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SPECIAL REPORT

CT image of novel coronavirus pneumonia: a case report

Xiangmin Zhang[1,2] · Wei Song[1,2] · Xingli Liu[1,2] · Liang Lyu[1,2]

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Abstract

Objective Knowledge of CT characteristics of COVID-19 pneumonia might be helpful to the early diagnosis and treatment of patients, and to control the spread of infection.

Methods The chest CT images of the patient were collected to describe the CT manifestations and characteristics, and they were compared with the previous studies.

Results Multiple patchy ground-glass opacities (GGOs) were seen in bilateral lung, mostly in subpleural areas. They progressed within 3 days, and nodular GGOs were also seen together with subpleural patchy GGOs.

Conclusion Our case of COVID-19 pneumonia showed multiple subpleural GGOs in bilateral lung, rapid progression, and it also accompanied nodular GGOs on chest CT. These findings were consistent with the previous reports, and they might be useful for early detection and evaluation of severity of COVID-19 pneumonia.

Keywords COVID-19 pneumonia · Ground-glass opacities · CT

Case report

A 64-year-old man had fever repeatedly after catching a cold for 6 days. He felt better after taking the antifebrile agents. One day before visiting the hospital, he had fever again, dizziness and headache, the four limbs ache, but no cough, shivering, chest tightness, chest pain, nausea and vomiting, diarrhea, etc. Recently, the patient traveled from Wuhan to Kunming. He denied medical history of hepatitis, tuberculosis, typhia, contacting with poultry and mosquito bites. He was hospitalized in our hospital on January 21 2020, and still had fever after admission, with the highest temperature of 39.2 ℃. Detection of 2019 novel coronavirus (2019-nCoV) by real-time RT-PCR was positive. The possibility of combined infection with other pathogens were microbiologically excluded. CT features of the case are similar to the case report by Lei [1] and a large series by Pan et al. [2] (Fig. 1).

✉ Liang Lyu
lyuliang0720@hotmail.com

[1] Department of Radiology, The First People's Hospital of Yunnan Province, No. 157 Jinbi Road, Kunming 650032, Yunnan, China

[2] The Affiliated Hospital Kunming University of Science and Technology, Kunming, Yunnan, China

COVID-19 pneumonia is infected by seventh known coronaviruses, named 2019-nCoV. 2019-ncov is a kind of virus which has homologous recombination between bat coronavirus and unknown source coronavirus. Its recombination takes place in spike protein S, which can recognize cell surface receptors, and get into cells to proliferation by membrane fusion [3]. Fever is the main clinical symptom of COVID-19 pneumonia patients, followed by dry cough, muscle ache or fatigue. Besides these, headache, and hemoptysis and diarrhea may occur in some cases. The incubation is required in some patients, and it takes about 7–10 days, and the severe patients can progress to ARDS [4]. The clinical symptoms of COVID-19 pneumonia are the same as the common upper respiratory tract infection, but the chest CT has certain specificity [1, 2]. As medical evidence, CT diagnosis was written in "Diagnosis and Treatment of Pneumonia Infected by 2019-nCoV (trial implementation 5th Edition)" published by National Health Commission of the People's Republic of China [5]. However, it is difficult to distinguish COVID-19 pneumonia from other viral pneumonia on CT findings alone. It is still necessary to clear and definite the epidemiological history, and it should be diagnosed by real-time RT-PCR. There is no specific drug for the treatment of NCP patients. Based on past experience in the treatment of SARS and MERS, some antiviral drugs such as Lopinavir

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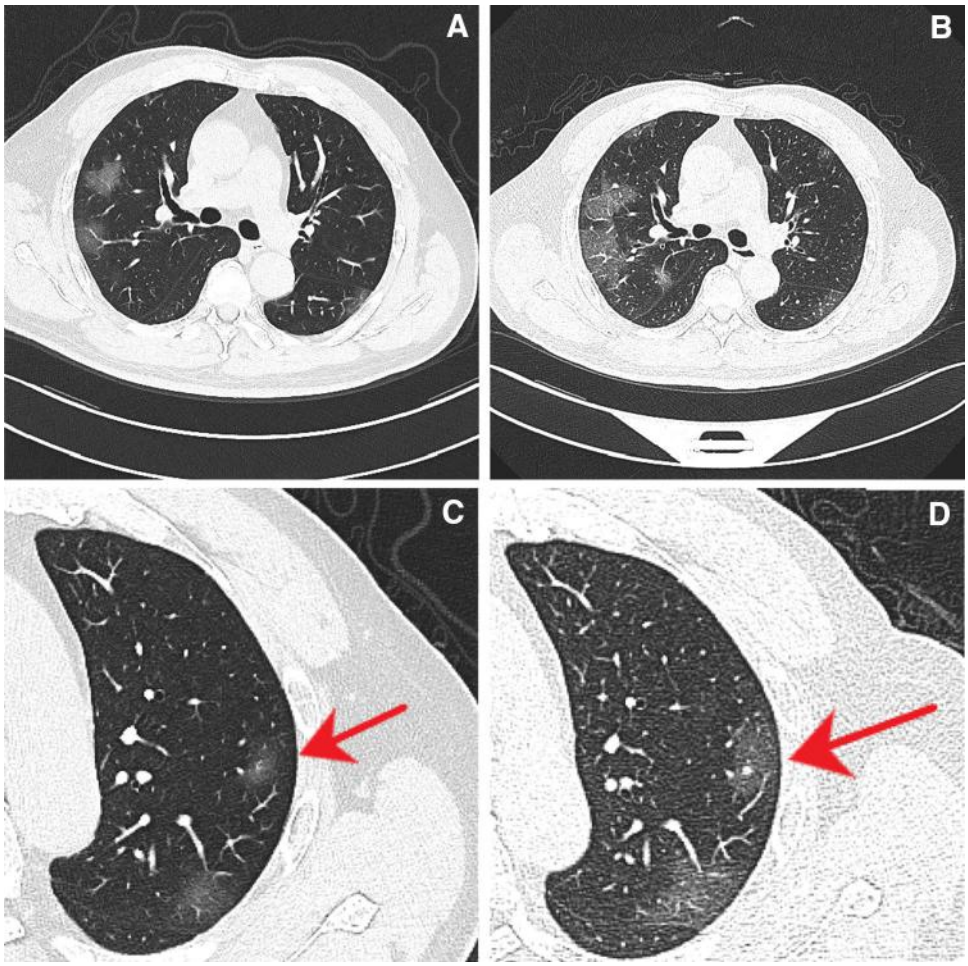

Fig. 1 **a** Chest CT on admission shows multiple ground-glass opacities in bilateral lungs, mainly in the subpleural areas. **b**: CT image of 3 days later shows marked progression of multiple ground-glass opacities in subpleural areas. **c**, **d** High resolution CT images at the same period of **a** and b, respectively. They show nodular ground-glass opacities in the subpleural areas in upper lobe of left lung, and they significantly progressed within 3 days

and Ritonavir may play a positive effect in the treatment of NCP patients, while the curative effect still needs further research [6].

In conclusion, our case of COVID-19 pneumonia showed multiple subpleural GGOs in bilateral lung, rapid progression, and it also accompanied nodular GGOs on chest CT. These findings were consistent with the previous reports, and they might be useful for early detection and evaluation of severity of COVID-19 pneumonia.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical statement All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study.

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