A Diabetic Patient With 2019-nCoV (COVID-19) Infection Who Recovered and Was Discharged From Hospital

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Abstract: Novel coronavirus has become a global health hazard and its high infectivity is alarming. The imaging findings of the 2019-nCoV infection in our young diabetic patient featured ground-glass opacities and consolidations in both lungs. The lung lesions may involute rapidly during the course. The patient showed improvement both clinically and on computed tomography imaging at discharged after 2 weeks' treatment. Computed tomography scans of patients helped monitor the changes continuously, which could timely provide the information of the evolution of the disease or therapeutic effect to clinicians.

Key Words: 2019-nCoV, viral pneumonia, emerging diseases, computed tomography

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BRIEF INTRODUCTION

Since December 2019, cases of unexplained pneumonia have appeared in Wuhan, Hubei Province.[1] On January 7, 2020, deep sequencing analysis from patients' lower respiratory tract extracts revealed that the causative agent was a novel coronavirus (named 2019-nCoV by the World Health Organization [WHO]).[2] The infection has spread rapidly throughout the country and the world in a short period.[3–5] According to the latest news from the Chinese Health Commission, as of February 4, 2020, there have been 20,528 confirmed cases and 426 deaths due to the infection. Currently, some patients with 2019-nCoV pneumonia have been cured and discharged. This article reports the first diabetic patient who recovered from the 2019-nCoV infection and was discharged from our hospital.

CASE REPORT

A 23-year-old man with chief complaints of fever and cough for 9 days was admitted to our hospital. His clinical manifestations did not improve despite an anti-inflammatory regimen. Physical examination revealed fever with a body temperature of 38.6°C. He had a history of elevated blood glucose without further examination and treatment. Physical examination on admission showed a congested pharynx and mild swelling of the bilateral tonsils. His breath sounds were coarse without rales. Other physical and neurological examinations were unremarkable.

In view of the epidemiology, he had been working at a place located a few hundred meters away from the Huanan seafood Market in Wuhan City, China. He went to that market to buy fruits 11 days ago before admission. Laboratory examination on the second day after admission revealed decrease of blood oxygen saturation by 60%, blood gas analysis showed a normal pH of 7.446, normal white blood cell count of 6.66×10^9/L, increased percentage of neutrophils of 88.1%, and decreased percentage of lymphocytes of 6.4%. The serum biochemistry showed decreased total protein of 57.6 g/L, decreased albumin of 27.4 g/L, elevated serum glycated hemoglobin of 14.1%, elevated erythrocyte sedimentation rate of 24 mm/h, elevated C-reactive protein of >160.0 mg/L, and normal interleukin-6 of 7.48 pg/mL. All routine microbiologic testing including typical respiratory virus antibodies were negative. Radiograph and computed tomography (CT) (Fig. 1) of the chest revealed ground-glass opacities and consolidations in the bilateral lungs.

Hence, based on the epidemiologic, clinical manifestations, laboratory data, and radiologic findings, a diagnosis of 2019-nCoV infection was made according to the criteria published by WHO.[6]

During the hospitalization, in addition to symptomatic treatment, the patient was treated with antibiotics (meropenem, linezolid) and antiviral agents (ganciclovir, oseltamivir). All abnormal laboratory data gradually improved or became unremarkable. He finally recovered and was discharged from the hospital on the 15th day after admission.

COMMENT

As of February 4, 2020, there have been 738 discharged 2019-nCoV-infected patients who have been cured in China. This is the first recovered patient at our hospital. Observing the dynamic changes of chest imaging during the treatment of patients can potentially evaluate the treatment effect and prognosis of patients.

The preliminary epidemiological and clinical characteristics of 2019-nCoV-infected populations have been recently published.[7–9] The disease is more common in male patients with an age over 50 years, and the majority of patients had comorbidities including diabetes mellitus, hypertension, and cardiovascular disease. Most patients have been exposed to the Huanan seafood Market in Wuhan City. Common clinical manifestations at the onset are fever and cough. The patient in this report is young but has underlying type II diabetes mellitus with poor glycemic control: the serum glucose level was 14.5 mmol/L and glycated hemoglobin was 14.1% at admission. This suggests that the patient has impaired immune function.

The imaging manifestations of this patient were closely related to his clinical condition. Because the patient had a long time from the onset of symptoms to the first CT examination (8 d), and the condition was critical at that

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This study was approved by both the ethics committees of Tongji Medical College of Huazhong University of Science and Technology and Wuhan Jinyintan Hospital. The patients enrolled in the present study provided written informed consent.

