

Universal Testing for Covid-19 of all Patients Admitted in Labour Room in a Tertiary Care Centre

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Abstract

Background: The coronavirus disease 2019 (Covid -19) pandemic has created a need for data regarding the prevalence of severe acute respiratory syndrome of corona virus (SARS-COV-2) infection in pregnant women. We decided to study to study the prevalence of SARS-COV-2 infection through universal testing of all unsuspected asymptomatic pregnant patients admitted in clean labour room. **Methods:** This is an observational study in which all asymptomatic women admitted in labour room between August first 2020 and September 2020 were treated for SARS COV-2. The prevalence of covid-19 infection among patients was calculated as number who tested positive out of total number of asymptomatic patients treated. **Results:** A total of 715 women underwent routine covid-19 testing upon admission to labour room, out of those women who were tested for SARS-COV-2, Twenty one(2.94%) women had a positive result. All twenty-one women who were positive, were asymptomatic at the time of admission. Of the women who tested negative, sixteen had history of mild fever and one had cough. No neonate had positive SARS-COV-2 test result at twenty-four hours of life. There were no significant differences in demographic profile between women with positive results and remainder of women. **Conclusions:** Universal testing prevents disease transmission to health care providers, patients and new born.

Keywords:- Covid-19, Pregnancy, Screening.

INTRODUCTION

In December 2019, a novel coronavirus was first reported in Wuhan, Hubei province, China.^[1]

Over the ensuing months, widespread transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the virus that causes coronavirus disease 2019

(COVID-19), has been reported in every inhabited continent and has been declared a pandemic by the World Health Organization as of March 11, 2020.^[2] In the general population, approximately 80% of infections with COVID-19 are reportedly either asymptomatic or mildly symptomatic.^[3,4,5] In previous pandemics such as SARS and H1N1, pregnant women were more susceptible to

serious illness and had greater mortality rates than the general population.^[6,7,8] Data on the clinical characteristics of SARS-CoV-2 infection in pregnant women remain to be determined. Many of the symptoms of covid-19 infection, if present, overlap with normal physiological changes of pregnancy, potentially leading to delay in diagnosis among pregnant patients.^[9,10,11,12] Although not currently seen as a group of high risk for complications from covid-19, the care of pregnant women and their newborn involves many areas of outpatient and inpatient care in peripartum period. Early experience from a hospital in New York in mid-march 2020 supported the concept of universal screening of women admitted for delivery and the results of universal screening of two hundred and fifteen women from the same hospital system showed a 13.5% prevalence of asymptomatic, SARS-COV-2 Infection.^[6,7,13,14] While the risk of nosocomial transmission is affected by clinical settings, the intimate and prolonged nature of childbirth elevates the risk of cross-infection between women and midwives. The role of such nosocomial transmission has been increasingly recognized, and severity may be greater than of community-acquired infections. Identification of infectious women prior to delivery could contribute to prevention of further transmission to patients and healthcare workers, and a recent report has suggested facilities to consider testing pregnant women for SARS-CoV-2 at the time of admission.^[5,15,16] Maternity units has to continue to provide all services to the pregnant women, even during a pandemic.^[8,9] Therefore, identification of asymptomatic women with infection is useful so that the safety of patients, newborns, staff, and support persons can be maintained. In

early July, 2020 a policy of universal testing of all women admitted to our centre was made.

Aim of Study

The aim of the study was to estimate the prevalence of SARS-CoV-2 infection through universal testing of all unsuspected asymptomatic pregnant patients admitted in clean labour room after triaging.

Exclusion criterion is Covid positive patients referred from outside were directly admitted to isolation labour room and excluded from study.

MATERIAL AND METHODS

This is an observational study in which all asymptomatic women admitted to labour room between August 1, 2020 and September 30, 2020 were tested for SARS COV-2. The women who had planned delivery/cesarean were tested day before admission and admitted after the results.

