



The Shared Experience from Treatment of COVID-19 Pneumonia: A Case Report

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Abstract

The pandemic of COVID-19 pneumonia, as a new kind of pneumonia, has lasted for several months since Dec.2019 and the number of patients with COVID-19 pneumonia is still increasing at an unexpected rate across the world. Undoubtedly, both social and financial burdens from the pandemic are huge and globally, many attempts by medical institutions and hospitals are performed with the aim of seeking some effective treatment on COVID-19. As one of the most serious countries affected by COVID-19, much contributions and efforts against pandemic have been done in China and some of which have been already proven to be acceptable and effective. Therefore, a case report regarding the treatment of COVID-19 is presented, clinically, to share useful and feasible experience.

Keywords: COVID-19 pneumonia; Antiviral treatment; Fever; Fatigue

Introduction

At the end of 2019, the pneumonia with unknown cause was suddenly found in Wuhan, the capital of Hubei province, China and the number of patients with pneumonia was increasing within a few months accompanied with associated mortality. Facing this critical and challengeable public health threat, contingency plan and medical support as well as prevention had been implemented immediately to control the emerging pandemic by Chinese government including general updated disinfection, isolation of patients and suspects as well as related closely contacted population, publicized strategy of health and prevention against pandemic, blockade of communities, villages or even entire cities. During this special period, all provinces in China had activated the top response level of prevention and management against pandemic. On Feb. 11, 2020, based on the fact that typical lineage of β novel coronavirus was identified as the cause of the pneumonia pandemic, the WHO declared officially that the virus was named as COVID-19 [1]. Currently, COVID-19 pneumonia pandemic has been controlled in China and subsequently, social activities are restarted gradually. However, unfortunately and surprisingly, COVID-19 pneumonia pandemic is now becoming the global huge health concern due to great spread. Therefore, shared experience of treatment against COVID-19 is urgent and necessary under the context of global prevention and management against pandemic and a case report is presented to demonstrate and share our medical intervention against COVID-19 pneumonia.

Case Presentation

Patient, male, 54-year-old, admitted to hospital with complaining of fever and fatigue for 2 days on Feb 7, 2020. Physical examination at admitting was normal, especially for bilateral lungs, no rale and wheezing sound were found. At admitting, temperature was 37.8°C and SpO₂ was 97% (without oxygen therapy). Right pneumonia was shown by chest CT scan on Feb 1, 2020 (not listed). Positive reaction of COVID-19 by virus nucleic acid testing from municipal center for disease control and prevention (CDC), Hefei. Any significant abnormal results in lab tests including blood routine, liver and renal function, immune function were not found. The closely contacted history of the patient with his son who was diagnosed as novel coronavirus pneumonia (COVID-19 pneumonia) on Feb 3, 2020 was confirmed. No any other basic diseases including hypertension, diabetes, Chronic

Obstructive Pulmonary Disease (COPD) were found. Therefore, the patient was clearly diagnosed as COVID-19 pneumonia. Initially, the patient was managed and treated based on the regulations against a category infectious disease from National health commission including strict isolation, vital sign monitoring, nutritional support, oxygen therapy and antiviral treatment. Combination therapy for oral administration of Lopinavir and Ritonavir 500 mg, twice/d plus aerosol inhalation of Recombinant Human Interferon α -2 b 5000000 IU, once/d was performed. Also, Traditional Chinese Medicine (TCM) was used as supplementary therapy. Later, after the antiviral strategy was performed, slight elevated transaminase of liver function, possibly related to medical injury was found. Hence, simultaneously, medical liver protection was added. On Feb 12, 2020, it was demonstrated that multiply progressive consolidation lesions within bilateral lungs were confirmed by chest CT and clinically intermittent fever with the peak of 38°C as well as worse SpO₂ of 93% (without oxygen therapy) were also not controlled. After 5-day therapy period, Lopinavir and Ritonavir was discontinued and further consultant was necessary (Figure 1).

In accordance with the severity type (SpO₂ \leq 93% at rest and without oxygen therapy) by clinical guideline against COVID-19 pneumonia from National health commission and consultant treatment opinion from expert panel, as an intensive strategy, antiviral combination therapy for oral administration of Arbidol 0.2 g, triple/d plus intravenous infusion of Ribavirin 500 mg, twice/d were activated. Subsequently, after 2-day observation period, both the elevated CRP (27.71 mg/L) and continuous fever with the peak of 39°C under the antiviral treatment as well as clinical symptom of coughing were took into consideration, complication with bacterial infection was the possible cause. Empirical intravenous administration of Cefotaxime 2 g, q12 h/d was added. The

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Received : April 03, 2020; **Accepted** April 13, 2020; **Published** April 20, 2020

Citation: Zhou J, Zhang J, Yan Z (2020) The Shared Experience from Treatment of COVID-19 Pneumonia: A Case Report. J Clin Case Rep 10: 1337