The authors declare no conflicts of interest.

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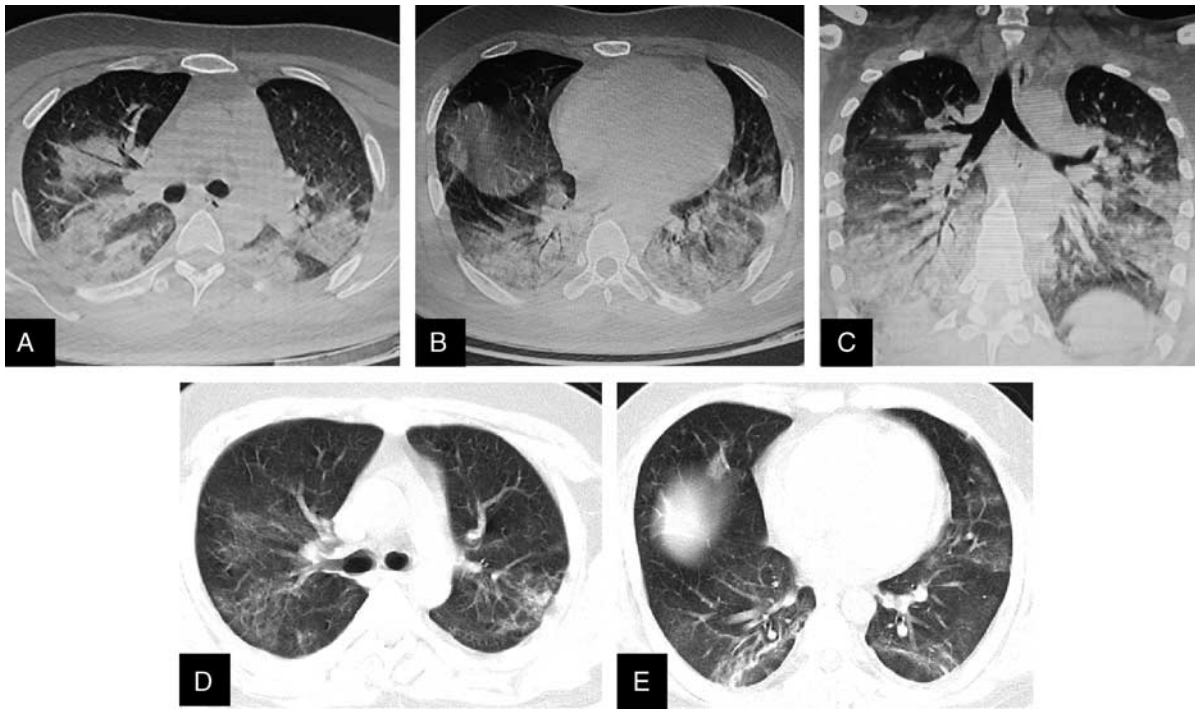

FIGURE 1. CT of the chest in axial (A, B) and coronal (C) images obtained on the eighth day of the disease course showed ground-glass opacities and consolidations in bilateral lungs, more prominent in both the lower lobes, right upper lobe, right middle lobe, and the apicoposterior segment of the left upper lobe. CT of the chest (D, E) obtained on the 19th day of the disease course showed bilateral pulmonary ground-glass opacities and patchy consolidations that were significantly regressed in comparison with the last CT images (A–C) obtained 11 days ago.

timepoint, the lung opacities on CT appeared quite serious, involving both lungs, mainly in the posterior aspects and lower lobes. In the second week, due to the serious condition of the patient, CT could not be performed. The chest radiograph showed that the pulmonary ground-glass opacities and consolidations were still extensive. However, in the third week after onset, the lung opacities gradually regressed. CT is helpful in delineating pneumonia due to the novel coronavirus, but it is difficult to differentiate from pneumonitis due to other viruses. The accurate diagnosis of 2019-nCoV infection relies on epidemiological investigation and laboratory data.

In summary, the imaging findings of the 2019-nCoV infection in our young diabetic patient featured ground-glass opacities and consolidations in both lungs. The lung lesions may involute rapidly during the course. CT imaging findings are closely related to the clinical condition. Because the patient in this case is relatively younger, pulmonary infection was rapidly controlled after 2 weeks of treatment.

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