



CT Scan Features and Clinical Course of COVID-19 Pneumonia in Pregnant Women: Can CT Predict the Prognosis?

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Dear Editor,

Coronavirus (COVID-19) infection, a new highly contagious respiratory disease has raised a significant amount of concern throughout the world. As in any other infectious disease, some groups are at higher risk and need more attention including elderly people or those who suffer from comorbidities. Pregnancy by itself is considered a state of partial immune suppression because of physiological changes in immune and cardiopulmonary systems which make pregnant women vulnerable to viral infections and severe illness after respiratory virus infections (1). On the other hand according to data during previous epidemics of coronavirus infections (SARS-COV and MERS-COV), pregnant women were more prone to present with critical clinical features and perinatal outcomes (1). Although according to initial reports mostly from China, COVID-19 does not seem to follow such a critical course in pregnancy, maternal death can occur in patients with severe disease (2). Therefore, it seems reasonable to pay attention to pregnant women in this worldwide pandemic as well as comparing them with non-pregnant affected cases.

Most common clinical features in pregnant women have been reported as fever, cough, myalgia, malaise, sore throat, diarrhea, and shortness of breath, which are similar to non-pregnant women (1, 3). In comparing lab data, lymphopenia and increased C-reactive protein (CRP) levels were found in the majority of patients (1). Low dose computed tomography (CT) scan plays an important role in the diagnosis of COVID-19 pneumonia in pregnant women and its severity assessment (1, 3, 4). It is reassuring that the radiation dose to the fetus is negligible (0.01–0.66 mGy) from a

single chest CT scan, and exposure to radiation of < 50 mGy is not associated with an increased risk of fetal anomalies or pregnancy loss (5). On the other hand, it has been shown that CT scan has a superior sensitivity compared to RT-PCR in the early detection of COVID-19 pneumonia (4).

There are limited studies that have focused on the pattern of CT involvement and the pattern of timeline progression in pregnant patients. Regardless of being or not being pregnant, the most common early chest CT findings were reported as ground glass opacities (GGO) mostly in the lower lobes with peripheral distribution. Imaging findings of COVID-19 have overlap with other viral infections, but the patterns of involvement with predominantly peripheral distribution will facilitate the diagnosis of COVID-19 pneumonia (4). With progression of COVID-19 disease, CT scan showed crazy paving pattern and consolidations that were followed by gradual absorption (3, 4). It has been shown that the CT features, the timeline progression, and the CT severity scores at each stage of the disease were similar to non-pregnant women (3). Furthermore, Liu et al. found that consolidation was significantly more common in the infected pregnant groups compared to non-pregnant women, while GGO ± reticulation was more frequent in the non-pregnant adults (4). Also, they showed that presence of more consolidation and relatively higher CT severity score in infected pregnant women suggested a more severe disease (4). The CT severity score is an index proposed for assessment of severity of lung involvement by COVID-19 pneumonia (4).

Findings about perinatal outcome are controversial. Some suggest no evidence of poor perinatal outcome (fe-

tal death, neonatal death, neonatal asphyxia and low Apgar score)(1,3). Whereas, others report challenging perinatal outcomes including preterm labor and fetal distress (6), coagulopathy accompanied by liver dysfunction (6), and mother's death (2, 6). There is a recently published article by Hantoushzadeh et al. on severely involved pregnant women with high maternal death rate [seven out of nine cases] that focused especially on their clinical course and laboratory findings but not on the severity of findings in chest CT scan (2). We think such critically ill mothers possibly have higher CT severity scores and assessing this index could easily guide clinicians to evaluate the situation of their patients. There is no doubt that chest CT is an efficient and easily available modality for early detection and monitoring of the clinical course of patients with COVID-19, but there is limited data about its role in predicting the severity of COVID-19 pneumonia and prognosis of the disease in pregnant women. We recommend large-scale studies to assess the role of CT in determining the severity of the disease in pregnant women, which would be very helpful along with laboratory data and clinical features to structure the clinical treatment strategy.

Footnotes

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