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Case Report

The role of CT imaging in COVID-19

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List of abbreviations

CT: computed tomography
RT-PCR: reverse transcriptase-polymerase chain reaction
COVID-19: 2019 coronavirus disease

Introduction

Recently, a cluster of cases of pneumonia has outbroken and spread rapidly in Wuhan, China.[1-4] Chinese health authority conformed that it was associated with 2019 novel coronavirus.[5] This article reports a patient who presented with 2019 novel coronaviral pulmonary infection**.** The study protocol was approved by the Ethics Committees of the General Hospital of Ningxia Medical University, and the patient provided written informed consent.

Case presentation

A 51-year-old male presented to the hospital with a 4-day history of fever and dry cough due to unknown causes. He disclosed that he traveled to Wuhan, China (the center of novel coronavirus outbreak) from January 12–16, 2020.

The body temperature of the patient was elevated to 38.5 °C. Lung auscultation revealed rhonchi in both lower lungs. Laboratory results showed leucopenia (white blood cell count was 3.26×10^9/L). The white blood cell differential count showed that neutrophils were 62.9% and lymphocytes were 31%. The level of C-reactive protein increased to 30.51 mg/L (normal range, 0-6 mg/L) and erythrocyte sedimentation rate was elevated to 25 mm/h (normal range, 0-20 mm/h). Unenhanced chest computed tomography (CT) showed multiple peripheral ground-glass opacities in both lungs (Figure 1A). Strikingly, the first four times of reverse transcriptase-polymerase chain reaction (RT-PCR) of the patient's oropharyngeal swab were negative for 2019 coronavirus disease (COVID-19) nucleic acid, while the fifth RT-PCR was finally positive on February 3, 2020.

Based on the epidemiological characteristics, clinical manifestations, CT findings, and laboratory tests, the diagnosis of COVID-19 pneumonia was confirmed. The patient was treated with antiviral medicine (lopinavir/ritonavir) and interferon inhalation**.** The follow-up CT scans indicated progressive pulmonary opacities (Figure 1B, C).

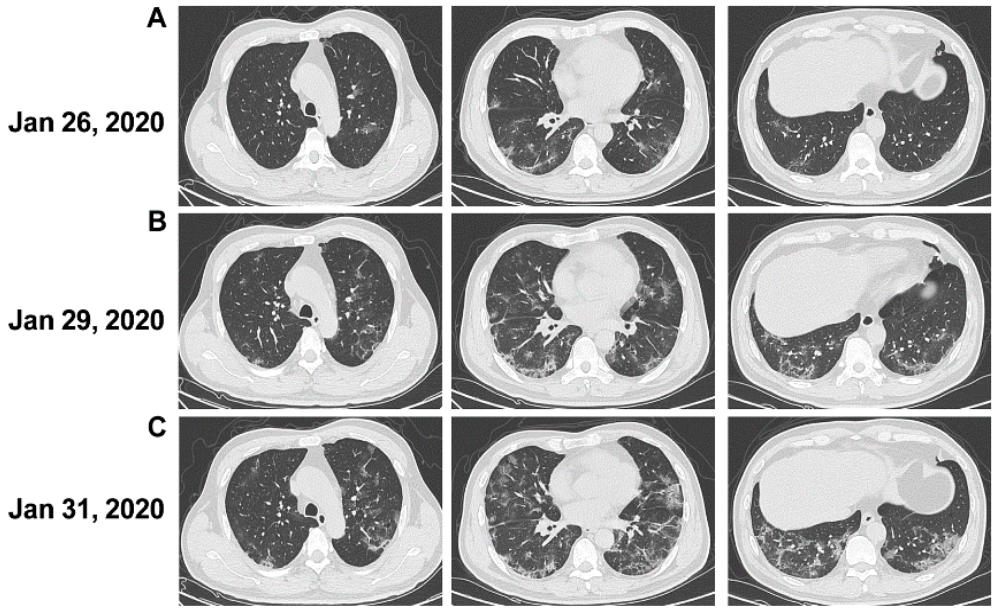

Figure 1: Thoracic non-contrast CT images in a 51-year-old male. (A): Image shows multiple peripheral ground-glass opacities in both lungs.(B, C): Follow-up images on January 29 and 31 show progressive pulmonary opacities in both lungs.

Discussion

Although RT-PCR is the gold standard, it could not be replaced by chest CT, and different diseases may show similar signs on CT. However, CT plays a major role in the diagnosis of 2019-nCoV pneumonia and rapid assessment of treatment efficacy.[6, 7] Thus, it can be used as a robust supplementary tool when the sensitivity of RT-PCR is not sufficient to identify suspected cases and close contacts for isolation at the earliest.

Consent for publication

Informed written consent was obtained from the patient for publication of this case report and accompanying images.**Acknowledgment**
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Competing interests

The authors of this work have nothing to disclose.

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