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Research Article

Clinical Characteristics and Outcomes of Pregnant Women Confirmed with SARS-COV-2 Admitted in the Hospitals in Baghdad

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A B S T R A C T

Background: Pregnant women are considered one of the most vulnerable groups for COVID-19. Routine but essential services are the most affected during emergencies, therefore practitioners must pay closer attention to women and newborns to minimise the impact of the pandemic on these vulnerable populations.

Objectives: To describe clinical characteristics and outcomes of pregnant women admitted to hospitals with SARS-CoV-2 in Baghdad during 2020.

Methods: Across-sectional retrospective study was conducted in six maternity hospitals in Baghdad during a period of ten months, including 170 pregnant ladies who came to the hospital for labour or management of health problems related to pregnancy and testedpositive for COVID-19. The data were collected from medical records and patient medical sheets of admitted ladies, phone calls, and questionnaires.

Results: The mean age of the included women was 29.59±6.78 years, and 50.6% of patients were aged less than 30 years with 41.2% having primary education level. 78.2% of patients were housewives, 94.7% of pregnant women had a single foetus, 84.7% delivered by caesarean section, 58.2% reported fever as the most common symptom, and 43.5% of neonates of mothers with COVID-19 had a negative test result of COVID-19.

Conclusion: The majority of pregnant ladies were symptomatic and hypertension was the most common co-morbidity in the included pregnant ladies. There was a significant association between age and the presence of symptoms of COVID-19 infection in which patients aged less than thirty years who presented with symptoms, especially fever and dyspnoea were more than patients aged thirty years old or more.

Keywords: Clinical Outcomes, Pregnant Women, Caesarean Section, SARS-COV-2, Baghdad

Introduction

COVID-19 is a new disease, caused by a novel coronavirus that has not previously been seen in humans.[1] The World Health Organization (WHO) declared the COVID-19 outbreak a pandemic in March 2020, as the number of confirmed cases increased, this broughtthe cumulative numbers to over 79 million reported cases and over 1.7 million deaths globally since the start of the pandemic till the end of 2020.[2] Even before the spread of COVID-19, almost half of all low-income countries were already in debt distress or at a high risk of it, leaving them with little fiscal room to help the poor and vulnerable who were hit hardest.[3] Women and children are among the most vulnerable in times of disaster. Routine but essential services for women and children, such as antenatal care, contraception, abortion services, and immunisation, are some of the most affected services during emergencies, as a result of healthcare providers being occupied with other services;both the research literature and the guidelines from developmental agencies (e.g. WHO, UNICEF) are calling for practitioners to pay closer attention to women and children to minimise the impact of the pandemic on these vulnerable populations.[4] Since the first case of COVID-19 in America, 60,458 confirmed cases of COVID-19 were reported among pregnant women, including 458 deaths, or 1%, in 14 countries, according to the Epidemiological Update from the Pan American Health Organization (PAHO) published on 22 Sep 2020.[5] The already over-stretched health systems in the countries of the Middle-East andNorth Africa countries (MENA) region are likely to be further challenged in the context of COVID-19 preparedness and response, causing the risk of disruptions in essential health and nutrition services for mothers and newborns, potentially leading to preventable maternal, newborn mortality and morbidity.

Iraq reported its first confirmed case of SARS-CoV-2 infection on 22 February 2020. The detected case wasfor an Iranian student for religious studies in Najaf. By April, the number of confirmed cases had exceeded the hundred mark in Baghdad, Basra, Sulaymaniyah, Erbil and Najaf.[6]

The first Iraqi pregnant woman with confirmed COVID-19 infection was diagnosed on 13 March 2020 by polymerase chain reaction (PCR) at Al-Kadhimiya Teaching Hospital in Baghdad. She was admitted to the quarantine sectorwith close continuous monitoring for her and foetal condition. Within 11 days of treatments and follow up, a twice negative result of PCR was shown and after 17 days, the patient started preterm labour (vaginal delivery of 30 weeks of gestation) ofa viable male baby with normal APGAR score and negative COVID-19 PCR test.[7] The present studydescribes clinical characteristics and outcomes of pregnant women admitted to hospitals with SARS-CoV-2 in the centreof Baghdad during 2020.

