GYNECOLOGICAL ENDOCRINOLOGY
2020, VOL. 36, NO. 4, 277–278
https://doi.org/10.1080/09513590.2020.1747426

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COVID-19 AND PREGNANCY

Severe acute respiratory syndrome coronavirus 19 and human pregnancy

The new disease

The severe acute respiratory syndrome (SARS) due to coronavirus SARS-CoV-2 (COVID-19) emerged from Wuhan city (Hubei Province, China), and secondarily extending to other Asian countries and Europe. Currently, North, Central and South America (Caribbean included) are also reporting cases with an exponentially increasing trend [1,2]. The spread of infection follows a pattern similar to the observed in historic medieval pandemias; although at a faster rate due to modern time airway traveling facilities and probably to climatological factors.

Bat-CoV, SARS-CoV (1 and 2) and MERS-CoV (causing Middle East respiratory syndrome) have partial homology [3]. The median incubation period of SARS-Cov-2 infection is 5–6 days [4]. Patients may be asymptomatic or have mild symptoms (e.g. cough, shortness of breath and/or fever) or present severe symptoms of pneumonia [5]. Other manifestations include lymphocytopenia (<1500 cells/mm^3 and/or platelet count $<150{,}000$/mm^3), acute respiratory distress syndrome, acute kidney or heart failure, and rhabdomyolysis. Mortality rate is age dependent, reaching up to 15% in older males [4,6]; with more deaths observed among older males who have comorbidities [7]. Diagnosis requires polimerase chain reaction assay confirmation [8–10].

Massive airway transportation has aided to the spreading of the infection out of the Asian region. Unfortunately, responses from different countries were not prompt and rigorous enough to contain the severity of the situation. In this sense, countries or regions have responded differently. Indeed, while South Korea, Japan, Singapore and Hong Kong have been able to manage the outbreak, promptly controlling the number of new cases, others have not succeeded. By March 19, 2020, China has not reported new SARS-Cov-2 cases.

Some European countries have even been skeptic to what was happening in China and other Asian countries, allowing massive street manifestations [11], instead of implementing early measures such as self-isolation or strict quarantine (including the closing of frontiers) [12]. Other European countries reacted 'too little, too late', underestimating the coronavirus pandemic risk and enacting swift measures to protect the population [13]. In any case, all decisions were taken too late when the virus was already widely extended into the population [14]. In addition, some recommendations of supranational organizations (e.g. WHO and FIGO) were probably not followed [15,16]. Despite this, strategies for pandemic management should be based on the scientific rigor of professional organizations, real-time information from scientific journals, and instant online communication with worldwide coverage [17–19]. The magnitude of this global crisis resembles that of other pests, such as the Black Death occurring centuries ago, or the more recent H1N1/09 pandemic viral infection. It is expected that these pandemics will occur more frequently in the near future.

The pregnant woman

Pregnant women can be infected by SARS-CoV (1 and 2) or MERS; however, COVID-19 disease seems less aggressive than the other viral infections. Despite this, available data linking COVID-19 disease with adverse maternal and perinatal outcomes are limited; however, infected pregnants do not appear to be more susceptible than individuals of the general population [19] and fetal involvement will depend, to a great extent, on maternal well-being.

Vertical transmission has not been demonstrated in pregnant women with SARS-CoV-1 and MERS-CoV infection [20]. In this same sense, although COVID-19 infections have been reported in few pregnant women, no vertical transmission has yet been documented [21–23].

The effects of COVID-19 infection on maternal and fetal health will be defined with the outcome of current positive pregnant women. If one takes into consideration outcomes of other viruses of the same family, and the available evidence, it is less likely that the infection is a determinant factor for adverse reproductive outcomes. The problem in pregnant women may, however, depend on the general complications related *per se* to the infection. Nevertheless, most pregnancy cases are expected to be mild or moderate [19] although COVID-19 pneumonia pregnancy cases have been reported [22,24].

It seems premature to determine a possible risk of miscarriage or second trimester loss due to COVID-19 based on case reports of SARS-CoV-1 and MERS that were not later confirmed [19,25]. As with SARS-CoV-1 and MERS, fatality has been observed in cases of COVID-19 pneumonia. Despite this, fatality rate among pregnants seems to be similar to that of non-pregnants [20–22].

Current obstetric recommendations are based mainly on outcomes observed in Chinese pregnant women; however, quality of healthcare is not homogeneous in Asian and non-Asian countries. Hence, outcomes worldwide will differ which will probably be related to organization/clinical services, quality of care and the available resources of each country. Fortunately, within this scenario, it seems that the placenta protects fetal growth and development although outcome data of women acquiring the infection during early phases of pregnancy is still lacking.

One cannot omit the fact that to fight pandemics there is an urgent need for international collaboration with the overcoming of political barriers. Depending on the political organization of some countries, regions or communities bureaucracy may increase and condemn individuals to be exempt of benefits on equal terms and effectiveness. This situation must serve as a lesson to be learned in the mediate future.

The current SARS-CoV-2 pandemia is global although the prevalence of the infection cannot be assessed due to the lack of sufficiently precise tests to be offered to all possible suspected patients. For now, 'flattening the curve' of cases seems to be the best strategy. Although this seems simple, in fact, it is difficult to be carried out and may be delayed or never achieved for some countries. In any case, this is not the final solution but may provide us time until an effective anti-viral agent or vaccine is developed. To date, the prevention of contagion is the best treatment for the current scenario.

Outcomes of pregnants delivering in the upcoming months will provide more information on this particular new disease and its relation to pregnancy. In the meantime, it seems best that women should be encouraged to delay becoming pregnant until more evidence related to risks associated to COVID-19 infection during pregnancy is available. In addition, women susceptible to be submitted to assisted reproductive technology should take some additional precautions as recently recommended by La Marca et al. [26].

Finally, the current pandemic has revealed a new phenomenon or scenario in scientific communication that is now carried out in real time and without barriers, with the sharing of scientific information between technological centers/hospitals and the general population.

Author contributions

The first draft of this contribution was performed by FRPL, then all authors contributed to the final editing of the manuscript. All authors approved the final version.

Disclosure statement

The authors report no potential conflicts of interest.

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Received 20 March 2020; revised 21 March 2020; accepted 23 March 2020