

PREGNANCY IN THE ERA OF COVID-19. A MULTIPLE BIO-PSYCHOLOGICAL CHALLENGE

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SUMMARY

Pregnant women and their fetuses represent a high-risk population during infectious disease outbreaks, like current COVID-19 Pandemic, given the fact that consequences of a period of intense stress and anxiety during pregnancy, as spontaneous preterm labor and psychiatric postpartum disorders, are already known. As fetal brain faces neurodevelopmental challenges in a cytotoxic environment of possible inflammation and increased catecholamine levels, mother also has to cope with a hostile environment of uncertainty, rich in bio-social threats that can be devastating for both maternal and fetal health, as well as for Public Health.

Key words: COVID-19 – pregnancy - bio-psychological challenge

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INTRODUCTION

Pregnant women and their fetuses represent a high-risk population during infectious disease outbreaks, like current COVID-19 Pandemic, while complications of COVID-19 include miscarriage (2%), intrauterine growth restriction (IUGR: 10%), and preterm birth (39%). (Dashraath et al. 2019). Maternal mental health problems are associated with short-term and long-term risks for the affected mothers' overall health and functioning, as well as for their children's physical, cognitive and psychological development. Conditions such as extreme stress, emergency and conflict situations, and natural disasters (Sago et al. 2020) can inflate the risks of perinatal mental health morbidity. Therefore, it is plausible that pregnant women are vulnerable to mental ill-health during the COVID-19 pandemic (Hocaoglu et al. 2020, Thapa et al. 2020), with higher fear of COVID-19 among pregnant women being associated with higher depression, suicidal intention, and poorer mental health, and vice versa. (Ahorsu et al. 2020). It appears also that the behavior of husbands affects their wives' mental health and the reverse is equally true (Ahorsu et al. 2020, Figueiredo et al. 2018, Røsand et al. 2012).

STRESS, QUARANTINE AND NEUROINFLAMMATION

The effects of the stress and panic, started by the onset of the global pandemic, in addition to the prolonged confinement, must be considered when assisting both noninfected and infected pregnant women. Castro et al. (2020a), while early cessation of breastfeeding may also contribute to poor health among mothers and infants (Shonkoff & Garner 2012). Studies have also shown

that poor couple interaction or poor relationship quality also affects pregnantly mental health, precipitating anxiety or depression symptoms during pregnancy (Ahorsu et al. 2020, Figueiredo et al. 2018, Røsand et al. 2012).

The consequences of a period of intense stress and anxiety during pregnancy, as spontaneous preterm labor and psychiatric disease on the siblings are already known, and special attention must be reserved for those pregnant, noninfected women, in this time of an overloaded health care system and exhausted health care workers (Arenliu et al. 2020, Castro et al. 2020b, Usul et al. 2020)

Furthermore, risk of miscarriage associated with COVID-19 remains unclear although the presence of Severe Acute Respiratory Syndrome Corona Virus -2 (SARS-COV- 2) in a second trimester placenta has been demonstrated. (Thapa SB et al. 2020), while new animal research suggests SARS-CoV-2 can invade the brain and directly act on brain cells, causing neuroinflammation (Rhea et al 2020).

Fever, with a median temperature of 38.1-39.0°C, is the prevailing symptom in COVID-19. (Guan et al. 2020). Cohort studies in patients with other infections have not shown increased risks of congenital anomalies from maternal pyrexia in the first trimester (Sass et al 2017), while childhood inattention disorders are more common, possibly related to hyperthermic injury to fetal neurons (Gustavson et al. 2019)

At the same time, pregnant women are at increased risk of developing mental health problems such as depression, anxiety, and post-traumatic stress symptoms (Hocaoglu et al. 2020). The risk may be related to concerns regarding the wellbeing of the unborn child, but aggravated by unintended consequences of preventive measures, such as quarantine, physical distancing, home isolation, remote consultations with healthcare

professionals (Arenliu et al. 2020, Sago et al. 2020), and inability to obtain expected level of support and care prenatally as well as during the intrapartum and postnatal periods. (Thapa et al. 2020).

Fear of COVID-19 was significantly and positively associated with depression, suicidal intention, and preventive behaviours but negatively associated with mental health among pregnant women (Ahorsu et al. 2020, Khamees 2021). This fear can be mainly attributed to physiological and mechanical changes occurring in pregnancy, that increase susceptibility to infections in general (Abbas 2020), particularly when the cardiorespiratory system is affected, and encourage rapid progression to respiratory failure (Dashraath et al. 2020).

