

Radiation pneumonitis and Covid-19 pneumonia: are there overlapping features? Letter to editor

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Abstract

Respiratory involvement of Covid-19 infection, presenting as a mild flu-like illness to potentially lethal acute respiratory distress syndrome is the main clinical manifestation in adults. As well assessed by many reports, CT scan of the chest show a pictorial fashion of images due to the severity and stage of the disease, starting from focal nodular or mass-like opacities with air bronchogram to areas of ground glass consolidation or whited out lung. However, these findings have been defined not specific to this disease. At the Covid-19 pandemic time, they could yield confounding reporting in case of cancer patients treated with thoracic radiotherapy (RT) developing features of atypical radiation pneumonitis. Hypersensitivity pneumonitis and radiation induced Bronchiolitis Obliterans Organizing Pneumonitis (RT-BOOP) should be accounted in the differential diagnosis.

Coronavirus disease 2019 (COVID-19), is a highly infectious disease characterized by a life-threatening severe acute respiratory syndrome which has been spread worldwide beyond China. The main clinical and radiological finding is pneumonia depicted with different findings and combined in a pictorial fashion on chest CT images so non-specific to be confused with other pneumonia diseases. Among them, radiation pneumonitis after thoracic radiotherapy to treat cancer should be accounted having this disease with similar clinical pictures due to a febrile flu-like syndrome. With this regard Ippolito et al. recently have highlighted the typical clinical and CT findings of radiation pneumonitis in order to distinguish this well-established post radiation side effect from Covid-19 pneumonia overlapping features [1].

In this work, they reported several key points corresponding to the "classical radiation induced lung injury (RILI)" due to the effect of pulmonary fibrosis. The single-sided lung distribution with the pulmonary involvement corresponding to different isodoses to the lung within the radiation treatment fields and a flu-like syndrome have been pointed out. But unusual radiation pneumonitis which may mimic the Covid-19 pneumonia like the Hypersensitivity Pneumonitis or the Bronchiolitis Obliterans Organizing Pneumonia (RT-BOOP), both primed by RT need a mention. These syndromes are rare clinical situations which share a febrile flu-like syndrome or respiratory failure manifestations like Covid-19 pneumonia, but surprisingly, the chest CT findings are shared outside the radiation fields not corresponding to the radiation ports. These findings show the wide pictorial fashion of features suggestive of a Covid-19 pneumonitis. In fact, Hypersensitivity pneumonitis displays signs outside the radiation fields with diffused interstitial bilateral pneumonia evolving into a "whited out lung" [2]. This event is called "sporadic RILI" which occurs in approximately 10% of thoracic RT and is associated with ARDS. RT-BOOP syndrome is a migratory pneumonitis with an incidence of 1.8-2.9%, showing findings outside the radiation fields occurring several months after adjuvant RT in breast cancer patients. From all the reported series, a spectrum of CT findings in RT-BOOP have been described getting from focal nodular or mass-like opacities to areas of consolidation resembling pneumonia

or patchy ground glass infiltrates with bronchogram or vessel signs [3]. With regard to Covid-19 pneumonia, a growing body of evidences have assessed the pivotal role of CT in diagnosis of Covid-19 patients with false negative RT-PCR results, showing a 98% sensitivity in detecting and monitoring the course of the pneumonia [4]. Moreover Carotti et al. have outlined that Covid-19 CT features are not specific and could overlap with other pulmonary injuries like the drug-induced lung damages as in case of Methotrexate-induced lung disease [5]. Thus, by a radiation oncologist's point of view, key points of Covid-19 pneumonia in common with "atypical" radiation pneumonitis should be considered. To discern among these two entities in case of false-negativity of RT-PCR, medical history, serology and BAL fluid might improve diagnosis. To recognize and differentiate these sporadic entities from COVID-19 pneumonia in this time may represent a big challenge for radiologists who are beginning to familiarize with this infection.

Conflict of interest

The authors declare that they have no conflict of interest.

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