

Case Report

Two cases of asymptomatic new type coronavirus (COVID-19) pneumonia Including one case with organizing pneumonia pattern

Katsunao Niitsuma, Tomoko Suzuki, Miwako Saito

Fukushima Medical University Aizu Medical Center Infection and Respiratory Internal Medicine

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Abstract

New type coronavirus (COVID-19) pneumonia has become a community-acquired pneumonia pandemic. We report on two cases of COVID-19 infection on a cruise ship who were asymptomatic at the time of hospitalisation but who had pneumonia confirmed by chest CT. Treatment was started with Lopinavir / Ritonavir. One patient recovered quickly receiving early treatment, but the other showed acute lung injury and required steroid at the moment of serious severe situation as 93 of P/F ratio. Both cases have recovered, and It was suggested that quick response depending on the situation was necessary.

Introduction

We report two cases of new type coronavirus (COVID-19) infection on a cruise ship "Diamond Princess" who admitted to our hospital. These cases had been asymptomatic before transportation, but chest CT showed pneumonia after they arrived late at night. One case developed fever from next day, and treatment was started with Lopinavir/ Ritonavir (LPV/r), antibiotics, and herbal medicines for both cases.

One case improved with early administration of LPV/r, but the other case with underlying diseases showed appetite loss and general fatigue, and chest CT images worsened causing severe lung injury with 93 of a PaO₂/FiO₂ (P/F) ratio. His subjective symptoms were improved with short-time and small amount steroid administration, and both were discharged in 22 days because RT- PCR of COVID-19 (SARS-CoV-2, 2019-nCov; hereafter referred to as 2019-nCov) confirmed negative results. The patients have given their consent for the case report.

Case Report

[Case I]A 78-year-old man

[Chief complaint] None

[Present illness]

He was on a cruise ship "Diamond Princess" and was scheduled to disembark on February (Feb.) 12 after calling at Yokohama. But COVID-19 infection occurred on board and he needed inboard quarantine with his wife (case 2). On Feb. 15, he had a positive result of 2019-nCov, and he was transported to our hospital for isolation with his wife.

[Past history]

His past history included cerebral infarction, sleep apnea syndrome (using CPAP) at 73 yeras old and surgery for spinal canal stenosis at 77 years old.

[Life and social history] He does not smoke and has opportunity drinking.

[Drug allergy] None

[Oral medicine]

He is taking medicines the following medicines, amlodipine 2.5mg/day (discontinued after taking LPV/r) , cilostazol 200mg /day

[At the time of admission] (Fig. 1)

Pneumonia was seen on the chest CT images (Fig. 2) at admission, and the patient was diagnosed with COVID-19 pneumonia. Although he did not any symptoms, hypoxemia was observed as SpO₂ 88% (room air). oxygen inhalation (nasal catheter) 2 L/min) was required. Baloxavir marboxil 40 mg was also administered. On the 2nd hospital days (Feb.16), he had 38.5°C fever and prolonged hypoxemia as 86%-90% of SpO₂, and required increasing oxygen dose. On the 3rd hospital days, the fever further rose to 38.8 °C, and hypoxemia was not improved. Therefore, an extraordinary ethical review committee meeting was held, and permission to use LPV/r for COVID-19 infection was granted. After obtaining permission to take LPV/r and informed consent from the patient, 800mg of LPV/r was administrated. On the 4th hospital days (Feb.18) in the evening, he complained malaise and appetite loss, and respiratory distress was observed. On the 5th hospital days 1,000mg of acetaminophen was administrated intravenously because high fever like-39.5°C was performed. Further, SpO₂ decreased to 85% even under 4L/min oxygen supplementation with nasal catheter. Therefore, it was changed to the reservoir mask 6L/min.

Although the temperature temporally went down with acetaminophen administration, hypoxemia further progressed. Non-invasive positive pressure ventilation (NIPPV) was prepared at a P/F ratio of 93 in the morning of the 6th hospital days, and 200mg of hydrocortisone was single administrated intravenously.-The CT image showed exacerbated shadows (Fig. 2) with an organic pneumonia pattern spread to all lobes except for the right lower lobe. In the evening, fatigue was disappeared and appetite recovered- Although the body temperature has gone up and down at reached the maximum to 38.2°C from the 7th to 9th hospital days, respiratory distress was improved, and oxygen supplementation was reduced from 4L/min to 2L/min. On the 10th hospital days (Feb.24), the body temperature went below 37°C, and the oxygen supplementation was finally stopped on Feb. 25. Concomitant antibiotics (Ceftriaxone (CCTX) 2g×1 time/day, or Sulbactam/Ampicillin (SBT/ABPC) 6.0g (3.0g× 2 times)/day) was used for aspiration pneumonia which was concerned due to the sequelae of previous cerebrovascular disorders and long-term isolation in the cruise ship. Kampo medicines, Japanese herbal medicines, such as Mao-to, Daiseiryu-to, or Chikujountan-to were also used as an anti-inflammation therapy. On the 13th hospital day (Feb.27), the first 2019-nCov test was performed with his nasal samples. The result was positive, and on March 6, twice consecutive negative was confirmed at the sixth 2019-nCov test. He finally discharged on March 7 at the 22nd hospital days. Figure1 shows clinical course after hospitalization.

