Labor outcomes in comprehensive COVID 19 tested population in tertiary care facility

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Abstract

Early detection of SARS CoV 2 status in pregnant patients is crucial, this allows for risk appropriate, judicious use of personal protective equipment (PPE), with timely and appropriate
neonatal testing and rooming practices. It also provides safe environment for the neonate,
family members, other patients, and health staff.

Introduction

Pakistan reported its first two confirmed cases of COVID-19 on February 26th, 2020 . Maternity health care units continue to provide care to its regular volume of patients. Generalized testing of all patients presenting to obstetrical units was proposed, and proved necessary. Following the initiation of universal screening programs by Sutton et.al, data on COVID-19 in pregnancy started emerging

Recent estimates suggest <1% of asymptomatic patients have tested positive since initiating universal screening. Some studies suggested that pregnant women with COVID-19-related symptoms have a high rate of severe disease and preterm birth. It is prudent for obstetricians to be particularly vigilant when caring for such patients who become symptomatic. The Aga Khan University Hospital started testing women booked for elective procedures in obstetrics and gynecology for SARS CoV 2 in May 2020

Using data from these records our study aims to determine the prevalence of SARS CoV 2 amongst obstetrical patients presenting to obstetrical units, being subjected to generalized screening

Also determine the characteristics of the disease amongst these women, its evolution during the hospital stay, differences in pregnancy outcomes between affected and unaffected females

Objectives

To determine the prevalence of SARS CoV 2 amongst obstetrical patients presenting
to obstetrical units, being subjected to generalized screening. The study also aims to determine
the characteristics of the disease amongst these women, its evolution during the hospital stay,
differences in pregnancy outcomes between affected and unaffected females.

Materials and Methods

This prospective observational study was conducted at the Department of Obstetrics and Gynecology, Aga Khan University hospital, Karachi, between the months of June and November 2020. All women >24 weeks of pregnancy presented to labour room pertaining to admission or delivery, underwent generalized screening for COVID 19 PCR along with symptoms related to it were and maternal characteristics were recorded.

These women were observed during course of hospital stay. On bases of Covid-19 status they had been divided into Covid-19 positive and negative groups.

Data collected on maternal characteristics that include maternal age, BMI, parity, gestational age at presentation, booking status, indication for admission, comorbidities, and antenatal risk factors. Data was collected on obstetrical outcome, mode of delivery, and indication for a cesarean section. For neonates, data regarding their birth weight, live birth, still birth or an intrauterine fetal demise, pre-term birth, and APGAR score at 1 and 5 minutes were collected

Results

Maternal Characteristics

In total 2887 women who delivered,1918 women were subjected to COVID-19 testing. 5.52% tested covid-positive and 94.4% tested negative. 7 were symptomatic and 93.4% were asymptomatic, most commonly reported sore throat.

A significant difference of BMI was found in both the groups (p-value 0.001), women with Covid-19 positive had higher BMI.

More women with covid positive were admitted for labor indication and for elective lower segment cesarean section.

GDM was found to be higher among women with covid positive than negative.

No association was found in other risk factor amongst those who tested positive and negative.

Table I (Maternal characteristics stratified by SARS-CoV-2 RT-PCR result)

Maternal Characteristics	SARS-CoV-2 RT-PCR Positive (n=106)	SARS-CoV-2 RT-PCR Negative (n=1812)	P-value
Age	29.5[26-35]	28[27-32]	0.083
BMI	29.5[27-32]	28[26-30]	0.001*
Multiple gestation	0 (0%)	8 (0.4%)	0.999
Gestational age at admission	38 [36-39]	38[37-39]	0.522
Gravida			
Primi	35(33%)	669(36.9%)	0.720
Multi	60(56.6%)	967(53.4%)	
Grand Multi	11(10.4%)	176(9.7%)	
Booking Status			
Booked	96(90.6%)	1648(90.9%)	0.89
Unbooked	10(9.4%)	164(9.1%)	
Indication for admission			
Labour indication	44(41.5%)	609(33.6%)	0.095
Fetal indication	13(12.3%)	382(21.1%)	0.026*
Elective LSCS	26 (24.5%)	314 (17.3%)	0.067
Elective IOL	17 (16%)	441 (24.3%)	0.060
PPROM	2 (1.9%)	64 (3.5%)	0.581
COVID like symptoms	0 (0%)	2 (0.1%)	0.999
Others	4 (3.8%)	0 (0%)	0.000*
Comorbidities			
GDM	33 (31.1%)	371 (20.5%)	0.009*
PIH/ Preeclampsia	11 (10.4%)	238 (13.1%)	0.412
Hyper/hypothyroidism	5 (4.7%)	102 (5.6%)	0.691
Risk Factors			
Pregestational diabetes	3 (2.8%)	52 (2.9%)	0.999
Pregestational Hypertension	1 (0.9%)	83 (4.6%)	0.085
Asthma	1 (0.9%)	21 (1.2%)	0.999
Smoking	0 (0%)	2 (0.1%)	0.999

