

Case Report

Computed tomography manifestation of novel corona virus pneumonia

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ABSTRACT

Since December 2019, the outbreak of the novel corona virus has impacted nearly >60 million peoples in more than 150 countries. In this case report, we aim to define the chest computed tomography findings of 2019-novel corona virus associated with pneumonia. A 47-year-old female patient, who is known case of hypertension and diabetes, presented with chief complaints of fever and shortness of breath since, two days. Chest computed tomography was performed and showed bilateral multifocal ground glass opacities with consolidation which suggested viral pneumonia as a differential diagnosis, and subsequent 2019-novel corona virus pneumonia nucleic acid test was positive.

Keywords: Computed tomography, Corona virus, Emergency medicine, Pneumonia

INTRODUCTION

Corona virus disease 2019 (COVID-19) is an infectious disease which is caused by severe acute respiratory syndrome corona virus 2 (SARS-CoV-2). Radiology especially chest computed tomography (CT) plays an important role in the evaluation and of COVID-19 related pneumonia. Outbreak of COVID-19 infection began in December 2019 in Wuhan, which is the capital of central China's Hubei province.^{1,2} Initial analysis revealed bilateral lung opacities in 40 out of 41(98%) chest CT in infected patients and described as lobular and subsegmental areas of consolidation with ground glass opacities, most typical findings on CT chest.³

As clinical physicians, epidemiologists, virologists and others working with public health officials and policymakers to understand infection pathogenesis and control disease spread with early imaging with CT chest and confirming it with real-time reverse transcriptase (RT-PCR) will lead to early diagnosis, isolation and treatment of the patient which will help us in decreasing the burden of the disease.

CASE REPORT

A 47-year-old female patient presented to emergency department to us. She is a known case of diabetes and hypertension since, 2 years for which she was on oral hypoglycaemic agents and antihypertensive. She presented with history of fever and shortness of breath since, two days. She was referred to us in view of worsening respiratory symptoms.

On presentation her blood pressure and pulse rate was normal. Her saturation was 57% on room air; oxygen supplementation was given with non-rebreather mask with oxygen requirement of 12 L/min. Initial evaluation revealed total leucocytes count of $7.2 \times 10^9/L$ with normal renal function test and liver function test. Arterial blood gas was suggestive of type 1 respiratory failure with pH of 7.367 and pO_2 of 61.3 with oxygen saturation of 94.0% with PaO_2/FiO_2 ratio of 76.63 (severe ARDS). X-ray chest was done which was suggestive of consolidation and ground glass opacities in bilateral lower zone and peripheral involvement. Keeping the possibility of COVID-19 related pneumonia RT-PCR was sent and CT chest was done.

CT chest revealed ground glass opacifications with mixed consolidation predominantly in bilateral lower and peripheral involvement (Figure 1) which suggested viral pneumonia as differential diagnosis and subsequent detection of 2019 novel corona virus (2019-nCoV) by real-time RT-PCR was positive. CT features of the case are similar to the case report by Lei and a large series by Pan et al.^{4,5}



Figure 1: Reveals ground glass opacifications with mixed consolidation predominantly in bilateral lower and peripheral involvement.

DISCUSSION

COVID-19 pneumonia is infected by seventh known corona viruses, named as 2019-nCoV. 2019-ncov is a kind of virus which has homologous recombination between bat corona virus and unknown source virus. Its recombination takes place in spike protein S, which can identify cell surface receptors, and get into cells with the help of spike protein in order to proliferate by membrane fusion.⁶ The transmission occurs mainly through respiratory droplets, but it can also be transmitted by close touch. The incubation period for COVID-19 is within 14 days following exposure, and in most cases, it took approximately four to five days after exposure. Main symptom of COVID-19 pneumonia is fever, followed by dry cough, muscle ache or fatigue. In severe cases, shortness of breath usually occurs one week later, while, in critically ill patients, acute respiratory distress syndrome, septic shock, metabolic acidosis, and coagulation dysfunction can occur.⁷

Most patients have a good prognosis, most of them are young and without any co-morbidities and a few patients those are critically ill or die, most of whom are elderly people having one or more co-morbidities. However, it is difficult to distinguish between COVID-19 pneumonia from other viral pneumonia on CT findings alone. It is still necessary to clear and it should be diagnosed by real-time RT-PCR. Recently, chest CT has been documented to be more sensitive in detection of 2019-nCoV infection in a series of 1014 cases.⁸ Chest CT offers a fast and

convenient evaluation of patients with suspected pneumonia associated with 2019-nCoV.

CONCLUSION

Our case findings were consistent with the previous reports, and they might be useful for early detection and evaluation of severity of COVID-19 pneumonia. Chest computed tomography offers fast and convenient evaluation of patients with suspected 2019-novel coronavirus pneumonia where RT PCR takes time to get the accurate diagnosis so that patient can be isolated and treatment for it can be initiated.

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