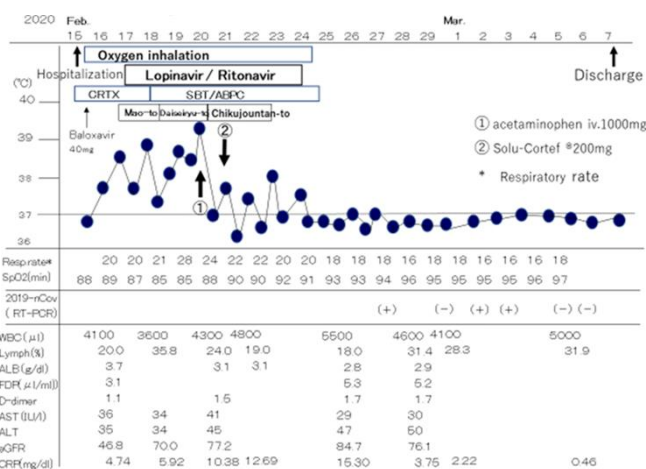


Fig. 1. Clinical course (Case 1)

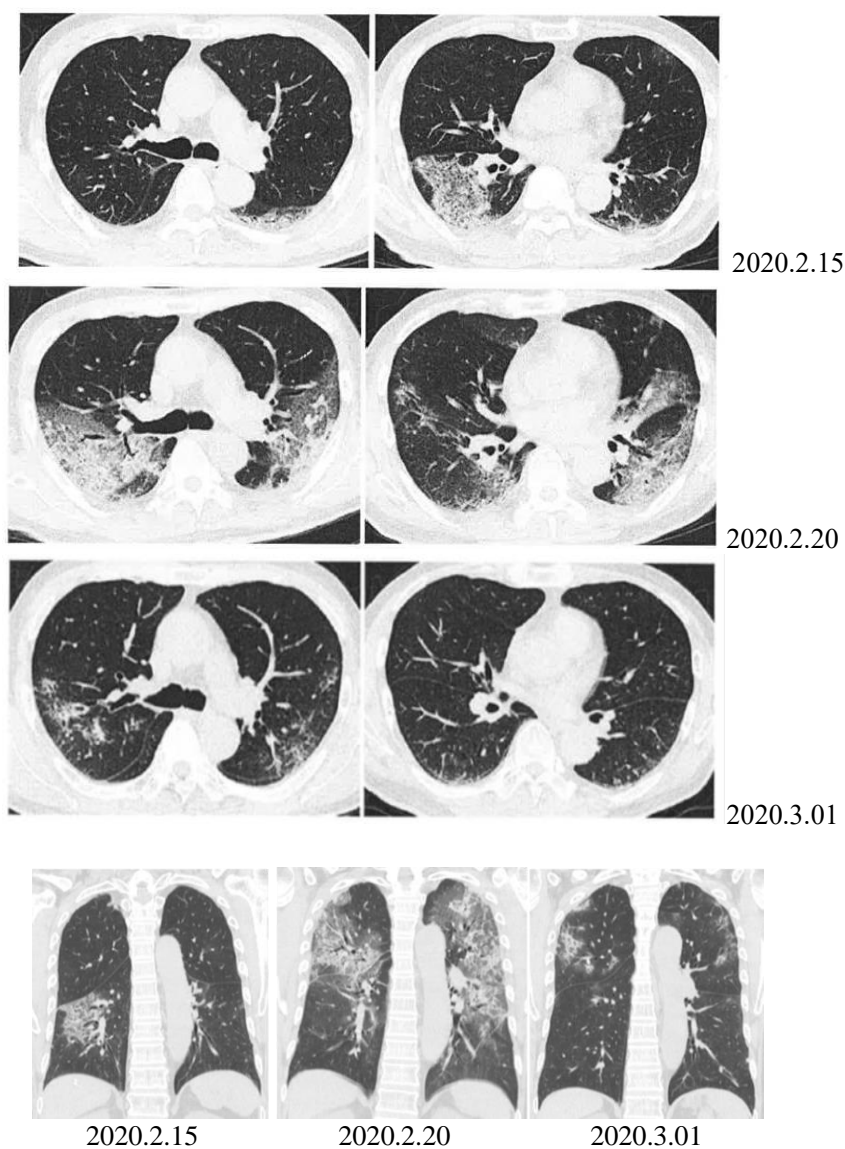


Fig.2. Chest CT Axial /Coronal view image of Case 1 (2020.2.15 / 202.2.20 / 2020.3.01)

Case 2. 74-year-old woman

[Chief complaint] Pain of right knee joint, but no symptoms with COVID-19.

[Present illness]

She was on a cruise ship "Diamond Princess" with her husband (case 1), and was scheduled to disembark on Feb.12 after calling at Yokohama. But COVID-19 infection occurred on board and he needed inboard quarantine with her husband. On Feb.15, he had a positive result of a new type of 2019-nCov, and she was transported to our hospital for isolation with her husband.

[Past history] Nothing in particular

[Life and social history] She does not smoke and has opportunity drinking.

[Drug allergy] None

[at the time of admission] (Fig. 3)

Slight pneumonia in the left lingular segment 5 which was diagnosed with COVID-19 pneumonia was seen on the chest CT images at admission (Fig. 4). On the 1st hospital