Similarities and differences of chest CT features between COVID-19 pneumonia and heart failure

August 19 2021

In a new publication from *Cardiovascular Innovations and Applications*, Zhaowei Zhu, Jianjun Tang, Xiangping Chai and colleagues from Central South University, Changsha, Hunan, China, analyze the similarities and differences of chest CT features between COVID-19 pneumonia and heart failure.

During the COVID-19 epidemic, chest computed tomography (CT) has been highly recommended for screening of patients with suspected COVID-19 because of an unclear contact history, overlapping clinical features, and overwhelmed health systems. However, there has not been a full comparison of CT for diagnosis of heart failure or COVID-19 pneumonia.

This paper describes how patients with heart failure (n = 23) or COVID-19 pneumonia (n = 23) and one patient with both diseases were assessed with clinical information and chest CT images being obtained and analyzed. No difference was found in ground-glass opacity, consolidation, crazy paving pattern, the lobes affected, and septal thickening between heart failure and COVID-19 pneumonia. However, a less rounded morphology (4 percent vs. 70 percent, \( P = 0.00092 \)), more peribronchovascular thickening (70 percent vs. 35 percent, \( P = 0.018 \)) and fissural thickening (43 percent vs. 4 percent, \( P = 0.002 \)), and less peripheral distribution (30 percent vs. 87 percent, \( P = 0.00085 \)) were found in the heart failure group than in the COVID-19 group. Notably,
there were also more patients with upper pulmonary vein enlargement (61 percent vs. 4 percent, \( P = 0.00087 \), subpleural effusion (50 percent vs. 0 percent, \( P = 0.00058 \)), and cardiac enlargement (61 percent vs. 4 percent, \( P = 0.00075 \)) in the heart failure group than in the COVID-19 group. More fibrous lesions were also found in the COVID-19 group, although there was no statistical difference (22 percent vs. 4 percent, \( P = 0.080 \)).

Although there is some overlap of CT features between heart failure and COVID-19, CT is still a useful tool for differentiating COVID-19 pneumonia.