Method

The current study is a cross-sectional retrospective study that was conducted in six maternity hospitals in Baghdad: two from Al-Karkh health directorate which included Al-Kharh for Gynecological & Obstetrics hospital, Al-Kadhimian Medical City and two from Al-Russafa health directorate which included Al-Elwiya teaching hospital, Fatima Al-Zahraa for Gynecological & Obstetrics Hospital and two from Medical City which included Baghdad Teaching Hospital, Nursing Private Hospital during a period of ten months from 20 March to 31 December 2020. The study included 210 pregnant women who attended obstetrics and gynaecology consultation clinics for labour or management of health problems related to pregnancy and tested to bePCR positive for COVID-19 as total numbers, but this number was reduced to 170pregnantwomen, due to the inability to obtain all the required variables in the questionnaire because of the incompleteness of their information in the medical records and the inability to reach them through their phone numbers. The data were collected from medical records and patient medical sheets of the admitted pregnant women. Phone calls were made to complete the missing information in the records of infected mothers' questionnaire that was applied to all enrolled pregnant women to collect the needed information. It includedquestions to gather the following information:

Demographic Data

Age: depending on women in reproductive age.

Gestational Age: per weeks (at admission)

Occupation: includedhousewife and employee.

Educational Level: includedilliterate, primary, intermediate, high school, college and higher studies.

Income: divided into equal or less than 500000 IQ dinars per month or one million IQ or more than one million IQ dinars.

Obstetrical Variables of Pregnant Women

Type of pregnancy: whether multiple or single.

Presence of comorbidity: hypertension and pre-eclampsia, diabetes mellitus, liver disease, antepartum haemorrhage and others.

Presence of symptoms: includedfever, cough, dyspnoea and others.

Mode of delivery: includedvaginal delivery, assisted vaginal delivery or C/S.

Outcome of pregnancy: either alive birth, miscarriage, or stillbirth.

Neonatal Variables

Admission to respiratory care units: whether need or not to admit.

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Transmission of the infection to the baby: yes if vertical transmissionoccurred, no if it did not occur.

APGAR Score of the Baby at Birth

Time of performing the confirmation test: if before or after the first 12 hrs of life.

Exclusion Criteria

- Pregnant women with a history of confirmed infection with COVID-19 during the current pregnancy
- Pregnant women whohadnot been confirmed with COVID-19 infection

Ethical Considerations and Official Approvals

Verbal consent was obtained from each patient prior to collecting data, and information was anonymous. Names were removed and replaced by identification codes. All information waskept confidential in a password-secured laptop and data wereused exclusively for the research purposes.

Administrative approvals were taken before starting data collection by the included hospitals from the following:

- The ethical and scientific committee in Al-Kindy College of Medicine
- Baghdad health directorates (Al-Rusafa, Alkarkh)

Statistical Analysis

The collected data were enteredinto Microsoft Excel 2016 and loaded into the SPSS V24 software statistical programme. Descriptive statistics were presented using tables and graphs.Chi-square test was used to find out the significance of association between related categorical variables.P value 0.05 was considered as the discrimination point for significance.

Results

This study involved 170 pregnant women that suffered from COVID-19 during their current pregnancy, with a mean age of 29.59 ± 6.78 years. Most of them had primary school education (41.2%), and were housewives (78.2%) with a family income of less than 1000000 IQ dinars (67.1%) as shown in Table 1.

Table 1.Distribution of Studied Cases

Variables		N (170)	%
Age (years)	<30	86	50.6
	≥30	84	49.4
Education	Primary	70	41.2
	Secondary	66	38.8
	University	34	20.0
Occupation	Housewife	133	78.2
	Employee	37	21.8
Income (IQ dinars)	<1000000	114	67.1
	≥1000000	56	32.9
Type of pregnancy	Single	161	94.7
	Twin	9	5.3
Comorbidity	Yes	41	24.1
	No	129	75.9
Gestational age at admission	First trimester (1 week - 12 week)	11	6
	Second trimester (13 week - 27 week)	3	2
	Third trimester (28 week - 40 week)	156	92
Mode of delivery	C/S	144	84.7
	VD	16	9.4
	D and C	10	5.9
Outcome of pregnancy	Alive baby	144	84.7
	Miscarriage	16	9.4
	Stillbirth	10	5.9
Co-morbidity	Gestational hypertension	26	63.4
	Pre-eclampsia	3	7.3
	Diabetes mellitus	5	12
	Hepatitis (B/C)	4	9.7
	Antepartum haemorrhage	3	7.3
	Others	0	0
Symptoms	Yes	99	58.2
	No	71	41.8
Fever	Yes	90	52.9
	No	80	47.1
Dyspnoea	Yes	33	19.4
	No	137	80.6
Cough	Yes	24	14.1
	No	146	85.9

About 78.8% of neonates did not need admission to the neonatal care unit and 6.5% needed admission, while 14.7% ended inabortion or stillbirth (Table 2). There was no significant association between maternal signs and

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symptoms and neonatal need foradmission to respiratory care unit (p value = 0.051), fever (p value = 0.139), dyspnoea (p value = 0.235), and cough (p value = 0.393).

