Clinical update on COVID-19 in pregnancy: A review article

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Abstract

The data pertaining to the COVID-19 pandemic has been rapidly evolving since the first confirmed case in December 2019. This review article presents a comprehensive analysis of the current data in relation to COVID-19 and its effect on pregnant women, including symptoms, disease severity and the risk of vertical transmission. We also review the recommended management of pregnant women with suspected or confirmed COVID-19 and the various pharmacological agents that are being investigated and may have a role in the treatment of this disease. At present, it does not appear that pregnant women are at increased risk of severe infection than the general population, although there are vulnerable groups within both the pregnant and nonpregnant populations, and clinicians should be cognizant of these high-risk groups and manage them accordingly. Approximately 85% of women will experience mild disease, 10% more severe disease and 5% critical disease. The most common reported symptoms are fever, cough, shortness of breath and diarrhea. Neither vaginal delivery nor cesarean section confers additional risks, and there is minimal risk of vertical transmission to the neonate from either mode of delivery. We acknowledge that the true effect of the virus on both maternal and fetal morbidity and mortality will only be evident over time. We also discuss the impact of social isolation can have on the mental health and well-being of both patients and colleagues, and as clinicians, we must be mindful of this and offer support as necessary.

Key words: coronavirus and pregnancy, COVID-19 and breastfeeding, COVID-19 and pregnancy.

Introduction

A Pneumonia of unknown cause was identified in Wuhan, China and was first reported to the WHO Country Office in China on December 31, 2019.[1] On February 11, 2020, WHO announced a name for the new coronavirus disease: COVID-19.[1] This has rapidly escalated and has become the International Public Health Emergency, and by May 7, 2020, there were 3 679 499 confirmed cases and 254 199 deaths in 215 countries.[2] With this novel condition, obstetricians and international obstetric bodies sought to determine in a short time the impact this disease would have on pregnant women, if parturients were at a higher risk of morbidity and mortality and what effect, if any, this disease would have on the fetus. Leading obstetric organizations have responded with a series of guidance documents to aid clinicians to navigate through this unknown landscape, including guidelines from the International Federation of Gynecology

and Obstetrics (FIGO),[3] the Royal College of Obstetricians and Gynecologists, UK (RCOG)[4] and the American College of Obstetricians and Gynecologists (ACOG).[5,6] Much of the data available thus far is in the form of case studies, case series and observational studies. As this is a new infection, little is known about COVID-19, particularly related to its effect on pregnant women and infants, and there is currently no definitive evidence-based guidance specific to pregnant women regarding the evaluation or management of COVID-19.6 The US Centers for Disease Control and Prevention (CDC) has stated, based on the information currently available, that pregnant women seem to have the same risk as adults who are not pregnant.[7] The aim of this article is to review the current data in relation to how COVID-19 affects pregnant women, the information to date on treatment options, its psychological impact and its wider effect on healthcare services and resources.

Symptoms and Disease Severity

In general, it is accepted that pregnant women are at increased risk of severe morbidity and mortality from specific respiratory infections, such as H1N1 and varicella pneumonia.[5] This includes a higher risk of severe illness when infected with viruses from the same family as COVID-19 and other viral respiratory infections, such as influenza.[7] With regard to COVID-19, the limited data currently available do not indicate that pregnant individuals are at an increased risk of infection or severe morbidity (e.g., need for intensive care unit [ICU] admission or mortality) compared with nonpregnant individuals in the general population. An intense inflammatory response has been reported as one of the key features of severe COVID-19,[8] and as there is relative immunosuppression in pregnancy this may partly explain why many pregnant women do not develop severe respiratory symptoms.[9] However, pregnant patients with comorbidities may be at increased risk for severe illness consistent with the general population with similar comorbidities.[6]

Similar to nonpregnant patients, the predominant features of COVID-19 in pregnancy are fever, cough, dyspnea and lymphopenia and are further presented in Table 1.[10] Shortness of breath is described in up to 18% of patients with COVID-19. In some cases, this may be difficult to discern from physiologic dyspnea due to increased maternal oxygen demands from heightened metabolism,

gestational anemia and fetal oxygen consumption, which are common in pregnancy.[10] Initial reports from seven pregnant women with COVID-19 in China displayed clinical manifestations of fever (86%), cough (14%), shortness of breath (14%) and diarrhea (14%).[11] A more detailed review of 118 pregnant women in Wuhan with confirmed COVID-19 subsequently presented by Chen *et al.*[12] observed similar results, that the most common symptoms in 112 women with available data were fever (75%), cough (73%) and lymphopenia (44%).[12] These figures have been similar in other studies.[14,15] There are also reports of atypical clinical presentations in COVID-19 pregnant patients, including a normal temperature (56%) and leucocytosis[16,17] and other symptoms, including nasal congestion, rash, sputum production, headache, malaise and loss of appetite in less than 5% of cases.[13]

