Letter to the Editor

eISSN 2005-8330
https://doi.org/10.3348/kjr.2020.0164
Korean J Radiol 2020;21(5):620-622

Korean Journal of Radiology
KJR

Computed Tomographic Findings in COVID-19

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Dear Editor,

We read the publication on "Novel Coronavirus Pneumonia Outbreak in 2019: Computed Tomographic Findings in Two Cases" with great interest (1). Lin et al. (1) described "chest computed tomography findings of multiple regions of patchy consolidation and ground-glass opacities in both lungs" and mentioned that "these findings were characteristically located along the bronchial bundle or subpleural lungs." We would like to share ideas and observations from other countries where coronavirus disease 2019 (COVID-19) is also endemic. The computed tomography (CT) findings of COVID-19 are variable. In our setting, some patients have no initial abnormal lung findings and can be misdiagnosed with other common diseases. A recent publication showed that the detection rate of disease is 98% (2). Also, there are different clinical findings in different stages of the disease (3). Use of CT imaging might be useful for assessing the severity of COVID-19, but disease confirmation is still based on molecular diagnosis of the pathogen.

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Received February 24, 2020; accepted after revision February 25, 2020.
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Korean Journal of Radiology
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Response

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To the Editor,

Thank you for your comments regarding our online article on computed tomography (CT) findings in two cases of coronavirus disease 2019 (COVID-19), which caused an outbreak in China (1). Recent studies documented that human-to-human transmission of the novel coronavirus 2019 (2019-nCoV) is the epidemiologic characteristic of COVID-19 (2, 3). As of February 25, 2020, the World Health Organization (WHO) reported 80239 confirmed cases globally, and 2700 deaths in 34 countries, including China, Korea, Japan, the United States of America, Canada, Italy, and Iran (4). In short, 2019-nCoV has spread worldwide.

Fever and cough are the most frequent initial symptoms of COVID-19 and may facilitate the diagnosis of infection with 2019-nCoV (5). Regarding the CT characteristics, we agree that the features of 2019-nCoV infection detected by imaging modality are diverse. Ground-glass opacity (GGO), pulmonary consolidation, pulmonary nodules, and diffuse GGO with thickened interlobular septa were observed in patients with COVID-19 pneumonia. However, pleural effusion and thoracic lymphadenopathy were uncommon. The characteristics of the opacities were also variable and included linear and rounded morphology, "crazy-paving" pattern, and the "reverse halo" sign (6). Among these CT findings, GGO and consolidations were always observed at different stages of COVID-19 development (5).

Previous studies have shown that the lobe involvement was most frequently distributed along the bronchovascular bundles or subpleural regions in the bilateral lungs (6-8), which is consistent with the CT findings in the two cases that we reported. However, not all of the patients with COVID-19 had abnormal CT features. A recent study has shown that 98% (50/51) of patients had abnormal chest CT characteristics, and one patient (1/51, 2%) had normal results on chest CT (9). Even though COVID-19 can be confirmed by the detection of the nucleic acid of the virus, CT examination—as the imaging modality—has an important role in detecting abnormalities in the pulmonary parenchyma in patients with suspected COVID-19 pneumonia. Therefore, the combination of repeated swab tests and CT examinations can be helpful for diagnosing individuals with high clinical suspicion of 2019-nCoV infection but negative in the real-time reverse transcriptase-polymerase chain reaction (rRT-PCR) screening (9). CT images and the detection of nucleic acid can mutually complement each other in the diagnosis of COVID-19.

In conclusion, COVID-19 pneumonia is a human-to-human transmitted disease, and fever and cough may be its initial symptoms. The 2019-nCoV has certain specific signs on CT imaging. However, not all cases display abnormal chest CT results, and the detection of the nucleic acid of the virus is the best way to diagnose patients with suspected COVID-19. Therefore, clinical history, manifestations, and the rRT-PCR amplification of the viral DNA from a sputum sample can be considered to represent the comprehensive analysis necessary to diagnose COVID-19 infection.

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