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Case Report

An unusual case of coronavirus disease 2019: Delayed chest CT evidence

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ABSTRACT

Asymptomatic patients and infected patients with normal chest CT imaging are considered carriers of SARS-CoV-2. Before a diagnosis of coronavirus disease 2019 (COVID-19) is made, these patients with negative chest CT findings may be ignored, causing the possibility of virus transmission. For patients with suspected infections, reliable epidemiological information and clinical symptoms, clinical management is necessary even when the chest CT is negative.

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Introduction

COVID-19 pneumonia is caused by SARS-CoV-2 that has caused a widespread epidemic, posing a serious threat to global health. Patients diagnosed with COVID-19 at admission are usually confirmed to have pneumonia [1]. As the designated hospital for the treatment of such patients, our center found that COVID-19 patients with normal chest CT imaging findings were unusual in clinical practice [2]. Asymptomatic patients and infected patients with normal chest images are considered carriers of SARS-CoV-2, requiring timely clinical intervention and management [3]. Here, we first discuss a patient who was diagnosed with COVID-19 but had no pulmonary lesions on chest CT at the time of admission and was confirmed to have COVID-19 pneumonia during her hospital stay. The clinical problems encountered in treating such patients are discussed.

Case presentation

A 26-year-old woman developed a fever (37.9 °C [100.22 °F]) on January 27, 2020 (Fig. 1) after her brother returned to Shanghai, China, from a business trip to Wuhan, China (from January 13, 2020 to January 17, 2020), where COVID-19 was spreading [4]. She subsequently went to the hospital and was tested with a real-time polymerase chain reaction (RT-PCR) assay of a throat swab sample to detect SARS-CoV-2. She was then diagnosed with COVID-19. Later, her brother was also diagnosed with COVID-19. At admission, she had no cough, sputum or shortness of breath (January 29, 2020). Fever was the only clinical manifestation, and chest CT showed that the bilateral lungs were clear (Fig. 2A and B). Laboratory studies showed that all items of the routine blood tests were normal at admission. Several additional laboratory tests were abnormal, including low-density lipoprotein (2.02 mmol/L; normal range 2.6–4.1 mmol/L) and erythrocyte sedimentation rate (32 mm/h; normal range 0.0–20.0 mm/h) [5]. She was treated with symptomatic treatment and lopinavir-ritonavir during the hospital stay. In the early days of the epidemic, there was a lack of systematic understanding of COVID-19. Because the patient’s clinical symptoms did not subside, CT imaging was used to assess the evolution of the disease. On the 5th day after admission (February 3, 2020), a few ground-glass opacities were found in the subpleural area of the right lower lobe on chest CT (Fig. 2C and D). Then, her clinical symptoms improved, and chest CT images (February 9, 2020) showed a reduction in the size of the ground-glass opacities (Fig. 2E and F). The chest CT imaging results, clinical manifestations, and laboratory tests were not completely consistent during the clinical course [6].

Discussion

At present, the source of infection for COVID-19 is mainly infected patients, and asymptomatic patients are highly likely to carry and spread the virus [2,3]. The main routes of human-to-human transmission of COVID-19 are via droplets expelled from the respiratory tract and direct or indirect contact, and the entire population is generally susceptible [7]. Thus, clinical management needs
to be carried out as soon as possible for those who have reliable epidemiological information and clinical symptoms.

By describing a patient with confirmed COVID-19 without pulmonary lesions on chest CT at admission, our case provides the initial clinical manifestations, laboratory assay results and chest CT images of a patient with COVID-19, which is different from the studies that have been reported so far [1,2]. As one of the main respiratory infections, pneumonia caused by a SARS-CoV-2 infection is of great help to make an early clinical diagnosis. However, for patients with a suspected COVID-19 infection with specific clinical information, a one-time CT examination cannot rule out the possibility of COVID-19. Further diagnostic tests should include RT-PCR assays, and follow-up CT imaging of the chest is also recommended.

**Conclusions**

For patients with suspected COVID-19 infections with reliable epidemiological information and clinical symptoms, the chest CT findings can be negative, and RT-PCR assays are needed to make a further diagnosis.

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