All women admitted directly to labour room during previous 24 hrs. were tested with RT-PCR in the morning. If early delivery or intervention was anticipated, sample was immediately taken at the time of admission and sent for TRUNAAT testing in which case results were available within 3 hrs. Following standard protocol, a single swab collected from posterior oropharynx and nasopharynx by the resident on duty, labeled, packed and sent to VDRL labs and a list of all patients along with their name, age, CRN, SRF no. contact no. was sent on email so that once the test is done results uploaded on same list and sent back to department to save the time.

The real time PCR test is for qualitative detection of RNA from SARS COV-2 in



nasopharyngeal Sample. The assay targets ORF1, a region that is unique to SARS COV-2. All patients were informed of their test results. Those tested positive were immediately shifted to isolation labour room and managed there. Owing to test result turnaround time, sometimes test results were not available at the time of intervention, they were dealt with appropriate contact precaution PPEs. The demographic data for all women has been illustrated in [Table 2].

The Prevalence of COVID -19 infection among patients was calculated as number who tested positive out of total number of asymptomatic patients tested. The case files were used to obtain information on maternal age, Rural /Urban, timing of admission (antepartum, intrapartum or postpartum), parity (nullipara or multipara), gravida, gestational age and comorbidities.

Statistical analysis

The Prevalence of COVID -19 infection among asymptomatic unsuspected patients was calculated as number who tested positive over total number tested.

The differences in distribution of maternal characters were assessed using chi square test

of for categorial variables and students t- test for continous variable. All analyses were performed using soft ware.

The study was approved by institutional ethical committee.

RESULTS

A total of 715 patients underwent routine COVID-19 testing upon admission to labour room. Out of those women who were tested for SARS-CoV-2, 21(2.94%) women had a positive test, resulting in an 2.94% (95% confidence interval [CI]:) prevalence of SARS-CoV-2 infection in the population studied. All women (21) who were positive, were asymptomatic at the time of admission. Of the women who tested negative, 16 had history of mild fever and one women had cough. No neonates had positive SARS-CoV-2 test results at 24 hours of life. Demographic characteristics of the study cohort are shown in [Table 3] There were no significant differences in demographic characteristics between women with positive test results and the remainder of the women.

Table 1: Distribution according to tests.

| | No of patients | Percentage |
|------------------|----------------|------------|
| Total Patients | 715 | 100% |
| Total tests done | 715 | 100% |
| RT-PCR | 615 | 86.01% |
| Positive | 15 | 2.43% |
| Negative | 600 | 97.56% |
| TRU-NAAT | 100 | 13.99% |
| Positive | 06 | 6% |
| Negative | 94 | 94% |
| Total positive | 21 | 2.94% |



Table 2: Age distribution of Patients

| Age Group (Years) | Patients | Percentage |
|-------------------|------------|------------|
| <20 | 14 | 1.96% |
| 20-24 | 316 | 44.20% |
| 25-29 | 273 | 38.18% |
| ≥30 | 112 | 15.66% |
| Total | 715 | 100% |
| Mean±SD | 25.09±3.60 | |
| Median | 25.00 | |
| Range | 18-34 | |

Table 3: Demographic characteristics of the study cohort.