Data are presented as median [25-75 percentile], n (%). Mann-Whitney U for median, and Chi-square with a Fisher Exact test (<=5) for n (%).* Denotes significance

Table II (Obstetric outcomes)

Obstetrics outcomes	SARS-CoV-2 RT-PCR Positive (n=106)	SARS-CoV-2 RT-PCR Negative (n=1812)	P-value
Mode of birth			
SVD	36 (34.0%)	816 (45.0%)	0.009*
C- section	69 (65.1%)	919 (50.7%)	
Instrumental birth	1 (0.9%)	77 (4.2%)	
Indication for a c- section			
Non reassuring fetal status	16 (15.1%)	144 (7.9%)	0.012*
Non progress of labor	8 (7.5%)	280 (15.5%)	0.027*
Scheduled repeat	37(.34.9%)	478 (26.4%)	0.054
Malpresentation	4 (3.8%)	8 (0.4%)	0.003*
Other	4 (3.8%)	4 (0.2%)	0.001*

Data are presented as median [25-75 percentile], n (%). Mann-Whitney U for median, and Chi-square with a Fisher Exact test (<=5) for n (%).* Denotes significance

Obstetric outcome

Women with covid positive had more c-section than covid-negative.

In indications, non-reassuring fetal status was found to be higher among covid positive women than negative.

Scheduled repeat cesarean sections were more among Covid-19 positive women than negative.

Cesarean sections for mal-presentation were more in the Covid-19 positive group than negative.

Non-progress of labor was less in Covid-19 positive women.

Neonatal outcomes

No significant difference was found regarding live and still birth among both groups. Covid-positive women had less intrauterine fetal demise than negative.

Women with covid positive had higher preterm births than negative.

More babies were born at the APGAR score ≥7 at 1 minute in covid positive group than negative.

No significant difference was found at APGAR score greater >7 at 5 minutes.

Table III (Neonatal outcomes)

Neonatal outcomes	SARS-CoV-2 RT-PCR Positive (n=106)	SARS-CoV-2 RT-PCR Negative (n=1812)	P-value
Birth weight	2.9[2.5-3.2]	2.9[2.6-3.1]	0.996
Live birth	104 (98.1%)	1786 (98.6%)	0.665
Still birth	1 (0.9%)	1 (0.9%)	0.108
IUD	1 (0.9%)	25 (1.4%)	0.999
Preterm birth	30 (28.3%)	368 (20.3%)	0.049*
APGAR Score at 1 min (Missing=28)			
<7	0 (0%)	20 (1.1%)	0.623
≥7	104 (98.1%)	1766 (97.5%)	0.999
APGAR Score at 5 min (Missing=28) >7	104 (98.1%)	1786 (98.6%)	0.665

Data are presented as median [25-75 percentile], n (%). Mann-Whitney U for median, and Chi-square with a Fisher Exact test (<=5) for n (%).* Denotes significance.

Discussion

The prevalence of COVID-19 was found in 5.5 % in our data set while other studies reported the detection rate of between 0.5-10.5% on universal screening. Majority of them were asymptomatic while only 6.6 % had clinical symptoms suggestive of COVID 19. The ample literature available to verifies it, and emphasizes the need for generalized screening of all pregnant women to identify and isolate them to avoid spread of the disease.

The common symptoms in our study were sore throat and cough. Other studies had reported fever as the commonest clinical presentation 62.9% followed by cough in 36.8% and sore throat in 22.6%.

COVID-19 positive women had statistically significant propensity towards high BMI, which was also seen in a study, reporting 60.5 %of positive women were obese . Gestational diabetes mellitus was significantly higher in COVID-19 positive women, followed by hypertension (31.1% and 10.4 % respectively), which was reflected by a study from Stockholm. COVID-19 positive women were found to be more prone to developing hypertensive disorders in pregnancy, with the incidence being 34.2%.

Other studies conducted under similar lines do not support preference towards a single major reason for admission, as suggested in our study.

One of the pioneer studies suggested an increased cesarean delivery rate among women. A study from Pakistan also exhibit 78.5% rate of C-section in with COVID-19. A study from New York, suggested no increase in the rate of cesarean section amongst positive women.

The neonatal outcome has generally been similar and satisfactory for both positive and negative tested women. This has been speculated by several observational studies and meta-analysis, which suggest no differences between the neonatal outcomes of COVID-19 positive and negative women. Vertical transmission was not reported in majority of studies, however a meta-analysis by Matar'R et.al found two cases of fetal Covid positive.

This is the first of its kind study to be conducted in a tertiary care hospital form Karachi, Pakistan, to generate local data regarding the prevalence of COVID-19 in obstetric population, as well as the maternal and fetal characteristics of COVID-19 positive and negative parturient in Pakistan. The limitation of this study was conducted in a single tertiary care private hospital of Karachi; therefore, the results may vary and not be applicable to the rest of the public center hospitals of this country.

Conclusion

There was low prevalence of COVID-19 among pregnant women, and mainstream were asymptomatic, these women tend to be carriers, and can spread the virus

It is wise to implement such generalized COVID testing in the obstetric population

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