NEUROIMMUNOMODULATION, PREGNANCY AND SARS-COV-2

This susceptibility and the reasonable fear (Yasin 2020) that generates, can be also explained through pregnancy bias toward T-helper 2 (Th2) system dominance, which protects the fetus, but leaves the mother vulnerable to viral infections, which are more effectively contained by the Th1 system. These unique challenges mandate an integrated approach to pregnancies affected by SARS-CoV-2 (Dashraath et al. 2020).

This modified approach that intergrades the immunomodulating effects of both pregnancy and anti-COVID-19 drugs administration, should be adopted when addressing clinical therapeutic dilemmas, like the use of hydroxychloroquine which is an antirheumatic drug that has been shown to prevent inflammation and organ damage and to reduce the proinflammatory signaling activation and cytokine production of IL-1, TNF, and type I interferons (Castro et al. 2020a).

As far as immunomodulation during pregnancy is concerned, mainly within the frame of tackling COVID-19 Pandemic, we should also take in account that since pregnant persons were excluded from the initial phase 3 clinical trials of COVID-19 vaccines, limited data are available on their efficacy and safety during pregnancy. (Rasmussen et al. 2020)

All of the abovementioned uncertainties are likely to add to psychological stress and may even lead to increased rates of pregnancy terminations (Thapa et al. 2020). As fetal brain faces neurodevelopmental challenges in a cytotoxic environment of possible inflammation and increased catecholamine levels, mother also has to cope with a hostile environment of uncertainty, rich in bio-social threats that can be devastating for both maternal and fetal health, as well as for Public Health.

PTSD IN POST COVID-19 ERA

Those conclusions stress the point that medical staff should be aware of and well-prepared to cope with increased anxiety, PTSD symptoms (Hocaoglu 2020),

and other psychiatric disorders that are likely to be triggered during pregnancy and postpartum period in COVID-19 era, jeopardizing current and future well-being of mothers as well as of the neonates. At the same time, COVID-19 Pandemic can even be a psychologically traumatic experience, affecting not only vulnerable population groups, like pregnant women (Hocaoglu 2020), but also people who exercise power in any of its forms (Liapis & Alevizopoulos 2021), especially those who are compelled to make hard and quick decisions under extreme pressures, as clinical doctors often must do when treating high-risk population groups infected by SARS-CoV-2 or suspected of having COVID-19 (Usul et al. 2020).

Therefore, we should always keep in mind that physician – patient relationship is also one of power (Gonzalez-Garcia 2019) and that recent dramatic transformations in social structures as well as in life philosophy and values that have been precipitated by SARS-CoV-2 spreading, are already demonstrating a significant impact on mental health and psychopathology depicting a new, even more prosocial and altruistic, role for psychiatry (Jakovljević 2011), as well as for medicine and physicians in general, at the face of novel bio-psychological challenges that will arise in post COVID-19 society.

Even though the small number of scientific reports do not allow for full assessment of the risk and consequences of SARS-CoV-2 infection for pregnant women and neonates (Mazur-Bialy 2021), care should be directed, in the light of the most current evidence-based recommendations, to measures that would decrease the impact of this pandemic on vulnerable populations (Khamees 2021). Such interdisciplinary initiations in the field of reproductive care, require incorporating the rapidly evolving data regarding SARS-CoV-2 and its impact on pregnancy, as well as taking a stand to advocate for best scientific and clinical practices to optimize both women's health and public health during this pandemic (Afshar 2020).

CONCLUSION

On these grounds, we should always take in account that the unprecedented circumstances of the pandemic threat, especially towards population groups that comprise multiple vulnerabilities, like pregnant women, require clinical agility and constant reevaluation of our therapeutic interventions. The significant hazard that COVID-19 represents for pregnant women's and for their offspring's, both physical and mental, health and development, intensifies the need for evidence based therapeutic and preventive measures aiming at alleviating the unequal burden of this disease and its detrimental, biological and socioeconomic, impact, focusing, at the same time, on social determinants of health that require multilevel approaches in order to respond

effectively to this multiple bio-psychological challenge that pregnant women, their doctors and Health Care Systems have to tackle with, during this global disease.

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