Recovery of a 91-year-old COVID-19 Patient with Medical and Psychological Support

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Abstract: Background: Coronavirus disease (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is designated as a global pandemic. Elderly men with underlying medical conditions are more susceptible to SARS-CoV-2 infection and usually develop severe/critical illness, therefore more attention we should be paid to them.

Objective: Describe methods that may help old patients with COVID-19 recover.

Methods: A case of a 91-year-old male COVID-19 patient in Haihe Hospital, Tianjin, China, has been reported here who survived after receiving supportive medical treatment and psychological assistance.

Results: In addition to medical interventions, psychological support may be needed to better treat COVID-19 patients, including the elderly.

Conclusion: Special care should be provided for elderly COVID-19 patients. Mutual understanding and support between patients and health-care workers are essential during this pandemic.

Keywords: COVID-19, SARS-CoV-2, elderly patient, psychological assistance, special care, family support.

1. INTRODUCTION

Coronavirus disease (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is highly contagious and has been designated as a global pandemic. There are neither antiviral drugs nor vaccines available specifically for SARS-CoV-2. Clinical trials have been conducted to assess the efficacy and safety of remdesivir, lopinavir/ritonavir, convalescent plasma, monoclonal antibodies, and mesenchymal stem cell therapy [1]. Currently, supportive and often intensive cardiopulmonary assistance still represent the main treatment option to minimize symptoms of the illness associated with SARS-CoV-2 infection [2]. COVID-19 patients’ clinical manifestations included fever, fatigue, dry cough, dyspnea, and myalgia [3]. SARS-CoV-2 infection is more likely to affect elderly people that could result in acute respiratory distress syndrome, acute cardiac injury, acute kidney injury, and even death. It is challenging for health-care workers to cure elderly COVID-19 patients.

The vulnerability and frailty of those elderly COVID-19 patients are reflected in many aspects. First of all, they usually have underlying diseases, including diabetes and cardiovascular disorders, that have been demonstrated to be risk factors for severe progression [4, 5]. Second, the physical decline of elderly patients makes many treatments unsuitable [6]. In addition, some elderly patients may lack family support and feel lonely. Emotional and psychological support is, therefore, essential in the treatment of elderly COVID-19 patients during the pandemic.

We report here a case of a 91-year-old male COVID-19 patient in China who survived after receiving supportive medical treatment and psychological assistance.

2. CASE PRESENTATION

The patient was a 91-year-old man with no history of smoking or drinking. He had a medical history of myocardial infarction. Because of glaucoma and cataract, he was blind in his right eye and had poor eyesight in his left eye. He also had some degree of hearing loss.

On January 17, 2020, the patient’s son, who lived in Wuhan, visited him in Tianjin for the Spring Festival, the most important festival in China. On January 25, his son was hos-
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pitalized with a high fever and later tested positive for SARS-CoV-2 nucleic acid at Tianjin First Central Hospital. His son was subsequently transferred to Haihe Hospital, designated for the treatment of COVID-19 patients in Tianjin, China.

On January 25, the elderly patient developed a cough with a little white sputum. The patient visited the fever clinic of Tianjin Fourth Central Hospital. Chest radiography showed a high-density shadow in the left lower lung, suggesting pneumonia. Laboratory tests revealed a decrease in the neutrophil ratio (12.5%, [normal, 50-70%]). Because of close contact with his son, a confirmed COVID-19 patient, a pharyngeal swab sample was collected for COVID-19 testing. Test results obtained two days later indicated that he was COVID-19-positive.

On January 27, the patient was transferred to Haihe Hospital. Serum levels of IgM and IgG were 9.34, 12.81 AU/mL, respectively, at day 3 after illness onset, lower than the average levels of IgM (55.8 AU/mL) and IgG (27.39 AU/mL) in 53 other younger patients in our hospital. The patient was very anxious because of illness and his hearing loss and poor eyesight. He, therefore, was admitted to the same hospital ward as his son for psychological support. At admission, he had a fever, cough, and little white sputum production but no shortness of breath. His body temperature was 37.7°C; blood pressure, 187/78 mm Hg; respiratory rate, 21 breaths/min; heart rate, 87 beats/min; and blood oxygen saturation, 100%. Clinical treatment included 5 million units of recombinant human interferon α-2b; atomized inhalation of 2 mL sterile injection water twice daily; arbidol hydrochloride (0.2 g every 8 hours, orally), lopinavir and ritonavir (0.5 g every 12 hours) tablets; and a Lianhua Qingwen capsule (traditional Chinese medicine; 1.4 g every 8 hours, orally). Ceftriaxone was administered as an anti-infection treatment (0.5 g in 100 ml of saline once daily). Other medicines included an acetylcysteine expectorant (Fig. 1).

On January 30, the patient still had fever intermittently, with a maximum temperature of 38.8°C. Lopinavir/ritonavir were stopped because of diarrhea. Laboratory examination indicated that the patient’s C-reactive protein (CRP) level (36.1 mg/L, [normal, 0-10 mg/L]) was significantly higher than that at admission (2.41 mg/L) (Fig. 2). Chest Computed Tomography (CT) showed deterioration of lung lesions (Fig. 3). Measurements on a Holter monitor for 24-hours showed abnormal cardiac function, including sinus rhythm, paroxysmal atrial fibrillation, right ventricular hypertrophy, atrial premature beat, intermittent short atrial tachycardia, and multisource ventricular premature beat. Electrocardiography indicated atrial fibrillation, therefore, betaloc (12.5 mg once, orally) was administered. Betaloc was stopped because the patient’s heart rate decreased to 48 beats/min. Nadroparin calcium anticoagulant therapy was administered (0.4 ml, once a day for two weeks, subcutaneously). The infection progressed and aggravated gradually, therefore, piperacillin sodium and tazobactam sodium were administered (4.5 g, every 8 hours, intravenously). In consideration of the patient’s age and complications, thymosin α1 was administered for immunity enhancement. His CRP level increased to 57 mg/L, five times the reference limit. CT indicated a progression of viral pneumonia the next day (Fig. 3). Anti-infection treatment was adjusted to include imipenem and cilastatin (1.0 g, every 8 hours, intravenously).

