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Short communication

Impact of COVID-19 on pregnant women with Rheumatic heart disease or Peripartum cardiomyopathy

Dear Editor,

We observed that there is a limited information on the impact of the SARS-CoV-2 infection on pregnant women with heart disease (HD). Aim of our study was to investigate the impact of COVID-19 on pregnancy and neonate retrospectively at BYL Nair Charitable Hospital (NH), a dedicated COVID-19 hospital [1] in women with HD in Mumbai, India. In the initial phase of COVID-19 pandemic of 6 months, NH received five RT-PCR confirmed COVID-19 pregnant women with heart disease [Rheumatic HD (RHD; n = 3), Peripartum Cardiomyopathy (PPCM; n = 2)], out of 879 COVID-19 pregnant and post-partum women (Table 1). To address if COVID-19 poses additional risk in pregnancy with HD, we compared outcomes in uninfected pregnant women with HD (n = 43) in pre-pandemic period from the same center (Table S1). We found around 1% of heart disease in pregnant women with COVID-19. Adverse outcomes such as preterm delivery, PPROM, low birth weight, neonatal death were observed in pregnant women with HD (RHD/PPCM) and COVID-19. Pre-term delivery was nearly three times higher in women with HD and COVID-19 (95% CI 0.33–20.48). PPROM/PROM was observed 14 times higher in women with HD and SARS-CoV-2 infection (95% CI 0.69–283.79). Preterm vaginal delivery was reported in one woman with RHD and COVID-19 (Case-2) and her new-born required neonatal intensive care due to low birth weight.

Pregnant woman with RHD and COVID-19 presented with fever, cough with expectoration, breathlessness, tachycardia with normal oxygen saturation. This suggests some diagnostic overlap between SARS-CoV-2 infection and new or recurrent acute respiratory failure with HD [2]. Two women with RHD were on secondary prophylaxis with penicillin in our study group. During the period of lockdown when there were transportation restrictions, the pregnant women with RHD faced several challenges in accessing the healthcare. Therefore, secondary prophylaxis must be ensured to all patients with RHD and more specifically to pregnant women by the public and private healthcare providers. Pregnancy is a state that is particularly susceptible to respiratory diseases like COVID-19 due to a compensated respiratory alkalosis with metabolic acidosis [3]. Despite this, both the cases with PPCM described in this report did not have worsening of PPCM due to COVID-19.

We faced multiple challenges because of COVID-19 status and comorbidities of the women presented in this report. During the early phase of pandemic, there was a delay in receiving appropriate treatment as all these women were denied treatment in multiple hospitals before being referred to our dedicated COVID-19 facility at NH. This observation suggested the significant challenges faced by these women, who are also likely to face difficulties in secondary prophylaxis and access to health care leading to additional risk for adverse pregnancy and neonatal outcomes.
Table 1
Demographic, epidemiological, clinical characteristics and management of pregnant women with RHD or PPCM and COVID-19.

| Parameters                                    | RHD1                          | RHD2                          | RHD3                          | PPCM1                         | PPCM2                          |
|-----------------------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------------------|--------------------------------|
| Heart Disease history                         | RHD since childhood           | RHD diagnosed during first pregnancy | RHD since childhood           | PPCM                           | PPCM                           |
| No. of referrals before reaching NH           | 2                             | 1                             | 2                             | 4                              | 5                              |
| Demographic                                  |                               |                               |                               |                                |                                |
| Age in years                                  | 27                            | 31                            | 26                            | 26                             | 21                             |
| G Gravid /Parity (P)                          | Primigravida                  | G3P2L2                        | G4P2L2                        | 34.5                           | Primigravida                   |
| BMI kg/m²                                     | 22.6                          | 23.1                          | Not available                 | 23                             | 23                             |
| Containment/Sealed zone                       | Symptomatic                   | Yes                           | No                            | Yes                            | Yes                            |
| Indication for COVID-19 RT-PCR testing        | Universal Testing             | Universal Testing             | Symptomatic                   | Universal Testing             |                                |
| Asymptomatic/Symptomatic (Mild/Moderate/Severe) | Symptomatic                   | Asymptomatic                   | Symptomatic                   | Asymptomatic                   | Asymptomatic                   |
| Fever                                         | No                            | No                            | No                            | Yes                            | No                             |
| Cough                                         | Yes                           | Yes                           | No                            | No                             | No                             |
| Breathing Difficulty                          | Yes                           | No                            | Yes                           | Yes                            | No                             |
| Hemoglobin, g/dL                              | 12.1                          | 11.1                          | 9.9                           | 9.2                            | 10.6                           |
| White blood cell count, /µL                   | 7300                          | 6700                          | 9800                          | 10900                          | 6000                           |
| Platelet count, >100/µL                       | 1.21                          | 1.20                          | 1.3                           | 3.09                           | 4.11                           |
| Serum Creatinine, mg/dL                       | 2.3                           | 1.0                           | 0.9                           | 0.4                            | 0.9                            |
| Echocardiogram                                | Moderate MS, moderate MR, mild TR, dilated LA with mildly dilated LV, Moderate PAH, MV0A 1.3 cm² LVEF 65 % | Severe MS, moderate MR, trivial AR | Severe TR | Moderate MS, severe PAH LVEF 60 % | Dilated LV, severe generalised LV hypokinesia, LVEF 20 %, LV diastolic dysfunction, LV non-compaction, Mild MR, Mild PAH, Mild TR, RVSP 48mmhg |
| Blood Pressure in mmHg                         | 100/70                        | 110/70                        | 100/70                        | 98                             | 96                             |
| Oxygen Saturation %                           | 95                            | Not done                      | Not done                      | Normal                         | 130/80                         |
| Chest X-ray changes                           | Yes                           | No                            | No                            | No                             | Normal                         |
| Consolidation                                 | No                            | Normal                        | Normal                        | Normal                         | Normal                         |
| ARDS                                          | Normal                        | Ultrasound – bilateral bright kidney. | –                            | –                             | –                              |
| Arterial blood gas analysis                   |                               |                               |                               |                                |                                |
| Relevant Ultrasound                            |                               |                               |                               |                                |                                |
| Weeks of Gestation at delivery                | 39 weeks                      | 36 weeks                      | 37 weeks at admission         | 36 weeks 5 days                |                                |
| Mode of delivery                              | Vaginal Delivery              | Vaginal Delivery              | Undelivered                   | Cesarean section               | Vaginal Delivery               |
| PROM/PPROM                                    | No                            | No                            | No                            | –                              | Yes                            |
| Preterm labour                                | No                            | Yes                           | –                             | –                              | –                              |
| Neonatal Outcome                              | Good                          | NICU admission, Baby survived | –                             | –                              | –                              |
| Birth Weight in Kg                            | 2.470                         | 1.790                         | –                             | 2.240                          | 2.229                          |
| Complications intrapartum & postpartum        | No                            | No                            | –                             | No                             | –                              |
| Treatment                                     | frusemide, laclactone (with-held) and metopropl | spironolactone, frusemide, frusemide, metopropl, penicillin | atenolol, frusemide, penicillin | frusemide, bisoprolol, isosorhide dinitrate, digoxin | carvedilol, ramipril |
| Hospital Stay                                 | 14                            | 17                            | 4                             | 13                             | 5                              |
| Mortality                                     | No                            | No                            | No                            | No                             | No                             |

