



A novel pathophysiology of gestational gigantomastia in the setting of COVID-19 infection

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The COVID-19 pandemic has been affecting the world since December 2019 (1), and was initially recognized for its pulmonary complications, which could be severe and life-threatening. It soon became apparent that coagulopathic complications of both the venous and arterial system were also observed, especially among critically ill patients with COVID-19. Most commonly these were associated with thrombocytopenia and elevated D-Dimers (2). These thrombotic and thromboembolic events contributed significantly to overall morbidity and mortality of affected patients and were seen especially frequently in the intensive care setting. It has been discussed that these changes in the coagulation system could be either directly related to the infection or to the altered physiology that is associated with severe disease (3).

Gestational gigantomastia is a rare disease entity and is characterized by significant, rapid and disproportionate enlargement of the breasts in the pregnancy or postpartum setting. Its etiology is not completely understood (4). Despite its overall benign nature, fatal outcomes have been reported (5), and it has occasionally been associated with concomitant malignancy (6,7).

In their case report, Ecanow *et al.* highlighted a new pathophysiology of gestational gigantomastia in association with concurrent COVID-19 infection (8). Even though superficial necrosis of the skin has been known to complicate gestational gigantomastia (9), its association

with deep tissue necrosis and thrombotic disease has not been observed before. This raises the thought of whether this pathologic finding could be directly related to the concomitant viral infection. It is unclear if the coronavirus directly caused the gestational gigantomastia; or simply complicated its course by the additional component of infarctive necrosis; or was instead an incidental concomitant occurrence with no relation to the disease in the breast. However, the unique pathologic appearance of thrombi within an area of deep tissue necrosis makes the latter scenario less likely, since this has not been described in the setting of gestational gigantomastia before.

In this patient, the disease course was not so severe that the patient would have been considered high risk for classical thrombotic events simply due to immobilization or disease severity. In fact, she was not critically ill; never requiring intensive care unit (ICU) admission, intubation or prolonged immobilization. Her only other obvious risk factor for thrombotic disease was her postpartum state. During delivery, a greater synthesis of procoagulant factors facilitate effective hemostasis (10). Most common hypercoagulable events in the puerperium are of venous nature (11). It is plausible to suggest that the viral infection could have directly complicated this patient's gestational gigantomastia and contributed to its severity, or may have even been a causative agent.

As COVID-19 is becoming an endemic virus, we will

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be learning more about its impact on breast tissue and breast disease and expand our understanding of its impact on the coagulation system. This will lead to new treatment recommendations. It is important to recognize that for extremely rare diseases like gestational gigantomastia, diagnostic and treatment recommendations may be based on case reports. Ecanow *et al.* highlighted a new aspect of this disease in association with this now all-too common virus and emphasize the need to consider anticoagulation for patients who present in a similar fashion, in addition to treatment of the gestational gigantomastia.

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