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LETTER TO THE EDITOR

Radiological approach to COVID-19 pneumonia: attention should be paid to pulmonary embolism and radiation exposure

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Dear Editor,

I read with great interest the review article entitled "Radiological approach to COVID-19 pneumonia with an emphasis on chest CT" by Güneyli et al. (1) in the journal of *Diagnostic and Interventional Radiology*. The authors provided a comprehensive and useful review on the role of imaging in coronavirus disease 2019 (COVID-19) pneumonia. In addition to the findings in this comprehensive article, I would like to contribute two important issues to this article.

The first one is pulmonary embolism (PE), which is an increasingly identified complication in patients with COVID-19 pneumonia (1) (Fig.). It has been reported that COVID-19 cases have an increased risk of hypercoagulable disorders (clotting disorders) and thromboembolic events (2, 3). In a recent study, it has been reported that 32 of 106 patients (30%) with COVID-19 had acute PE (2). Although high D-dimer levels (median ± interquartile range [IQR], 1940±3060 µg/L], normal value <500 µg/L) were frequently reported in COVID-19 cases, much higher D-dimer levels (median±IQR; 15385±14410 µg/L, normal value <500 µg/L) were reported in COVID-19 patients with PE (2). Moreover, it has been reported that the D-dimer threshold level of 2660 µg/L has a 100% sensitivity and 67% specificity for the diagnosis of PE (2). Similarly, another recently published study by Cui et al. (3) reported that 20 of 81 patients (25%) with COVID-19 had venous thromboembolism (VTE), and found that the D-dimer threshold level of 1500 µg/L has an 85% sensitivity and 88.5% specificity, and the D-dimer threshold level of 3000 µg/L has a 76.9% sensitivity and 94.9% specificity for the diagnosis of VTE. Therefore, in the presence of a significant increase in serum D-dimer level in clinically severe COVID-19 patients, pulmonary CT angiography should be performed initially for the diagnosis of PE, which is an important prognostic factor.

The second one is radiation concern in CT imaging, which may cause an increase in the risk of cancer. Increased use of CT imaging due to the COVID-19 pandemic raises radiation concern, especially in children, young adults, and pregnant women. Therefore, to reduce the radiation exposure of the population it is necessary to pay attention to some important issues. First, patients who need imaging should be clinically distinguished. Second, it has been shown that low-dose chest CT allows for reproducible and accurate evaluation of COVID-19 pneumonia (4). Dangis et al. (4) obtained chest CT images with a mean effective radiation dose of 0.56±0.25 mSv using low tube voltage (100 kVp) and tube current (20 mAs) values. They reported that low-dose chest CT has high sensitivity (86.7%), specificity (93.6%), and accuracy (90.2%) in the diagnosis of COVID-19 infection and provides alternative diagnoses in an important subset of patients (4). Therefore, chest CT should be obtained using low-dose protocols in selected patients.

Conflict of interest disclosure

The author declared no conflicts of interest.

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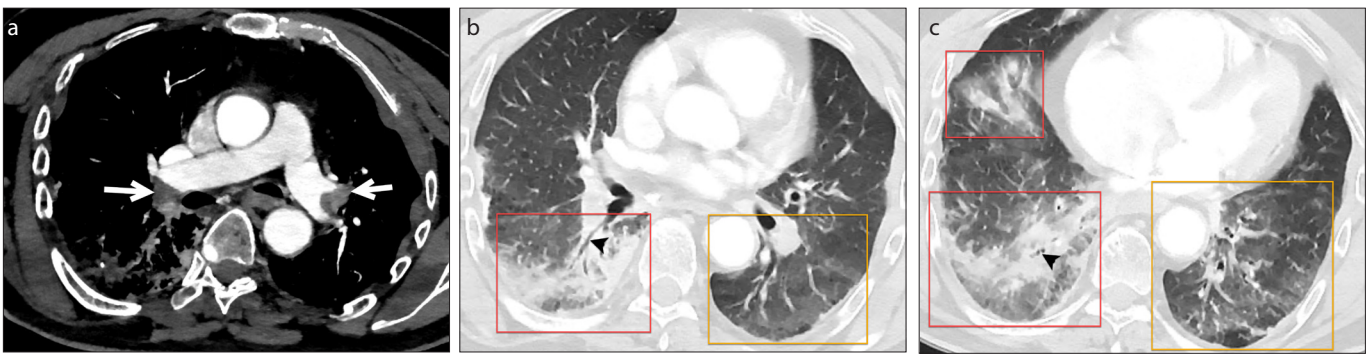

Figure. a–c. A 68-year-old male patient was presented with complaints of fever for six days and newly emerged severe dyspnea. The patient's D-dimer level was found to be very high (2375 µg/L, normal value <243 µg/L) and contrast-enhanced chest CT angiography was obtained. Axial CT image **(a)** at the level of the pulmonary bifurcation with mediastinum window settings shows bilateral pulmonary embolism *(arrows)*. Axial CT images **(b, c)** of the same patient with lung window settings show multiple subpleural and peribronchovascular mixed opacity areas (consolidation with ground-glass opacity) with air bronchogram sign *(arrowheads)* and patchy ground-glass opacities *(orange frames)*. The nasopharyngeal swab test of the patient was positive for SARS-CoV-2.