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fever was stabilized gradually on Feb 18, 2020 with the peak of 37.4°C and coughing was improved. It was demonstrated that compared with previous CT scan of Figure 1, multiply lesions within bilateral lungs were not progressive significantly (Figure 2). SpO₂ was 97% (with oxygen therapy of 2 L/min). The temporary antiviral strategy was proven to be positive and effective. Meanwhile, Arbidol was discontinued due to completed therapy period. Recombinant Human Interferon α-2 b and Cefotaxime were discontinued on Feb. 19 and 20, 2020 respectively when normal temperature with the peak of 36.9°C and decreased CRP (16.55 mg/L) as well as improved coughing was detected. It was demonstrated by chest CT scan on Feb 21, 2020, that compared with previous CT scan of Figure 2, remission of consolidation lesions within bilateral lungs was found (Figure 3). Ribavirin was discontinued on Feb

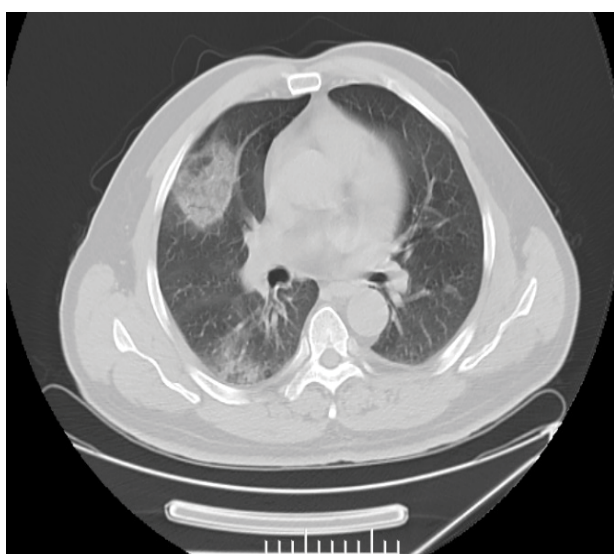


Figure 1: Multiply progressive consolidation lesions within bilateral lungs without pleural effusion and enlarged lymph nodes (Feb 12, 2020).

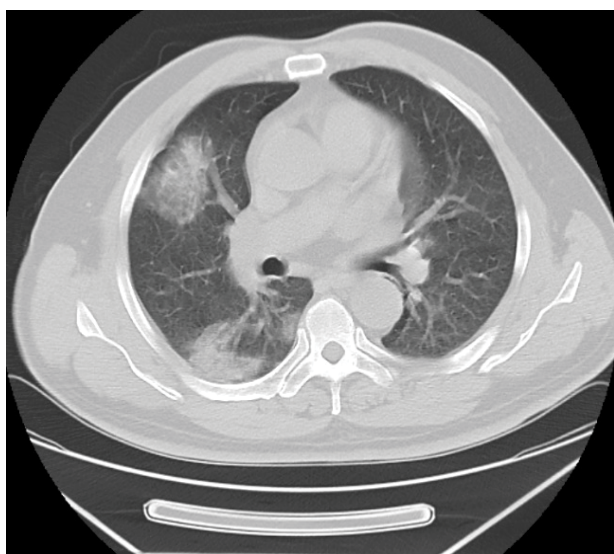


Figure 2: Compared with Figure 1, multiply consolidation lesions within bilateral lungs were not progressive significantly and without pleural effusion and enlarged lymph nodes (Feb 18, 2020).

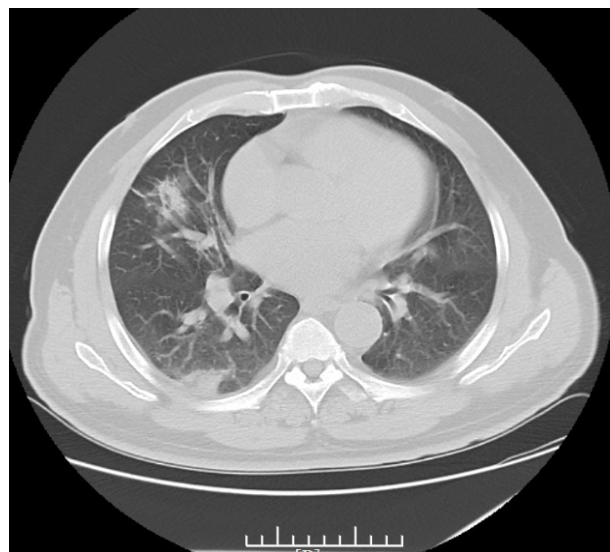


Figure 3: Compared with Figure 2, remission of consolidation lesions within bilateral lungs was found and without pleural effusion and enlarged lymph nodes (Feb 21, 2020).