On February 2, traditional Chinese medicine was discontinued because of abdominal distention. After receiving oxygen therapy, blood gas analysis results showed pH 7.46↑, partial pressure of carbon dioxide 33.3 mmHg↓, partial pressure of oxygen 97.70 mmHg↑, base excess -0.1 mmol/L, and 97% peripheral oxygen saturation. After three days of treatment, the patient’s temperature almost normalized (maximum 37.5°C). Arbidol hydrochloride was orally administered for the following 2 weeks.

![Fig. (1). Treatment course. (A higher resolution / colour version of this figure is available in the electronic copy of the article.)](<https://example.com/fig1.png>)
Fig. (2). Dynamic parameters of laboratory examination. Body temperature, counts of white blood cells, lymphocytes, red blood cells, and levels of hemoglobin, C-reactive protein, lactate dehydrogenase were recorded during the clinical course of the elderly COVID-19 patient. Red dotted lines indicated the normal range for each parameter, 4-10 x 10^9/L for white blood cells, 0.8-4 x 10^9/L for lymphocyte, 4-5.5 x 10^9/L for white blood cells, 120-160 g/L for hemoglobin, 0-10 mg/L C-reactive protein, and 313-618 U/L lactate dehydrogenase respectively.

Fig. (3). Chest computed tomography of the elderly COVID-19 patient, showing signs of viral infection in the lung. (A higher resolution / colour version of this figure is available in the electronic copy of the article).
By February 13, the patient’s body temperature had remained normal for three consecutive days, and the symptoms of cough and expectoration disappeared. Imipenem was stopped, and levofloxacin (0.5 g, once a day, for three days, intravenously) was used as an anti-infection treatment. Chest CT showed an improvement in lung shadow on February 17 (Fig. 3). Anti-infection drugs were discontinued. On February 21, his pharyngeal and anal swabs tested negative for SARS-CoV-2. The patient was discharged that day.

3. DISCUSSION

Immune function declines gradually with an increase in age, which makes the elderly a high-risk population for SARS-CoV-2 infection. Evidence has shown that SARS-CoV-2 causes worse outcomes in older adults. Further, underlying conditions such as diabetes and cardiac diseases that are often seen in elderly people accelerate the progression of the illness to a critical stage or even death. According to current clinical data, the mortality rate is much higher among elderly COVID-19 patients than among young adults [7]. Clinical treatment and care of elderly COVID-19 patients have been very challenging.

The efficacy and safety of traditional Chinese medicine in the treatment of COVID-19 have been widely acknowledged [8], but this patient did not respond well to it. Lopinavir/ritonavir was administered as an antiviral, but viral shedding did not improve. Later, treatment with lopinavir/ritonavir was discontinued because of diarrhea. In the absence of appropriate anti-coronavirus medication, clinical management for COVID-19 includes prompt implementation of recommended infection prevention measures and supportive management of complications. For this patient, the infection was minimized with ceftriaxone, piperacillin sodium, tazobactam sodium, imipenem, cilastatin, and levofloxacin administration. Because of the patient’s medical history of myocardial infarction, atrial fibrillation was induced during early treatment. One dose of betaloc was administered, followed by the anticoagulant nadroparin calcium.

However, medical interventions alone were not sufficient for this elderly patient. Psychological stress could dampen an individual’s immune responses that play an essential role in fighting against SARS-CoV-2. Like other COVID-19 patients, this elderly patient was very anxious at admission, not only because of his illness but also because of his poor hearing and eyesight. The hospital arranged for him to share the ward with his son for psychological support. A family ward should be considered, as family clusters of COVID-19 patients have often been observed.

This elderly patient needed special care psychologically and physically, and a designated nurse assisted him with daily activities, including eating and using the bathroom. In the beginning, this elderly patient was obviously anxious and worried about his son, who also suffered from COVID-19. The hospital then moved him and his son to the same ward, and his anxiety was eased soon. Upon request, we provided him musical support. Also, mutual understanding between health-care workers and patients made a significant difference in our hospital, especially at the beginning of this pandemic. This elderly patient often expressed his gratitude toward the health workers who cared for him. To reduce the nurses’ workload, this patient was occasionally found to withhold urination. Physicians, nurses, and patients at our hospital often left notes on windows or desks to express their gratitude or encourage each other. For this reason, the mortality rate of COVID-19 patients in China is lower than the world average.

CONCLUSION

In addition to medical interventions, psychological support may be needed to better treat COVID-19 patients, including the elderly ones.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Declared none.

HUMAN AND ANIMAL RIGHTS

No animals/humans were used for studies that are base of this research.

STANDARDS OF REPORTING

CARE guideline had been followed.

CONSENT FOR PUBLICATION

Written informed consent for publication was obtained from all participants.

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CONFLICT OF INTEREST

The authors declared no conflicts of interest.

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