| | | Negative (N=694) | Positive (N=21) | Total (N=715) | P-value (Test) |
|-------------------|-------------------|------------------|-----------------|---------------|----------------|
| Mean Age | Mean±SD | 25.09±3.60 | 25.19±3.71 | 25.09±3.61 | 0.901 (0.125#) |
| Age Group (Years) | <20 | 14 (2.02%) | 00 (0%) | 14 (1.96%) | 0.561 (0.34) |
| | 20-24 | 305 (43.95%) | 11 (52.38%) | 316 (44.20%) | |
| | 25-29 | 267 (38.47%) | 06 (28.57%) | 273 (38.18%) | |
| | ≥30 | 108 (15.56%) | 04 (19.05%) | 112 (15.66%) | |
| Residence | Rural | 419 (60.37%) | 13 (61.90%) | 432 (60.42%) | 0.889 (0.02) |
| | Urban | 275 (39.63%) | 08 (38.10%) | 283 (39.58%) | |
| Parity | Primigravida | 228 (32.85%) | 09 (42.86%) | 237 (33.15%) | 0.338 (0.92) |
| | Multigravida | 466 (67.15%) | 12 (57.14%) | 478 (66.85%) | |
| Gravida | G1 | 228 (32.85%) | 09 (42.86%) | 237 (33.15%) | 0.631 (0.23) |
| | G2 | 165 (23.78%) | 04 (19.05%) | 169 (23.64%) | |
| | G3 | 130 (18.73%) | 01 (4.76%) | 131 (18.32%) | |
| | ≤G4 | 171 (24.64%) | 07 (33.33%) | 178 (24.90%) | |
| Gestational Age | Mean±SD | 31.07±12.66 | 26.92±15.93 | 30.95±12.78 | 0.143 (1.467#) |
| Gestational Age | <28 | 30 (4.32%) | 00 (0%) | 30 (4.20%) | 0.245 (1.35) |
| | 28-31+6 | 56 (8.07%) | 05 (23.81%) | 61 (8.53%) | |
| | 32-34+6 | 98 (14.12%) | 01 (4.76%) | 99 (13.85%) | |
| | 35-37+6 | 201 (28.96%) | 03 (14.29%) | 204 (28.53%) | |
| | ≥38 | 218 (31.41%) | 07 (33.33%) | 225 (31.47%) | |
| | Missing/ Abortion | 91 (13.11%) | 05 (23.81%) | 96 (13.43%) | |
| Sign & Symptoms | Cough | 01 (0.14%) | 00 (0%) | 01 (0.14%) | 0.157 (1.99) |
| | Symptomatic | 16 (2.31%) | 00 (0%) | 16 (2.24%) | |
| | Asymptomatic | 677 (97.55%) | 21 (100%) | 698 (97.62%) | |
| Type of Sampling | RT-PCR | 600 (86.46%) | 15 (71.43%) | 615 (86.01%) | 0.051 (3.83) |
| | TRU-NAAT | 94 (13.54%) | 06 (28.57%) | 100 (13.99%) | |
| Comorbidities | | 10 | 1 | 11 | |

#=t-test and rest are Person Chi Square Test Comorbidities are presentational hypertension, diabetes, asthma and chronic obstructive pulmonary disease.

DISCUSSION

In this study all patients (715) admitted in labour room were tested for SARS-COV-2 infection. This number represents a success of our implementation of universal screening. The calculated prevalence of a positive test for SARS-CoV-2 infection was 2.94% (all asymptomatic) in women admitted in labour room as compared to 0.43% reported by Fassett et al.^[6] However Sutton et al.^[2] reported a prevalence of 13.5% asymptomatic and 1.9% symptomatic positive COVID-19 infection. Vintzileos et al,^[8] found SARS-CoV-2 infection in 19.9% (34% symptomatic and 66% asymptomatic) of 161 women tested on admission to labor and delivery at NYU Winthrop Hospital. Bianco et al reported a prevalence of 15.5% in asymptomatic patients.^[16] A positive case rate of 10% was reported by Prabhu et al. among 625 pregnant women who were universally screened for SARS-CoV-2 on the day of admission for delivery at 3 institutions in New York City, of which 80% were asymptomatic at the time of testing, including pre- and post-symptomatic

patients.^[9] None of neonates (n = 21) delivered to asymptomatic, SARS-CoV-2 positive women was positive. Reports of 38 Chinese women with COVID-19 infection also have shown no vertical transmission.^[12,13,14,15]

The strength of our study is the ability to implement a universal SARS-CoV-2 testing of all women admitted in labour room. The limitation is those women, referred with COVID positive status, were directly admitted in isolation labour room were not included in study.

CONCLUSIONS

Identifying asymptomatic cases in this study provides timely application of efficient management protocols thereby preventing disease transmission to healthcare providers, among patients and the newborns. The strategy of universal testing may be considered if adequate facilities are present. The health policies should balance the benefits of universal screening with their capacity constraints.

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