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Letter/Thoracic imaging

Concomitant acute aortic thrombosis and pulmonary embolism complicating COVID-19 pneumonia



Keywords:

Computed tomography angiography
 COVID-19 pneumonia
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Dear Editor,

In the context of the coronavirus health crisis, radiologists are on the front line to raise awareness about severe complications of COVID-19 pneumonia. Cardiovascular complications are known to occur in patients with COVID-19. We present herein a patient with concomitant acute thrombosis of the abdominal aorta and pulmonary embolism, illustrating the hypercoagulable state associated with the disease.

An otherwise healthy 71-year-old man presented with dyspnea, fever and cough that started 2 weeks ago. Computed tomography (CT) examination of the chest performed one hour after admission showed typical features of COVID-19 pneumonia (Fig. 1), later confirmed with real-time polymerase chain reaction test. The patient was admitted and oxygen treatment initiated. On hospital day (HD)

3, oxygen requirements increased. Blood test showed serum D-dimer level of 17280 ng/mL (Normal < 250 ng/mL), prothrombin time of 16 sec and platelets count of $361 \times 10^9/L$. Venous Doppler ultrasound revealed thrombosis of right posterior tibial vein. Pulmonary CT angiography confirmed acute pulmonary embolism. As a filling defect was observed within the aorta, additional aortic CT angiography was performed and showed a free-floating thrombus without aortic atherosclerosis. There were no evidences of visceral, hepatic, splenic or renal embolisms on venous phase images. The 12-lead electrocardiogram showed normal sinus rhythm. There was no clinical evidence of acute limb ischemia. Enoxaparin anti-coagulation therapy was started with favorable outcome.

Abnormal coagulation parameters, such as elevated D-dimers, have been described and seem to be associated with a higher risk of development of acute respiratory distress syndrome and death in patients with COVID-19 [1]. As in other viral pneumonias, patients with COVID-19 may be at risk of acute pulmonary embolism; however, the prevalence of this association is yet to be determined. This observation is to our knowledge the first to report an acute arterial thrombosis related to COVID-19. This complication may reflect the potential hypercoagulability associated with SARS-CoV-2 infection and raises the question of using early markers of disseminated intravascular coagulation, particularly D-dimer levels, to guide therapy [2].

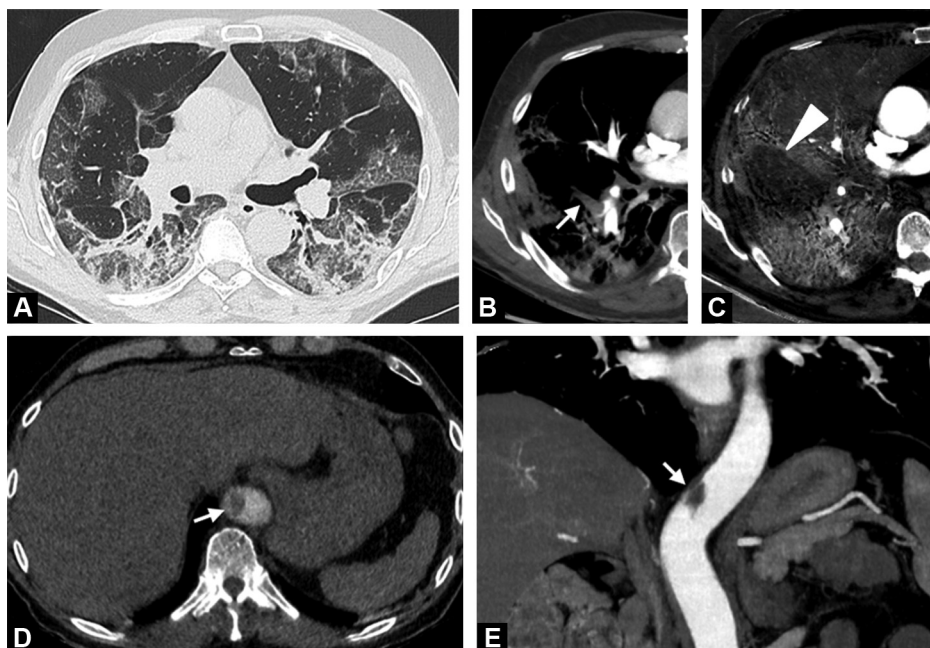


Fig. 1. 71-year-old man with COVID-19 pneumonia. A. Unenhanced CT image of the chest in the axial plane obtained at admission shows bilateral and peripheral ground-glass opacities associated with posterior consolidations. B. Dual-energy CT angiography image of the chest in the axial plane on hospital day 3 shows a filling defect (arrow) in the anterior basal branch of the right inferior lobe pulmonary artery. C. Iodine map image demonstrates a segmental perfusion defect (arrowhead) related to the occlusive pulmonary embolism in the right lower lobe. D. CT angiography image of the chest in the axial plane reveals a filling defect (arrow) within the aorta. E. CT angiography image of the abdominal aorta in the coronal plane performed on hospital day 3 confirms intra-aortic free-floating thrombus (arrow) at the thoraco-abdominal junction.

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The authors declare that they have no competing interest.

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