As alluded above the presenting symptoms can vary, and women present with a spectrum of clinical manifestations that range from mild symptoms and signs to severe illness, including pneumonia with or without acute respiratory distress syndrome (ARDS), renal failure and multi-organ dysfunction may require immediate advanced critical care support.[16] As a result, those affected are typically described as having mild, severe or critical disease. Early reports suggest that the percentages in the pregnant population are similar to those described for nonpregnant adults with COVID-19 infections (approximately 80% mild, 15% severe and 5% critical disease).[18] A New York study applying similar COVID-19 disease severity characteristics as described by Wu *et al.*,[19] observed that 37 (86%) of women possessed mild disease, 4 (9.3%) exhibited severe disease and 2 (4.7%) developed a critical disease, and these statistics have been reported in further reviews on the topic.10 US study also described the development of viral myocarditis and cardiomyopathy in 33% of critically ill nonpregnant cases.[20] To date, there is one paper, which describes two cases of cardiomyopathy in pregnant women.[21] This report suggests performing an echocardiogram in pregnant women with COVID-19 pneumonia, in particular those necessitating oxygen or those who are critically ill.[21] More data is needed to determine the incidence of cardiomyopathy in pregnancy and in the postnatal period secondary to COVID-19, and as with many elements of this new disease, we will see the true number evolve overtime.

Table 1 An overview of the most common symptoms observed in pregnant women with confirmed COVID-19

	Dashraath et al.[10] (%)	Yu et al.[11] (%)	Chen et al.[12] (%)	Elshafeey et al.[13] (%)
Fever	84	86	75	67.3
Cough	28	14	73	65.7
Dyspnea	18	14	7	7.3
Diarrhea		14	7	7.3
Lymphopenia	38		44	14
Leucocytosis	22			
Others: nasal congestion, rash, sputum, headache, loss of appetite			6	<5

High-Risk Groups

While, some studies have raised concerns that pregnant women may be more susceptible to COVID-19 as, in general, they may be more vulnerable to respiratory infection[22] the evidence to date would suggest that they are no more vulnerable to this particular pathogen than the general population.[7] However, we are aware that there are vulnerable groups within both the pregnant and nonpregnant populations and clinicians should be cognizant of these high-risk groups and manage them accordingly. Adults with pre-existing diabetes have been identified as being more vulnerable to the severe effects of COVID-19 infection.[23] Many of the guideline documents published to date highlight some of the at-risk groups within the obstetric population.[6] Specific comorbidities to assess women for include the following: hypertension, diabetes, asthma, HIV, chronic heart disease, chronic liver disease, chronic lung disease, chronic kidney disease, blood dyscrasia, those with solid organ transplants, malignancies and people on immunosuppressive medications.[6,24]

Maternal Mortality

Initial studies suggest a much lower maternal mortality rate for those with confirmed COVID-19 in comparison to those infected with MERS and SARS, respectively. A systematic view of 41 pregnancies affected by COVID-19 observed maternal mortality of 0% in comparison to a rate of 28.6% with MERS and 25.8% with SARS, while the second report of 108 pregnancies also reported no maternal deaths.[25,26] Subsequently, a case report has been published describing maternal mortality secondary to severe disease, with both maternal and neonatal demise[27] and an Iranian case series reported maternal deaths in seven of nine

pregnant women with critical COVID-19.[28] The true maternal mortality rate is yet to be determined, particularly in the higher risk pregnant population, and is an area for continued review.

