with reduced foetal movements, intrauterine foetal death and neonatal death were encountered which is in agreement with Liu Y et al[22] who reported neonatal death with one case of serious maternal disease. Another Iraqi study correlated the reduced foetal movements with foetal demise.[23]

Conclusion

This case series revealed a significant rate of severe maternal and foetal complications in COVID-19 positive women. This should be taken into consideration when managing pregnant women infected with the virus.

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