day (Feb.15),-Baloxavir marboxil 40mg was administered. Pain of right knee joint which was her chief complaint and swelling of the lower leg were observed, and NSAIDs was administrated as pseudogout. Fever rose from the 2nd hospital days till the 4th days (Feb.18), and pneumonia shadows of left lung worsened on the chest radiograph (Fig. 4). 800mg of LPV/r was administered, but oxygen supplementation was not required. Regarding swelling and redness of the lower leg, high value of FDP and D-dimer suggested deep vein thrombosis associated with economy class syndrome, and warfarin was administrated. The highest fever peaked at 38.4°C on the 5th hospital days (Feb.19), and it dropped down less than 37°C since next day. LPV/ r was terminated in 5 hospital days (Feb.19). Anti-coagulant therapy was discontinued, and the cause of knee joint pain might be due to osteoarthritis. She discharged on the 22nd hospital days (March 7) with her husband.

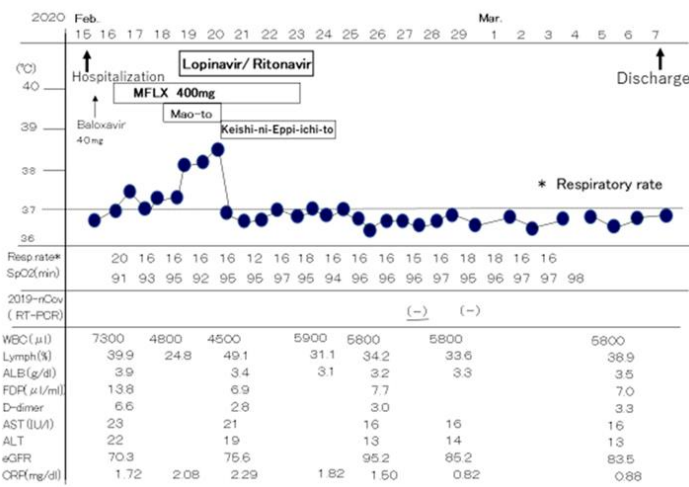
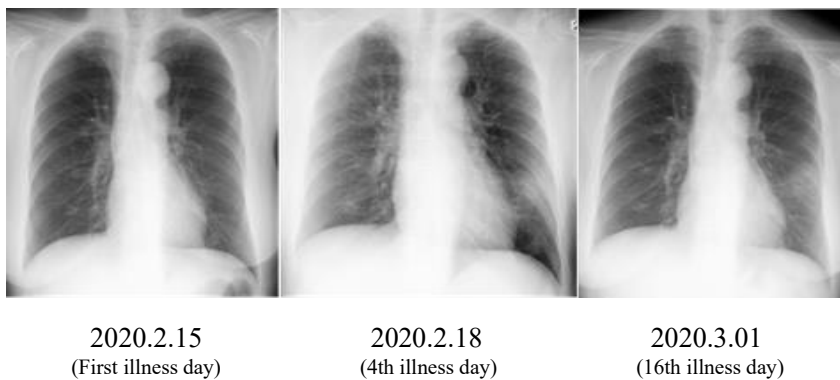