The association between sociodemographic variables and the presence of COVID-19 symptoms among the studied sample and that between maternal health variables and the presence of symptoms of COVID-19 is shown in Tables 3 and 4.

Table 2.Distribution of COVID-19 Test Results among Neonates of Infected Mothers and Distribution of Neonatal Admission to Care Unit

Variable		No.	%
COVID-19 test (PCR)	Positive	1	0.6
	Negative	74	43.5
	Not done	70	41.2
	Miscarriage or stillbirth	25	14.7
Admission to neonatal care unit	Need admission	11	8
	No admission needed	134	92

Table 3.Association between Sociodemographic Variables and Presence of COVID-19 Symptoms among the Studied Sample

Variables		Symptoms				Fever				Dyspnoea				Cough			
		Yes		No		Yes		No		Yes		No		Yes		No	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Age (years)	<30	58	58.6	28	39.4	53	58.9	33	41.3	22	66.7	64	46.7	14	58.3	72	49.3
	≥ 30	41	41.4	43	60.6	37	41.1	47	58.8	11	33.3	73	53.3	10	41.7	74	50.7
P value		0.014*				0.022*				0.040*				0.413			
Occupation	House wife	73	73.7	60	84.5	67	74.4	66	82.5	20	60.6	113	82.5	19	79.2	114	78.1
	Employee	26	26.3	11	15.5	23	25.6	14	17.5	13	39.4	24	17.5	5	20.8	32	21.9
P value		0.093				0.204				0.006*				0.905			
Education	Primary	35	35.4	35	49.3	32	35.6	38	47.5	11	33.3	59	43.1	10	41.7	60	41.1
	Secondary	36	36.4	30	42.3	33	36.7	33	41.3	11	33.3	55	40.1	10	41.7	56	38.4
	University	28	28.3	6	8.5	25	27.8	9	11.3	11	33.3	23	16.8	4	16.7	30	20.5
P value		0.005*				0.024*				0.102				0.898			
Income	<1 M. ID	64	64.6	50	70.4	60	66.7	54	67.5	21	63.6	93	67.9	16	66.7	98	67.1
	≥1M. ID	35	35.4	21	29.6	30	33.3	26	32.5	12	36.4	44	32.1	8	33.3	48	32.9
P value		0.429				0.908				0.641				0.965			

Table 4.Association between Maternal Health Variables and Presence of Symptoms of COVID-19

		Symptoms				Fever				Dyspnoea				Cough			
		Yes		No		Yes		No		Yes		No		Yes		No	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Comorbidity	Yes	24	24.2	17	23.9	21	23.3	20	25.0	8	24.2%	33	24.1	6	25.0	35	24
	No	75	75.8	54	76.1	69	76.7	60	75.0	25	75.8	104	75.9	18	75.0	111	76
P value		0.964				0.800				0.985				0.913			
Type of pregnancy	Single	93	93.9	68	95.8	84	93.3	77	96.3	31	93.9	130	94.9	22	91.7	139	95.2
	Twin	6	6.1	3	4.2	6	6.7	3	3.8	2	6.1%	7	5.1	2	8.3	7	4.8
P value		0.598				0.172				0.827				0.473			

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Rout of delivery	NVD	8	8.1	2	2.8	8	8.9	2	2.5	0	0.0	10	7.3	1	4.2	9	6.2
	C/S	81	81.8	63	88.7	75	83.3	69	86.3	32	97.0	112	81.8	20	83.3	124	84.9
	D&C	10	10.1	6	8.5	7	7.8	9	11.3	1	3.0	15	10.9	3	12.5	13	8.9
P value		0.317				0.684				0.086				0.807[a]			
Outcome of pregnancy	Live baby	82	82.8	59	83.1	76	84.4	65	81.3	30	90.9	111	81.0	20	83.3	121	82.9
	Abor-tion	10	10.1	6	8.5	7	7.8	9	11.3	1	3.0	15	10.9	3	12.5	13	8.9
	Still birth	7	7.1	6	8.5	7	7.8	6	7.5	2	6.1	11	8.0	1	4.2	12	8.2
P value		0.895				0.741				0.330				0.695			

Discussion

Nearly one-fourthof the mothers suffered from comorbidities in the present study. Hypertension was the most common co-morbidity followed by diabetes mellitus, hepatitis B and C infection, and other complications related to pregnancy (pre-eclampsia and antepartum haemorrhage). However, high BMI or obesity was not found to be associated with COVID-19 symptoms.