Cesarean Sections Rates

The cesarean section (CS) rate for women with confirmed COVID-19 infection has been reported as ranging from 42.9%[29] to as high as 91–92% in other studies.[25,26] The systematic review by Di Mascio, with a CS rate greater than 90%, primarily included women who were hospitalized with Covid-19 pneumonia in over 90% of cases,[25] and these high CS rates do not seem to be representative of women who have mild to moderate disease. It would appear that many of the CS procedures were performed in maternal interest, due to concern for maternal respiratory function. Furthermore, recent data emerging from an Italian study of 42 women reported a CS rate of 42.9%, of which 8 had CS procedures for an indication unrelated to the COVID-19 infection. This study also reported a vaginal delivery rate of 57.1%.[14]

Preterm Delivery and Neonatal Morbidity

Preliminary reviews reported high rates of preterm delivery, ranging from 41 to 47%.[25,26,30] A systematic review of 33 studies subsequently described the outcomes of 385 pregnant women with COVID-19 with gestational age at birth ranging from 30 to 41 weeks' gestation[13] and a preterm birth rate of 15.2%.[13] While many of the preterm deliveries were iatrogenic and for maternal reasons, there are reports of fetal distress as the indication in some cases,[13] although in others

the indication for delivery is unclear.[30] At present, there is insufficient evidence to determine any correlation between spontaneous preterm labor and COVID-19 infection in pregnancy although there are some reported cases of preterm prelabour rupture of membranes.[15,25]

There is currently no evidence to suggest that COVID-19 is teratogenic,[31] and early reports indicate no increased rates of miscarriage or early pregnancy loss in relation to COVID-19 infection.[25,31] Recently a second trimester (19 weeks) miscarriage was reported,[32] describing COVID-19 infection on the maternal side of the placenta suggesting acute placental insufficiency resulting in subsequent miscarriage. The case was supported by virological findings in the placenta, and placental histology demonstrated inflammatory infiltrates and evidence of funitis. There was no evidence of vertical transmission. Another case describes severe oligohydramnios in the context of COVID-19 infection,[33] although further data are required to investigate this potential association. Similarly, the rates of intrauterine growth restriction and other possible effects of the virus are yet to be determined with little or no data available on the above statistics at present to make any sound clinical conclusions. To date, there are two stillbirths reported secondary to severe maternal infection13 and one neonatal death secondary to complications of prematurity.[13]

Vertical Transmission

At present, the data suggests that there is little evidence of vertical transmission to the newborn. An early study by Chen *et al.* tested for SARS-CoV-2 on neonatal throat swabs of eight newborns and breast milk samples of three mothers, and no positive results were reported.[15] Furthermore, a US study of 43 women had no confirmed cases of COVID-19 detected in neonates upon initial testing on the first day of life.[18] Similarly, a systematic review of 41 pregnancies in which the majority was delivered by CS, found no clinical signs of vertical transmission.[25] Furthermore, studies assessed if there is an increased risk of vertical transmission associated with vaginal delivery. In a series of three cases of vaginal delivery in Wuhan cord blood and neonatal throat swab samples were collected within 12 h after delivery to determine if there was any neonatal infection with COVID-19 and did not find evidence of maternal-to-neonatal intrapartum transmission of COVID-19.[34] More recently, an Italian study of 42 women, 24 of which

gave birth vaginally, observed 2 early neonatal cases of COVID-19. However, they concluded that one was likely due to cross-contamination and the other due to early neonatal infection, but they could not entirely exclude the possibility of intrapartum transmission. In conclusion, they felt that vaginal delivery was associated with a low-intrapartum risk of transmission.[14] There is one case report of severe COVID-19 in a diabetic patient with a positive neonate from a 16-h swab, who was delivered by CS, which has also raised the possibility of vertical transmission.[16] At present, the numbers are small and there are no data to suggest recommending either CS or vaginal delivery to reduce the risk of transmission to the neonate.

Diagnosis and Treatment

A real-time reverse transcriptase-polymerase chain reaction assay is the current gold standard for detecting SARS-CoV-2 from respiratory specimens in patients with suspected COVID-19[10] with a sensitivity of circa 70%. Clinicians should consider retesting if clinical suspicion for COVID-19 remains with an initial negative swab, and chest imaging may aid confirmation of infection.[10] When CT is required, for further investigation, this should not be delayed in pregnant women.