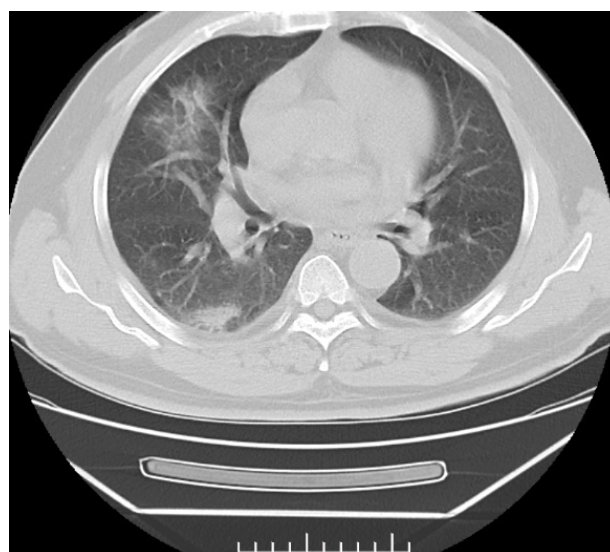


Figure 4: Compared with Figure 3, no significant changes within bilateral lungs were found and without pleural effusion and enlarged lymph nodes (Feb 24, 2020).

21, 2020. Maintained and supported treatment had been performed persistently till Feb 26, 2020, on which, the patient discharged based on approval of expert panel in accordance with the latest clinical guideline against COVID-19 pneumonia from National health commission. The patient received two tests of COVID-19 virus nucleic acid on Feb 23 and 24, 2020 and all results were shown as negative. Also, no significant changes within bilateral lungs were found from chest CT scan on Feb 24, 2020 (Figure 4). After discharging, the patient had received medical isolation in the following 14 days and measured temperature twice (morning and night) regularly and daily. No fever and coughing were reported again. Chest CT scan of follow-up was performed on Mar 11, 2020. It was demonstrated that the lesions were totally released (Figure 5).

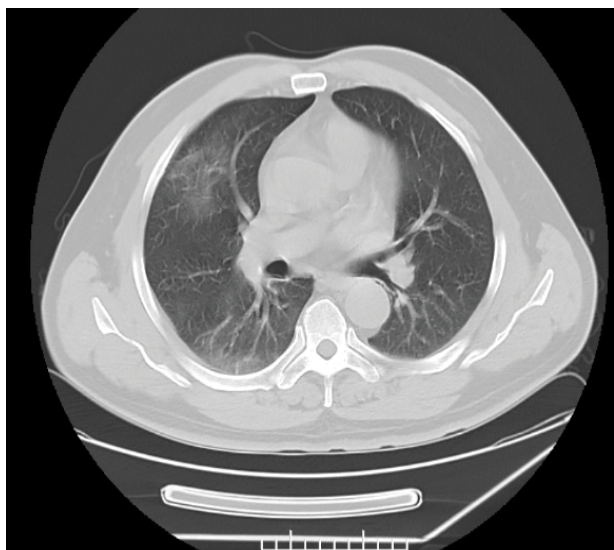


Figure 5: Compared with Figure 4, lesions were totally released and without pleural effusion and enlarged lymph nodes (Mar 11, 2020).

Discussion

COVID-19 pneumonia pandemic has been defined as Public Health Emergency of International Concern (PHEIC). The virus has been obtained from bronchoalveolar lavage fluid of patients with COVID-19 pneumonia. Morphologically, the virus is enveloped with diameter of 60-140 nm and polymorphic particles were found on the surface. In vitro study, it is found that viruses can be identified within human respiratory epithelial cells [2]. However, respiratory tract is not the only site where COVID-19 is isolated, stool sample from gastrointestinal tract is also the potential candidate for virus isolation [3]. Unlike SARS-COV, characterized with aggressive transmission and longer latent period, COVID-19 is one of the most dangerous viruses which impact public health safety.

Though diversity, the most common symptoms of COVID-19 pneumonia are fever, cough and fatigue. For this patient, fever is the

primary symptom at admitting. Positive contact history of patient with COVID-19 pneumonia is also indicative. Currently, due to lack of targeted therapy, the treatment strategy is made mainly by clinical experience. Antiviral agents are the base of medical plan and other combined supplementary materials also play a necessary role for the treatment of COVID-19 pneumonia. During the course of treatment, liver function of this patient was slightly abnormal; Hence liver function protection was valuable in improving liver injury. Besides, based on individual principle, special TCM was also used to improve symptoms effectively. Finally, the outcome of this patient was promised and encouraged. From literature, it has been found that, compared with SARS-COV and MERS-COV, the mortality of COVID-19 is relative lower [4,5]. Moreover, without any other chronic basic diseases, the treatment of this patient is more beneficial and optimal [6,7].

Conclusion

In summary, COVID-19 pneumonia pandemic has led to a great global impact on economy and social development. Less information for the COVID-19 is now released and how to seek safe and economical treatment against COVID-19 pneumonia is the most urgent task for medical institutions and hospitals around the world. Shared experience and international cooperation will be feasible and potential.

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