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Comment on: COVID-19 or Pulmonary Contusion? A Diagnostic Dilemma

From:

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Dear editor,

We reviewed with interest the recent article titled “COVID-19 or Pulmonary Contusion? A Diagnostic Dilemma” (1). The article underscores the importance of concomitant COVID-19 infection in traumatic patients and discusses some radiologic findings to facilitate the differentiation of the two entities. Diagnosing a patient as potential COVID-19 has major implications in hospital management and bed allocation. Inadvertently labeling a patient as COVID-19 or potential COVID-19 can result in admission to a COVID-19 ward and thus increasing the risk of infection to the patient. On the other hand, timely diagnosis of COVID infection in an asymptomatic or presymptomatic case of trauma significantly reduces the chance of transmission to the medical staff and other patients, and also may influence the prognosis and reduce morbidity and mortality. We, thus, find the article of utmost value and significance in the current pandemic.

Authors have stated that “pulmonary contusion is associated with laceration and gas accumulation in the lung parenchyma.” We would like to make a further distinction between pulmonary contusion and laceration. According to the more recent studies, pulmonary contusion is defined as damaged alveolar capillaries, as the result of blunt trauma, explosion injuries, or shock wave associated with penetrating trauma (2). Such endothelial injury is associated with the accumulation of blood and other fluids in the

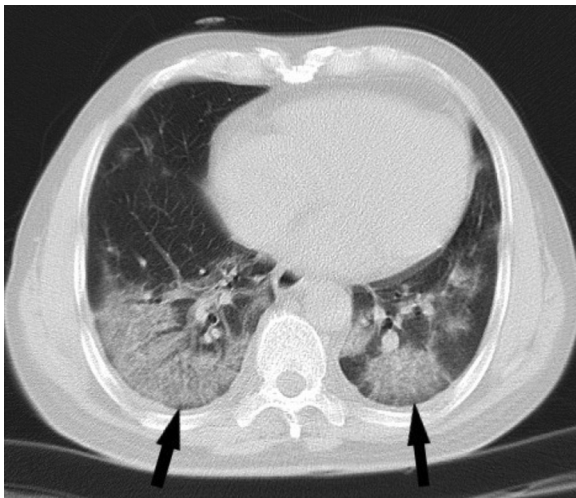


Fig. 1. Axial chest CT scan of a PCR proven case of COVID-19 pneumonia demonstrate zones of GGO and consolidation in peripheral location. Arrows indicate subpleural sparing in this case.

lung tissue, and contrary to laceration, there is no cut or a tear of the lung tissue. On the other hand, post-traumatic cavitory lesions, also referred to as traumatic pulmonary pseudocysts, following blunt trauma, occur as the result of the compression-decompression mechanism, leading to local lacerations in the lung parenchyma (3).

Second, subpleural sparing has been proposed as a possible differentiating radiologic sign. Figure 1 demonstrates an axial computed tomography (CT) image of a PCR-confirmed nontraumatic COVID pneumonia with typical subpleural sparing at least in some parts. We have observed several other similar cases in our experience with COVID pneumonia. This is further supported by a case presented by Yoon SH et al. in which the sparing of the juxta pleural region is well observed (4). Therefore, extending the result of the previous study by Donnelly (5) to the COVID pneumonia should be made with caution.

We agree with the authors that the temporal evolution of CT findings could be useful in differentiating COVID-19 infection and pulmonary contusion, however, given the overlapping features of lung contusion and COVID-19 pneumonitis in chest CT scan, we want to stress the fact that attributing the initial chest CT scan findings to COVID-19 pneumonitis is not possible in many cases. Less than perfect sensitivity of the currently available gold diagnostic standard (Reverse transcription polymerase chain reaction (RT-PCR)) has led many centers to shift the diagnosis to clinical findings plus CT scan in many centers, especially when (RT-PCR is scarce and unavailable. It should, however, be emphasized that the predictive value of the so-called “typical” CT findings is yet unknown and that the test performance depends very much on the pretest probability. It is thus expected that in asymptomatic patients the pretest probability is reduced. This is one reason why CT scan is not a proper screening method. Although to our knowledge there is no current literature on the performance of CT scan as a diagnostic test when there is a coexisting/underlying lung condition, we suspect an even lower diagnostic performance in such cases. This conclusion is probably specifically true in case of coexisting lung contusion and trauma.

We thus caution the possibility of overdiagnosis of COVID-19 based on chest CT scan alone in the case of asymptomatic patients with multiple trauma and possible lung contusion. We want to strongly urge the trauma surgeon and fellow emergency radiologists to take lab data and exposure history into consideration before labeling CT scans in trauma patients as typical for COVID-19 during the pandemic.

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