There are significant challenges when treating pregnant women with COVID-19 in severe and critical groups. Our anesthetic colleagues face particular challenges with regards to mechanical ventilation in the presence of a gravid uterus. The adoption of the prone position can help overcome some of these issues. Prone ventilation has been found to significantly improve oxygenation in the setting of ARDS, and its feasibility and safety in pregnancy have been documented.[35,36] Similarly, clinicians may be more cautious in the use of medical treatments, especially experimental treatment options, with pregnant patients and perhaps may also be hesitant to prescribe certain drugs in the pregnant population. It must be remembered that the health of the mother should be prioritized in the treatment of severe COVID-19 cases. In these critical cases, this can lead to difficult decisions, which in the maternal interest may be to terminate the pregnancy for pre-viable gestations or result in an iatrogenic preterm delivery,[23] which in turn can result in significant neonatal morbidity and mortality.

Thromboprophylaxis

There are emerging reports of an increased incidence of both venous and arterial thromboembolism in patients diagnosed with COVID-19 due to excessive inflammation, hypoxia, immobilization and diffuse intravascular coagulation.[37] A Dutch study of 184 patients with COVID-19 pneumonia found that 31% had venous or arterial thromboembolism (acute pulmonary embolism, ischemic stroke, deep vein thrombosis or myocardial infarction).[37] Similarly, a Chinese study of nonpregnant patients admitted to the ICU with COVID-19 pneumonia noted a 25% frequency of venous thromboembolic disorders.[38] Another study observed that anticoagulant treatment with low molecular weight heparin (LMWH) has been associated with improved prognosis in patients with severe COVID-19 infection, stratified by the sepsis-induced coagulopathy score or D-dimer results.[39] Given that normal pregnant women have evidence of the increased generation of thrombin and a pro-thrombotic state, as well as increased intravascular inflammation, which is exaggerated in the context of infection, such patients may be at an increased risk for thrombosis when affected by COVID-19.[40] International guidelines to date recommend thromboprophylaxis on an individualized basis, particularly women with mild symptoms who are self-isolating.[24,31] Venous thromboembolism (VTE) risk assessment should be carried out on all women who are admitted with COVID-19, and VTE prophylaxis is recommended if they are unwell.[24] The RCOG recommends that all pregnant women admitted with COVID-19 infection (or suspected COVID-19 infection) should receive prophylactic LMWH unless birth is expected within 12 h.[31] High-risk patients may need prolonged treatment with LMWH or increased doses, in line with local hospital guidelines and on consultation with local hematology services.

Corticosteroid Use

There is no evidence that giving steroids for fetal lung maturation causes harm in the context of COVID-19 infection.[31] There are reports of worse outcomes for patients with the use of corticosteroids; however, the typical corticosteroids used in pregnant women are roughly one-fourth to one-tenth of the amount used in these publications.[41] Furthermore, none of the patients were pregnant, and these studies were unable to control for underlying medical comorbidities, ventilation or ICU status.[41] At present, there is no evidence to recommend any change in routine clinical practice for targeted corticosteroid use for fetal lung maturation as per local hospital guidelines.

Antenatal Care

It is recommended that all pregnant women observe social distancing and follow self-isolation guidance to prevent exposure to COVID-19 and practice good hand hygiene.[3,31] FIGO currently recommends that during the course of the pandemic, the general principle should be to minimize in-person office visits3 and if practical and appropriate, consider appointments via telephone or videoconferencing. Women with symptoms of COVID-19 should be tested and appointments delayed if possible, during the period of self-quarantine. If symptoms persist, they should call and make an appointment for testing and/or hospitalization. Maternity units should consider additional measures, and these should include limiting the number of support persons/visitors with patients for outpatient and inpatient visits, including labor and delivery areas.[3]

For pregnant women who have recovered from the virus, close follow-up is recommended with a regular sonographic assessment of fetal growth and well-being as data is lacking on the potential development of intrauterine growth restriction (IUGR) and placental insufficiency.[22,33]

Labor and Delivery

For women who are either suspected or confirmed COVID-19 positive, appropriate care must be taken at the time of labor and delivery. As mentioned above neither CS nor vaginal delivery confers any additional risks to either the mother or the fetus, and mode of delivery should be determined on an individualized basis. Adherence to infection precautions is critical and should be planned in advance at a local level. This is particularly important in low-income countries with limited resources. Staff attending to these women should be provided with the necessary personal protective equipment (PPE). At present, there are no studies recommending fetal monitoring of asymptomatic pregnant women.[31] Continuous CTG monitoring should be offered to symptomatic patients

in labor.[31] Labor management should be delivered in a manner that is safe, with reference to minimum staffing requirements to limit exposure but with the capacity to provide emergency obstetric, anesthetic and neonatal care when necessary.[31] Women should be permitted and encouraged to have a birth partner present with them during their labor and birth.[31]

