

COVID-19: women with diabetes and hypertension during pregnancy

Midwives should be prepared to create individualised care plans, share data and liaise with other departments, to improve maternal and fetal outcomes for pregnant women with these conditions

C COVID-19 is a worldwide pandemic and poses a significant challenge to the care of pregnant women, especially pregnancies complicated by diabetes and hypertension. These pregnancies are associated with increased adverse pregnancy outcomes for both mother and child and require further

care (Gu et al, 2019). Notably, the first maternal mortality in the UK was a woman with type 2 diabetes (Ahmed et al, 2020). A multi-disciplinary approach is critical to the provision of optimal care to these patients. All clinical staff involved in the care of these patients should receive adequate training, including in the use of personal protective equipment (PPE).

The current outbreak of COVID-19 is sweeping across the world and having a devastating impact on healthcare systems globally. Increasing evidence shows that hypertension and diabetes are among the most significant comorbidities in patients with COVID-19 and these two conditions are also associated with increased morbidity and mortality (Yang et al, 2020; Guan et al, 2020). Therefore, pregnant women with diabetes and hypertension who contract COVID-19 would be at even higher risk of adverse pregnancy outcomes. Since diabetes and hypertension (pre-existing or pregnancy-induced) are common complications in pregnancy, healthcare professionals will face extra challenges with these patients.

Pregnancy, COVID-19 and cardiometabolic risk factors

There are several reasons why COVID-19 may pose a greater risk in pregnancies with diabetes or hypertension. Evidence shows that there exists a complex interplay between fetal cells and the mother's immune response, and thus pregnancy may alter a woman's susceptibility to and severity of certain infectious diseases (Mor and Cardenas, 2010). Additionally, hyperglycaemia in pregnant women with diabetes dysregulates both innate and adaptive immunity (Sifnaios et al, 2019). Upregulated circulating inflammatory

factors linked to innate immunity and proinflammatory CD4+ T cell phenotype have been observed in pregnancies in women with diabetes (Sheu et al, 2018). Patients with pre-eclampsia (new onset of high blood pressure in pregnancy, usually associated with protein in urine) have altered immunomodulation associated with maternal endothelial dysfunction (Rambaldi et al, 2019).

Women with diabetes and/or hypertension in pregnancy

In pregnancies in women with diabetes and/or hypertension, preventive precautions (such as refraining from unnecessary travel, avoiding crowds and public transport, and practicing and maintaining good personal and social hygiene) would need extra consideration (Liang et al, 2020). This will include more regular monitoring and an increased effort to control blood pressure and glucose levels. Clinicians can provide online or tele-consultation services, which would reduce the need for face-to-face clinic visits, lowering the risk of exposure to the virus. A clinical trial in the UK involving pregnant women has already demonstrated that a phone-based blood glucose management system can achieve comparable efficacy on glycaemic control, with many advantages, such as higher patient satisfaction and similar cost-effectiveness in women receiving treatment for diabetes (Mackillop et al, 2018). Similarly, Hirshberg et al (2018) demonstrated in a clinical trial that text-based monitoring is more effective in obtaining blood pressure measurements, as well as meeting current clinical guidelines in women with pregnancy-related hypertension, compared to face-to-face clinic visits. With remote blood glucose and

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blood pressure monitoring becoming more achievable, this could be a novel approach in the care of these women (Iacobucci, 2020).

Fear and anxiety about being infected should not be overlooked and can be exacerbated by the pressures of extended quarantine (Brooks et al, 2020). These factors may increase the mental burden of pregnant women with diabetes and hypertension. Since excessive stress can be harmful to both mother and her developing fetus (Monk et al, 2019), this additional consequence of the COVID-19 pandemic should be considered when planning their care. One example of an innovative approach to help alleviate patient fears can be seen in a Twitter account that was recently set up by clinicians in the UK to provide trusted advice to patients and answer questions around COVID-19 (Iacobucci, 2020). This shows that social media can be used as a tool for relieving patients' distress and anxiety within a remote setting.

For hospitalised patients, blood pressure and glucose levels should also be managed with particular care, in addition to other recommended treatments for pregnant women with COVID-19. Women with diabetes and/or hypertension are at high risk of caesarean delivery and COVID-19 further increases this risk (Ehrenberg et al, 2004; Der Tuuk et al, 2015). Should a caesarean section be undertaken, a negative pressure operating room would be recommended for COVID-19 patients. Clinicians should be adequately trained in operating room procedures in advance and full PPE should be used. Gonzalez-Brown et al (2020) provide good guidance on this topic. For example, assigning specific operating theatres for COVID-19 patients, preparing full PPE, including N95 masks, face shields, using regional anaesthesia. Consultation with neonatologists should also be considered early during pregnancy and delivery.

Conclusions

Whilst pregnancy combined with COVID-19 presents a unique challenge, the added complications of diabetes and/or hypertension necessitate extra consideration. Clinicians should provide

appropriate support to lower their risk of infection and should also liaise with doctors in other departments (such as respiratory, neonatal intensive care unit) involved in the patient's care. This would enable them to prepare individualised treatment plans, analyse cases, share data, and exchange expertise to improve maternal and fetal outcomes. **BJM**

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