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LETTER TO THE EDITOR

"Rings of Saturn" appearance: a unique finding in a case of COVID-19 pneumonitis

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Dear Editor,

Since March 2019 when the severe respiratory syndrome of coronavirus disease 2019 (COVID-19) was announced, many radiologic manifestations of COVID-19 have been reported (1). Bilateral ground glass opacities (GGOs) predominantly at lower and posterior segments, mixed pattern of GGOs and consolidation and septal thickening are the most common features. Halo sign, nodular pattern, pleural effusion, and even completely normal findings are less frequently reported.

We have encountered a unique CT appearance of COVID-19 pneumonitis in a 24-year-old man. This finding is not a halo or reverse halo sign as might be expected in these organizing pneumonias. Figure demonstrates focal core opacity and two ring-like opacities immediately around it as in the "rings of Saturn".

From a pathologic perspective, initially the virus enters the alveoli, followed by viral proliferation and local and generalized immune system response with cytokine storm by immunological modulators. This is most commonly followed by a recovery phase with pulmonary parenchymal tissue repair processes (2). CT may initially demonstrate localized GGOs, followed by more widespread GGOs, typically combined with consolidation, crazy paving, and the formation of fibrotic strips (3, 4). Concurrent invasion and resolving phases are due to immunity response in multiple phases as seen in organizing pneumonia.

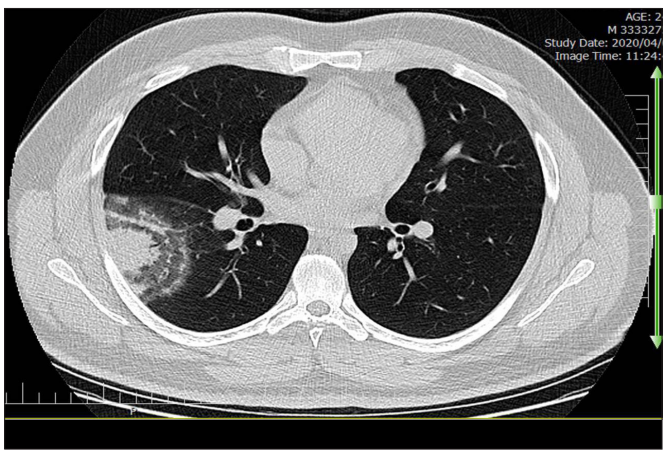

Figure. Axial chest CT scan shows a focal core opacity and two ring-like opacities immediately around it forming the appearance of "rings of Saturn", at the periphery of the right lung.

The most prominent differences between organizing pneumonia and resolving focal GGOs of COVID-19 include faster and less severe local reaction, with faster recovery and less fibrotic changes of simple resolving GGOs. Focal necrosis with surrounding hemorrhage is the main pathology of the halo sign typical of organizing pneumonia, which is not expected in COVID-19.

The pathological distribution of organizing pneumonia is in both alveoli and terminal bronchioles. Bronchiolar involvement can be due to thick alveolar exudates and inflammatory bronchial wall thickening.

Similarly, our presented feature appears to be due to bronchiole interstitial spreading and vascular impairment as a part of the cytokine storm with interstitial pneumonitis and focal organizing pneumonia with step-by-step veno-lymphatic spreading. This is the first report of this particular finding and needs to be supported by additional observations and studies.

Conflict of interest disclosure

The author declared no conflicts of interest.

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