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Necessitating repeated chest CT in COVID-19 pneumonia

An outbreak of novel coronavirus, severe acute respiratory syndrome corona-virus 2 (SARS-CoV-2) began in Wuhan, China, has spread rapidly.[1] The disease caused by SARS-CoV-2 was named as coronavirus disease 2019 (COVID-19) by the World Health Organization.[2] Chest computed tomography (CT) is easily available and is highly strongly recommended for screening patients for rapid confirmation of SARS-CoV-2 infected COVID-19.[3] We report a case with COVID-19 pneumonia which has outlined the main patterns of evolution seen on CT imaging though real-time fluorescence polymerase chain reaction results were negative for a total of four times.

Case report

A 38-year-old man working in a hospital in Wuhan is a dentist with a 2-days history of cough, fever (body temperature up to 38 °C), myalgia without chills and rigor and nasal discharge. Laboratory studies showed decreased lymphocyte percentage (13.3%, normal range, 20.0%–40.0%), normal total white blood cell count (8.72×10^9/L, normal range, $3.3–9.6 \times 10^9$/L) and normal blood level for C-reactive protein (<0.5 mg/L; normal range, <10 mg/L).

Unenhanced chest CT showed patchy shadow in upper lobe tongue segment of the left lung (Fig. 1a). Repeat chest CT showed the lesion had quick changes with formation of new lesions in other areas and extended from the peripheral to the central area suggesting progression of the disease on day 5 (Fig. 1b). After 14 days of therapy, the follow-up CT showed partial resolution and partially added of patchy consolidations and ground-glass opacities in both lungs (Fig. 1c). Real-time fluorescence polymerase chain reaction of the patient's oropharyngeal swab was negative for SARS-CoV-2 nucleic acid on 2, 5, 11, 14 days after hospitalization, respectively.

Discussion

This patient presented typical pattern of CT imaging features and showed the disease progression at the first but partial improvement at the second CT follow-up.[4] The main evolution seen on CT imaging of this case was differentiated from other pneumonia caused by other viruses or by other microorganisms. And laboratory tests had revealed at early stage normal counts of peripheral blood leukocytes and C-reactive protein were useful for differentiation of bacterial pneumonia. Besides, this case had a typical clinical presentation with definite epidemical history which greatly helps determine COVID-19 pneumonia.

The case we reported was probably prone to misdiagnosis in the clinic because of the lack of molecular confirmation of SARS-CoV-2 infection. Compared to chest CT, current SARS-CoV-2 nucleic acid test is time-consuming and may be initial negative. Typical chest CT findings are
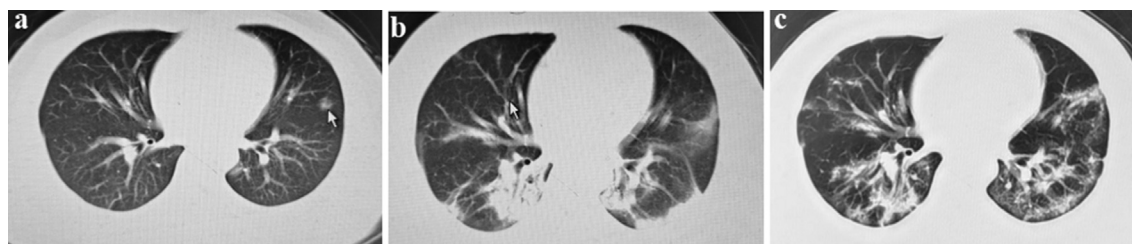

Figure 1 CT scans (slice thickness = 1.2 mm) changes in the course of disease over time. (a: January 29; b: February 04; c: Feb. 19).

helpful for initial screening detection and timely isolation of the COVID-19 pneumonia.[5] Meanwhile, repeated CT scanning could facilitate monitoring disease progression and implementing proper treatment.

Declaration of Competing Interest

The authors have no conflicts of interest relevant to this article.

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