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A Grave Situation with COVID in the Gravid: A Narrative Review

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ABSTRACT

The outbreak of the novel coronavirus in China in December 2019 and its subsequent dissemination to nearly all nations in the world has raised immense concern for human health, especially maternal and child health. Experts across the globe are probing into etiopathogenesis of the virus and developing vaccines and medications to contain the spread and treat the diseased. Numerous research projects have been undertaken to understand the full spectrum of the disease including transmission dynamics and clinical presentation and to evaluate the risk and predictability of vertical transmission. However, there is no reliable evidence that suggests vertical transmission of COVID-19 and this article reviews the existing literature and management protocols regarding the same. With the immuno compromised state of pregnancy and various physiological adaptations associated with it, maternal and foetal safety and management has become a major concern for institutions across the globe, especially in developing countries. The literature reviewed in this narrative article is obtained from articles from various databases such as PubMed, Scopus, Web of Science and various national and international Obstetric and Gynaecological associations using MeSH-compliant keywords including COVID-19, SARS-CoV-2, 2019-nCoV upto April 2020.



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by (WHO, 2020). Since then, numerous research projects have been undertaken to understand the full spectrum of the disease including transmission dynamics and clinical presentation and to evaluate the risk and predictability of vertical transmission. However, none of them showed conclusive or reliable evidence to prove or disprove the hypothesis. With the immuno compromised state of pregnancy (Luo and Yin, 2020; Zhang *et al.*, 2020) and various physiological adaptations associated with it, maternal and foetal safety and management have become a major concern for institutions across the globe, especially in developing countries.

INTRODUCTION

The mysterious outbreak of the COVID-19 pandemic was traced to a seafood market in Wuhan, China and within a few weeks, it was declared a pandemic

VIROLOGY AND CLINICAL FEATURES

The SARS-CoV-2 is a betacoronavirus similar to SARS-CoV and MERS-CoV. It is among the most com-

mon pathogens causing respiratory tract infections in humans. SARS-CoV-2 has enveloped virions that measure about 50–200 nm in diameter with a single positive-sense RNA genome (Yu *et al.*, 2020). The available literature on COVID-19 suggests that the average incubation period of the virus is 5 days (Range 2-14 days) (Rasmussen *et al.*, 2020).

The patients admitted to the ICU affected by the virus showed increased serum levels of inflammatory markers such as IL2, IL7, IL10, IP10, MIP1A, MCP1, GSCF and TNF α (Huang *et al.*, 2020).

Despite multiple studies conducted on COVID-19 affected gravidae, there is no conclusive evidence to prove vertical transmission of the virus (Chen *et al.*, 2020a,b) and the need for further research could not be emphasised more.

The mechanism of transmission is thought to be similar to other respiratory pathogens such as influenza; however mother-to-child transmission mostly occurs through close contact, via droplet infection and exposure to sources of infection such as public places (Zhu *et al.*, 2020).

The clinical presentation of COVID-19 in pregnant women is similar to that of non-pregnant adults affected by COVID-19 though women susceptible to respiratory pathogens or suffer from chronic diseases and complications could be more susceptible to COVID-19 (Qiao, 2020).

Common presentations of patients affected by the virus include fever, cough, sore throat, rhinorrhoea, shortness of breath, headache, chest pain, muscle ache, confusion, nausea and vomiting (Chen *et al.*, 2020a). Evidence also shows the presence of the virus in the stool sample of a case and loose stools was an observed symptom (Holshue *et al.*, 2020).

Beyond the virus specific symptoms, high fever early in the pregnancy is associated with birth defects such as neural tube defects (Buekens *et al.*, 2020). Reports also document severe complications such as respiratory distress syndrome, renal failure, disseminated intravascular coagulopathy, secondary bacterial pneumonia and sepsis in cases (Rasmussen *et al.*, 2020).

Histopathological examination of the placentas of known cases of COVID-19 after termination showed varying degrees of fibrin deposition in and around the villi. There was no evidence of villitis or chorioamnionitis in these placentas and no other morphological changes suggesting infection were seen.

Out of the 3 placentas observed by S et al. of patients affected by COVID-19, one placenta showed chorionic haemangioma and the other showed massive

multifocal placental infarction but it was not adequately clear if these changes were a consequence of COVID-19 and whether the virus caused direct or indirect placental damage.

Treatment Recommendations

A discussion on the recent recommendations by various studies and International Obstetrics & Gynaecology societies is as follows, (Coronavirus, 2020; Rasmussen *et al.*, 2020).

Recommendations for patients

1. Strict adherence to hand hygiene, cough hygiene and personal care.
2. Appropriate social distancing and avoidance of domestic excursions unless absolutely pertinent.
3. Close monitoring of foetal well-being using daily foetal kick counts and preferably with a portable foetal doppler.
4. Proper use of face masks.

General Recommendations for Doctors

1. Rapid triage of patients with respiratory symptoms and maintaining at least 6 feet distance of such cases from other patients.
2. Suspected and confirmed cases of COVID-19 must be admitted in an airborne infection isolation ward (AIIR).
3. CDC guidelines for control and prevention of spread of airborne infections must be strictly adhered to, including training and use of eye protection, N-95 respirators and Personal Protective Equipment (PPE). Additional staff training may be advocated as necessary.
4. Limiting access to these isolation rooms to health care personnel and visitors.

SPECIFIC RECOMMENDATIONS FOR OBSTETRICIANS

1. Pregnancy with COVID-19 must be considered as an increased-risk case and intensive monitoring must be done including foetal heart rate and contractions monitoring.
2. Antenatal examination and ultrasound may require detailed planning. Minimal equipment must be used, single probe ultrasonic examination must be done and the instruments and the room adequately disinfected after examining a suspect or a known case.

3. Early implementation of supportive therapy and oxygen supplementation including mechanical ventilation for patients with advancing respiratory distress and respiratory failure or cardiovascular compromise.
4. Screening for other bacterial and/or viral co-infections likely to complicate delivery.
5. Empirical antibiotic coverage for superimposed infections followed by specific therapy after culture and antibiotic sensitivity report.
6. Routine use of corticosteroids is not indicated unless preterm delivery is anticipated.
7. A multi-disciplinary approach must be taken for known cases of COVID-19 and decisions regarding delivery and termination of pregnancy must take into consideration the gestational age, foetomaternal well-being and preference of the parturient.
8. Neonates born to patients with known COVID-19 infection at the time of delivery must be considered as suspects of COVID-19. They must be tested for COVID-19, isolated from other healthy babies and cared for. However, neonates born to suspected cases of the virus or cases for whom test results are unknown need not be treated as suspects themselves.
9. Communication with the kin of the patient is essential regarding diagnosis and management of the patient.
10. Local authorities must be intimated about the diagnosis of COVID-19 for screening of relatives and contact tracing in the community.

CONCLUSION

The threat of COVID-19 still looms at large in developing and developed countries, though definitive therapy is under clinical study. The lack of conclusive statistical data makes the management of COVID-19 particularly challenging and intensive monitoring and supportive care before and after delivery is indispensable for favourable foetomaternal outcome.

Medical institutes must adhere to management protocols set by local administrative authorities to curb the spread of the virus in the community. The curtailment of this pandemic necessitates the coalescence of resources at individual, community and international levels and targeted research undertaken for the cure.

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Conflict of Interest

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