SARS-CoV-2, Severe Acute Respiratory Syndrome Corona virus 2; RT-PCR, Reverse Transcriptase Polymerase Chain Reaction; COVID-19, coronavirus disease 2019; PROM, premature rupture of membranes; PPROM, preterm premature rupture of membranes; NICU, neonatal intensive care unit; NND, neonatal death; RHD, rheumatic heart disease; PPCM, peripartum cardiomyopathy; MS, mitral stenosis; MR, mitral regurgitation; TR, tricuspid regurgitation; LA- Left Atrium, LV-Left ventricular; PAH, pulmonary artery hypertension; MV0A, Mitral Valve Orifice Area; LVEF, left ventricle ejection fraction; AR, aortic regurgitation; RVSP, right ventricular systolic pressure; ARDS, Acute Respiratory Distress Syndrome.

a Presented in the labour suite with a fully dilated cervix and delivered vaginally immediately on arrival, on the stretcher.

b Increased in intensity since 5 days but she had similar complaints since long before pregnancy.
One woman with PPCM (Case-5) had multiple congenital anomalies in the fetus at 21-weeks pregnancy but was denied medical termination of pregnancy (MTP) in multiple hospitals. The MTP Act (1971) in India permits the pregnancy termination until 20-weeks. Although MTP amendment Bill (2020) was passed in March, 2020 in the Lok-Sabha, it is yet to become an Act.

In the context of the COVID-19 pandemic, our study generated an evidence of impact of COVID-19 on pregnant women with RHD with COVID-19. Therefore, countries with endemic RHD with higher COVID-19 burden should make provision of cardiac assessment on ultrasound to improve RHD diagnosis and strengthen the healthcare system for multi-specialty management of pregnant women with RHD and COVID-19.

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Author contributions

NM and RG had full access to all data and take responsibility for data integrity and the accuracy of the analysis. NM and RG were responsible for study concept and design. NM, RG, SM supervised the study. AT, BJ, NK and SG acquired the data. All authors interpreted the data. RG and NM performed statistical analysis. NM, SM, and RG provided administrative, technical and material support. NM and AT drafted the manuscript. RG, NM revised the manuscript. All authors approved the manuscript.

Transparency document

The Transparency document associated with this article can be found in the online version.

Declaration of Competing Interest

The authors report no declarations of interest.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi: https://doi.org/10.1016/j.ejogrb.2021.01.024.

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Arundhati Tilve1
Niraj N. Mahajan1
Ankita Pandey
Bhargavi Jnanananda
Sangram Gadekar
Department of Obstetrics and Gynaecology, Topiwala National Medical College & BYL Nair Charitable Hospital, Mumbai, 400008, India

Smita D. Mahale
Rahul K. Gajbhiye*
ICMR-National Institute for Research in Reproductive Health, Mumbai, 400012, India

1These authors contributed equally.

* Corresponding author at: Scientist D & DBT Wellcome India Alliance Clinical and Public Health Intermediate Fellow, ICMR-National Institute for Research in Reproductive Health, Mumbai, 400002, India.
E-mail address: gajbhiyer@nirrh.res.in (R. Gajbhiye).

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Correspondence

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Isolated second trimester uterine rupture following a motor vehicle accident

Dear Editor,

Uterine rupture is an uncommon obstetrical complication associated with significant maternal and fetal mortality. The majority of such ruptures occur intrapartum and previous uterine scar is the most common risk factor [1]. Mid trimester uterine rupture following blunt trauma, especially motor vehicle accident (MVA), is very rare [5].

A 23-year-old woman, G1P0, 16th week gestation was admitted to our trauma center following a MVA. The woman was involved in a high-speed head on MVA while seated in the front passenger seat, with a three-point seatbelt and the airbag deployed. The patient was transported with normal vital signs and a Glasgow Coma Scale of 15.

Upon her arrival she complained of abdominal and pelvic pain. She was awake and alert with blood pressure of 103/59 mm Hg and