The Federation of Obstetric and Gynecological Societies of India in their recommendations suggest that for delivery, intubation and resuscitation, and during surgery for a suspected or confirmed COVID-19 positive patient the following should be used: disposable surgical cap, medical protective mask (N95), work uniform, disposable surgical gown, disposable latex gloves and full-face respiratory protective device or powered air-purifying respirator.[42]

Breastfeeding

In relation to breastfeeding, in a woman who is COVID-19 positive, the main risk for infants is the close contact with the mother, who is likely to shed infective airborne droplets.[43] The research from China, although limited, has not shown a virus in breast milk,15 and in light of the current evidence, the benefits of breastfeeding seem to outweigh any potential risks of transmission of the virus through breast milk.[3] For those wishing to breastfeed, precautions should be taken to limit the viral spread to the baby by observing strict hand hygiene before touching the baby. A facemask should be worn while breastfeeding. With regards to expressing breast milk, women should use a dedicated breast pump and ensure appropriate cleaning after each use.[3,43] When a mother with COVID-19 is too sick to care for the newborn, the neonate can be managed separately and can be fed freshly expressed breast milk, with no need to pasteurize it, as human milk is not believed to be a vehicle of COVID-19 transmission.[43]

Treatments

The treatment of a suspected COVID-19 patient begins at presentation to the hospital where the patient should be met by healthcare staff in appropriate PPE at a designated entrance, separate from that of routine antenatal care. A brief overview of the management of a COVID-19 pregnant woman is presented in Figure 1. The patient must be provided a mask and brought to an isolation room. The patient should be assessed rapidly, and a decision made regarding discharge to the community or admission to a hospital isolation room. The initial assessment should include assessing the severity of symptoms, including persistent pyrexia, progressing shortness of breath, hemoptysis and chest pain, as well as the management of other medical comorbidities as outlined above.[24] A multi-disciplinary team approach should be integral to the treatment of the pregnant patient with severe COVID-19 and should include Obstetrics, Infectious Diseases/Respiratory team, Microbiology, Midwifery and Pharmacology.

Pharmacological Agents

Currently, there are no drug treatments for COVID-19 in either the pregnant or nonpregnant populations, and there is no vaccine, hence the mainstay of treatment is supportive.[44] It was expected that COVID-19 would cause a large-scale burden on the health systems of resource-poor countries, which are densely populated. This has not proven to be the case. One speculation is that the older strain of the BCG vaccine, which continues to be used in some counties, might create an innate immune response against other respiratory pathogens.[45] A number of other medications are currently being investigated for use in the treatment of COVID-19 infection and are detailed in brief below.

