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LETTER TO THE EDITOR

Appropriate terms for chest CT features in COVID-19 infection

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Dear editor,

We have read with interest the article by Dr. Iwasawa and colleagues [1] published in the Japanese Journal of Radiology issue of May 2020. The authors reported on ultra-high-resolution CT (U-HRCT) the hallmarks of COVID-19 pneumonia, and described for the first time the alveolar collapse.

Some points are needed to be discussed and clarified in regards to pneumonia and alveolar collapse in COVID-19.

Similarly to others, the authors attributed chest CT parenchymal features (ground-glass opacity, consolidation, linear opacity, crazy paving) to COVID-19 pneumonia [1].

Direct endothelial damage determined by COVID-19 [2] and a detailed autopsy series of predominantly Caucasian COVID-19 patients [3] demonstrated that pneumonia is not the only histopathological lesion in the lung tissue. In COVID-19, the respiratory failure represents the primary cause of death: in the lung tissue of patients who died, the pattern of pneumonia ranges from 0 to 48% of cases [2, 3]. Other pathological features in the lung tissues of patients who died with COVID-19 such as exudative diffuse alveolar damage with massive capillary congestion, microthrombi, moderate intraalveolar fibrin exudation, pulmonary embolism, alveolar hemorrhage and vasculitis may determine similar patterns to those of pneumonia on chest CT in COVID-19 patients. Therefore, some discrepancy with respect to clinical diagnoses has been demonstrated, since cases clinically diagnosed as "pneumonia, COVID-related" only showed signs of diffused alveolar damage and no signs of suppurative bronchopneumonia both macroscopically and histologically [3].

By using U-HRCT, Dr Iwasawa and colleagues described for the first time the alveolar collapse resulting in a local lung volume loss. In the histopathologic literature, the alveolar collapse is synonym of atelectasis, a secondary phenomenon causing loss of pulmonary tissue with collapse of numerous alveolar cavities. So, the term "alveolar collapse" should be replaced with "atelectasis" whose histological and radiological features are well known. In the autopsy study by Menter et al. [3] no case of atelectasis was found.

In conclusion, an appropriate terminology is necessary for the radiological diagnosis and the pulmonary CT findings should be confirmed by autopsy studies. In severe COVID-19 patients, based on the pathophysiology and histological data the pulmonary alterations are not exclusively attributable to pneumonia [4]; the term alveolar collapse is improper and should be replaced by atelectasis.

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