Fig. 3. Clinical course (Case 2)



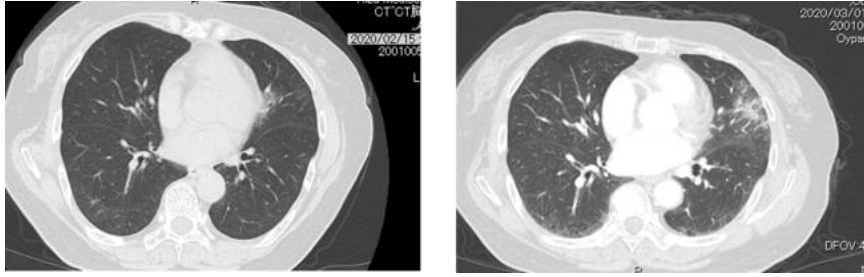


Fig.4 Chest XRay of Case 2 (2020.2.15 / 2.18 / 3.01) and Chest CT (left ; 2020.2.15 / right ; 2020.3.01)

Discussion

The number of the new coronavirus patients has reached 189,680 in 146 countries on March 18, 2020, as WHO declared pandemic on March 11, 2020. According to Chinese National Health Commission-'s“ Japanese New Guidelines for the Treatment of Coronavirus (6th edition) ”, classification of severity in the new Coronavirus infection is as follows; ¹⁾ mild case has symptoms, but no pneumonia, ²⁾ moderate case has pneumonia, ³⁾ severe case has any of respiration rate 30 times/min or more, SpO₂ 93% or less, P/F ratio 300 or less, and progress of pneumonia 50% or more in 24-48 hours, and ⁴⁾ serious severe case has any of use of ventilator, shock state, and with multiple organ failure ¹⁾ According to an epidemiological survey in China, mild cases account for 81%, severe cases 14%, and serious severe cases such as respiratory failure, or multiple organ failure 5% with a fatality rate of 2% ²⁾.

Both of our cases had pneumonia without fever and respiratory symptoms at admission. In case 1, ground glass opacity (GGO) ³⁾ was found in right lower lobe with predominant on the peripheral side on the 1st hospital day. Five days later, GGO diffusely spread throughout both lung with predominant on the peripheral side-just below the pleura. Septal thickening was also found. The CT image has improved with only opacities remaining in the left and right upper lobes (Fig. 2). The pattern of CT images showed organizing pneumonia.

In case 2, a slight GGO was found in the left lingular segment 5 on chest CT, which could not be confirmed on chest radiograph. But three days later, GGO appeared on the chest radiograph. These findings were all improved before discharge.

According to the clinical course of both, case 1 classified severe type close to serious severe, because 85% of SpO₂ despite 4L/min of oxygen administration and P/F ratio 93, and progress of lung injury on chest CT were observed. Case 2 was classified moderate type.

Regarding treatment for new coronavirus infection, although Baloxavir marboxil, an anti-influenza virus drug which was considered to inhibit viral gene replication itself, was first administered for both cases, fever rose from next day in both. In case 1, progress of hypoxemia and high fever were observed, and LPV/r was administrated. However, his fever did not lower, then acetaminophen was added. On the 6th hospital days (Feb.20), NIPPV was prepared due to 93 of P/F ratio. We suspected the onset of a cytokine storm, which is thought to be associated with high levels of GCSF, IP10, MCP1, and TNF α associated with the severity of the disease, so we decided to use systemic corticosteroids (Solu-Cortef[®]) with single-dose⁴⁾. His activities of daily living (ADL) was dramatically recovered since then, and LPV/r was terminated in 7 days. Whether the 7-day dosing, rather than the 10-day ¹⁾, had a negative effect on the subsequent negative conversion of 2019-nCov may require the accumulation of cases.

Case 2 was initially only followed-up. However, in response to the results as fever reached over 38 °C and exacerbation of opacities on chest radiograph, LPV/r was started. The drug seemed to improve her ADL and to help fever down. LPV/r may be effective if it used early.

In combination therapy with Kampo medicines ⁵⁾, Mao-to, Saikokeishi-to and Chikujoutan-to etc were administered in our cases. They were used for acute viral infection as influenza. Whether to be first line for COVID-19 infection should be determined based on the accumulation of cases.

Although it is premature to determine only in our two cases, the result turning negative of 2019-nCov might indicate less than 1.0 mg/dL of CRP.

Acknowledgments

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