Chloroquine and Hydroxychloroquine

Chloroquine is known to have the property of increasing the ph of the endosome and thereby preventing virus-cell fusion. It is also widely distributed in the whole body. A study by Wang *et al.* showed the *in vitro* benefit of chloroquine treatment.[46] Trials in China used Chloroquine 500 mg twice a day, also with some observed benefit.[47] Biologically similar hydroxychloroquine (HCQ), which is better tolerated than chloroquine, has also exhibited some promise in the management of COVID-19 in an *in vitro*[48] and *in vivo* setting.[49] The Royal College of Physicians in Ireland has recommended a dose of 400 mg twice a day on day 1, and then 200 mg twice a day from day 2 to 5 in the pregnant population.[24] HCQ given in a dose of 400 mg BD was found to reduce viral load, but a dose of greater than 600 mg/day has been associated with increased risks, including prolonging the QTc intervals.[50] Caution must also be exercised when considering its use for pregnant women with underlying
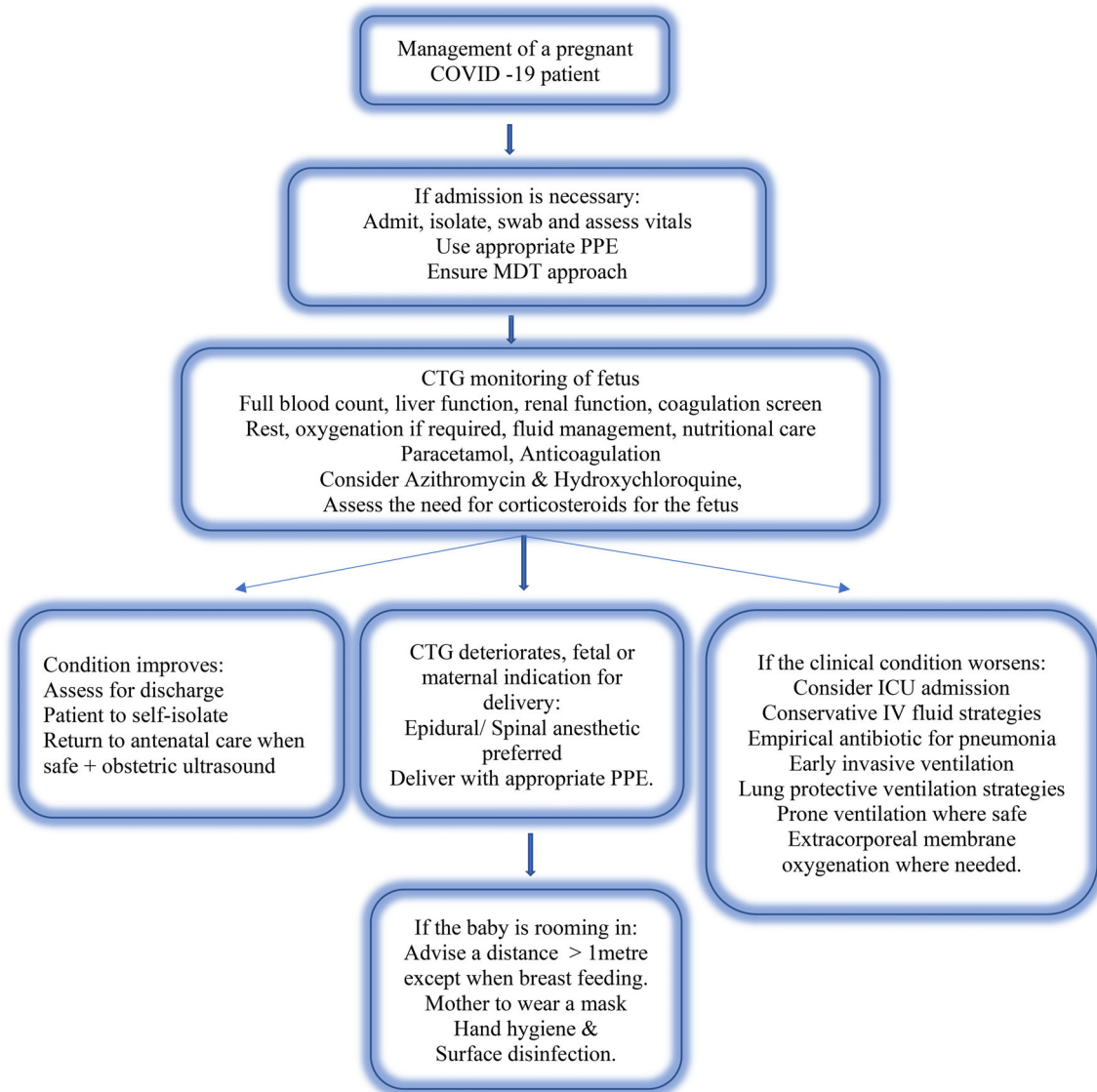
Figure 1 A brief overview of the management of a pregnant woman with COVID-19.

mental health problems as HCQ may interact with anti-psychotics, anti-depressants and methadone increasing the risk of QTc-prolongation, torsade de pointes (TdP) and potentially death.[51]

Azithromycin

Azithromycin, given in the dose of 500 mg daily for 3–5 days, may reduce the risk of super-added infections.[49] Its use appears to be safe in pregnancy and compatible with breastfeeding.[24]

Remdesivir

Remdesivir has been suggested as a potential treatment option for COVID-19, and there are currently four ongoing trials in the United States.[52] It was developed initially to combat Ebola. It works by inhibiting RNA polymerase and, hence stopping viral replication. It was not found to be effective in the 2019 Ebola outbreak but was effective against SARS and MERS.[53] At present, the recommended dose is 200 mg IV on day 1 and the 100 mg IV from day 2 to 10.