In a multinational cohort study which enrolled 706 pregnant women with COVID-19 diagnosis, about fifty percent of them were overweight early in pregnancy and had higher rates of pregnancy-induced hypertension, preeclampsia/eclampsia with a greater risk ofadmission to ICU.[8] In the current study, the majority of the participants were presented in the third trimester. This may be evident because the sample included mainly pregnant ladies who had come to the hospitalfor labour, and about one-third of the deliveries that occurred in the third trimester were preterm or early term labour, in general, this is compatible with the recommendations of WAPM-World Association of Perinatal Medicine which mentioned that "The most remarkable effect of COVID-19 infection in the third trimester is preterm delivery".[9] In the current study, about 80% of births occurred by cesarean section, and the rest occurred by vaginal delivery and dilatation and curettage. This high rate of cesarean deliveries may be related to medical conditions or pregnancy complications rather than the relation with COVID-19 infection, which agrees with the results of a retrospective review of medical records of nine pregnant women with confirmed COVID-19 infection admitted to Zhongnan Hospital of Wuhan University, Wuhan, China, from Jan 20 to Jan 31, 2020. All of them ended with caesarean section. At the onset of the pandemic, cesarean section (CS) was the favourable mode of delivery in infected women; which was probably to reduce the maternal and foetal risks, however, the role of CS in the reduction of these risks has not been established that lead to making COVID-19 infection alone not an indication for CS.[10]

All the mothers included in this study were alive and discharged home, except for a symptomatic primigravida pregnant lady who was admitted to the hospital at 39 weeks gestation for emergency termination of pregnancy by caesarean section after her pregnancy complicated by cardio vascular accident (CVA) with pregnancy outcome of alive baby with COVID-19 IgG positive only. This was also confirmed by a systematic review of 108 pregnancies looking for maternal and perinatal outcomes with COVID-19.

It showed that the majority of mothers were discharged without any major complications but still some severe maternal morbidity and perinatal deaths associated with COVID-19 infection have been recorded.[11]

There was a significant association between age and the presence of common signs and symptoms related to COVID-19 infection, where about 50% of symptomatic women were aged less than thirty years.It is also the same in the case of fever and dyspnoea while there was no significant association in the case of cough.On the other hand, there was a national cohort study conducted in Mexico where it was found thatpregnant women with advanced maternal age (older than thirty-five years) or with comorbidities such as diabetes, hypertension, and obesity were more likely to be associated with mortality.[12]

There was another cohort study done in Wuhan, China in which 33 neonates born to mothers with COVID-19, recruited from Wuhan Children's Hospital, revealed that 30neonates were SARS-COV-2 negative and only three of them were positive for SARS-COV-2.[13]

In another study that relied on a systematic review and meta-analysis of 19 studies including 79 hospitalised women that aimed to report pregnancy and perinatal outcomes of confirmed mothers with COVID-19 infection, the results for all coronavirus infections were miscarriageof about 64.7% participants and perinatal death in 11.1% which does not make the risk of neonatal death or stillbirth to be increased above the baseline in relation to the COVID-19 infection.[14]

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In our study, there was no significant association between the signs and symptoms of the infected mothers and neonatal outcome orthe need of admissions to care units. This makes it consistent with the results of a retrospective cross-sectional study done in a general hospital in New York City Health Hospital, Elmhurst from March 19 to April 22, 2020. It out lined the short-term outcomes of newborns of COVID-19 mothers and established that about 38% of newborns were born to positive mothers, and the majority of positive mothers were asymptomatic with only 16% of the earlier mentioned newborns needing admission to the neonatal intensive care unit after birth mostly for prematurity or sepsis and about 11% placed in an isolated room for a period in comparison with rest of the babies.[15]

Conclusion

The majority of the pregnant women were symptomatic; hypertension was the most common co-morbidities in the included pregnant women. There was a significant association between age and presence of symptoms of COVID -19 infection in which more patients aged less than thirty years presented with symptoms especially fever and dyspnoea as compared to those who were thirty years old or more.

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Conflict of Interest: None

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