Lopinavir/ritonavir

Lopinavir/Ritonavir, has also been suggested as a potential treatment for COVID-19, although currently there is no proven role for this drug. Cao *et al.* showed no benefit in a randomized controlled trial that included 199 patients in either short-term improvement or mortality.[54]

One hopes that the results of the ongoing trials might help clinicians formulate more definitive care plans, which will result in a decreased viral load and reduce morbidity and mortality. This data from non-pregnant patients may then be extrapolated for the treatment of pregnant women, though there are some calls for the inclusion of the pregnant population in these ongoing trials, particularly where there is experience with these drugs in pregnant women.[55]

Vaccine Development

Scientists around the world are in quest for a vaccine. The options include a recombinant subunit vaccine, a DNA vaccine or an mRNA vaccine.[56] Further experimental studies on T and B cell assays are required to assess the potential of the epitopes to induce an immune response,[57] and the exact timeline for the development of an effective vaccine is yet to be determined.

Mental Health

With the evolution of this virus, we have seen strict social distancing, and the endorsement of lockdowns internationally, the largest of which saw 1.3 billion people in India placed in lockdown on the March 24, 2020. With this new reality of social distancing, some higher-risk groups are also being asked to 'cocoon' and in my respects, this is leading to increased social isolation, particularly for vulnerable members of our society. We are seeing reports of increasing levels of anxiety and depression among the general population,[58-60] pregnant women[61,62] and also among healthcare professionals.[63-65] We must be cognizant of the effect this social isolation will have on our patients, particularly those with underlying mental health conditions and especially at a time when there will be reduced social support from family and friends.[31] There are also reports of an increased incidence in domestic violence, the reasons for which are multifactorial and include increased economic stress, disaster-related instability, increased exposure to abusive relationships and reduced external supports[66,67] as a result of these lockdown measures. We must use antenatal visits as an opportunity to assess women who are at risk and ensure the necessary supports are put in place to help them during this, particularly vulnerable time.

Economic Burden and Healthcare Burden

With no commercially available pharmaceutical interventions or vaccines to prevent infection, treat the disease or curb the pandemic countries are therefore relying on behavior change and non-pharmaceutical interventions, including among others, self-isolation of symptomatic individuals; increased hand hygiene; physical distancing; working from home where possible and school and business closures. As a result, the economic burden of the COVID-19 pandemic has been significant in terms of costs and job loss. Already the US reports as many as 30 million unemployed as of the 30th of April,[68] with unemployment rates in the UK, Ireland and Italy similarly increasing to 10%, 16.5% and 13%, respectively, and are expected to reach as high as 20% in Spain. It is likely that the direct cost of COVID-19 treatment will have a significant impact on other healthcare services. Already many countries have curtailed elective procedures.[69,70] Elective gynecological procedures are also being delayed and given the scale of the crisis is it difficult to determine when these patients will be facilitated for future treatment. FIGO has recommended that health organizations, fertility experts and patients avoid pregnancies and temporarily discontinue all fertility treatments at present.[71] There are also reports that patients are delaying presenting to the hospital for other reasons out of fear of COVID-19 transmission, particularly patients with potential malignancies. This concerning trend has been noted in other medical specialties,[72] and there is a concern that patients with early signs of treatable gynecological malignancies may also be deferring early attendance. This is an area for further review and will likely have a significant impact on services as they return slowly to a state of normality.

Conclusion

The evidence on this novel infection is changing almost on a daily basis, although it will likely be

many months before, we can determine the true impact it will have on both maternal and fetal well-being. In the interim, our primary responsibility is to ensure all women have access to safe maternity services. This includes remaining up to date with the evidence for the treatment of COVID-19 in the pregnant population and also ensure strict infection control measures to stem the spread of disease within our own units. Second, we must be aware of those that are potentially vulnerable during this time, both patients and colleagues, and we must ensure adequate supports are available to them during these uncertain times. Finally, we must look to the future. This is truly uncharted territory and at present, there is no cure or vaccine for this disease, and we are faced with the prospect of having to co-exist with this virus until an effective treatment option is found. Many countries are looking at safe ways to ease social restrictions over the coming months and as clinicians, we must prepare and plan on how we can begin to re-establish our gynecology and fertility services to ensure all women receive the necessary care they need in these unusual times.

Disclosure

The authors declare no conflict of interest.

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