

Nursing Informatics

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[AP1-E2-2-07] Characteristics of 25 Mild-Moderate COVID-19 Patients Admitted to a Municipal Hospital -Analysis of Information from an Electronic Medical Record System-

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Keywords: Municipal Hospital, Clinical Deterioration, Taste Disorders, COVID-19

A city hospital, located in the prefecture where the number of COVID-19 patients was the second largest in Japan, admitted 25 COVID-19 patients in the period in which the daily number of infected individuals reached a peak in Japan. We consider that analysis of the patients' backgrounds, symptoms, and outcomes may contribute to the preparations for the second wave of infection. We, therefore, retrospectively reviewed the information obtained from an electronic medical record system and found that about one-third of these COVID-19 patients were not residents of the city, and that the use of ICT is necessary for communication and coordination with organizations including the public health centers. In addition, some COVID-19 patients presented with diarrhea and smell/taste disorders in addition to respiratory symptoms. Also, while the potential for clinical deterioration is low, precautions against such deterioration are necessary in individuals who have had close contact with severely ill patients.

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Abstract

A city hospital, located in the prefecture where the number of COVID-19 patients was the second largest in Japan, admitted 25 COVID-19 patients in the period in which the daily number of infected individuals reached a peak in Japan. We consider that analysis of the patients' backgrounds, symptoms, and outcomes may contribute to the preparations for the second wave of infection. We, therefore, retrospectively reviewed the information obtained from an electronic medical record system and found that about one-third of these COVID-19 patients were not residents of the city, and that the use of ICT is necessary for communication and coordination with organizations including the public health centers. In addition, some COVID-19 patients presented with diarrhea and taste / smell disorders in addition to respiratory symptoms. Also, while the potential for clinical deterioration is low, precautions against such deterioration are necessary in individuals who have had close contact with severely ill patients.

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Introduction

In Japan, after the first patient with COVID-19 in Japan was identified on January 15, 2020, the number of infected individuals increased, and declaration of a state of emergency was issued on April 7 of the same year. Thereafter, the number of infected individuals began to decrease, and the state of emergency was lifted on May 25. There has since been no explosion of infection.

The city hospital, which has 400 beds and provides emergency medicine, established an outpatient clinic for returnees and people with potential exposure to COVID-19 at the request of the public health center on February 8, 2020. Since COVID-19 was a designated infectious disease at this point, patients found positive on a PCR test were transferred to designated medication institutions for specified infectious diseases. However, as COVID-19 patients gradually increased also in the prefecture in which the city hospital is located, and as it became difficult to admit them to only designated medical institutions, local hospitals including the city hospital began to accept COVID-19 patients. The city hospital accepted 25 patients with mild-moderate COVID-19 until the state of emergency was lifted. To utilize this experience for the next surge of infection, we report the results of analysis of characteristics of the back-

ground, symptoms, and outcomes of the patients with mild-moderate COVID-19.

Methods

A retrospective review was made using the records of an electronic medical record system. The review period was from March 23 to May 28, 2020, and the age, sex, presence or absence of underlying diseases, route of hospitalization, symptoms on admission, route of infection, treatments during hospitalization, and outcomes were aggregated.

Results

The 25 COVID-19 patients consisted of 14 males and 11 females. Their mean age was 53.2 ± 21.0 years; Seven of them (28%) were in their 40s, and 6 (24%) were in their 70s. The oldest patient was aged over 90. Of the patients, 18 (72%) were residents, and 7 (28%) were non-residents, of the city. Seventeen (68%) had no underlying diseases, and 8 (32%) had underlying diseases. Diabetes, observed in 5 (20%), was the most frequent underlying disease, and 1 of them was taking immunosuppressive drugs. Two (8%) had respiratory disease, and 1 (4%) was receiving anticancer chemotherapy.

The body temperature on admission was $\geq 37.5^{\circ}\text{C}$ in 10 (40%) and $<37.5^{\circ}\text{C}$ in 15 (60%). The respiratory rate was ≤ 18 in 14 (56%) and ≥ 19 in 11 (44%).

Of the symptoms observed during hospitalization, cough, noted in 17 (68%), was the most frequent, followed by fever and malaise (14 patients, 56%), headache (10 patients, 40%), diarrhea (8 patients, 32%), and taste/smell disorders (6 patients each, 24%). Although the respiratory rate was high in 11 (44%) on admission, only 5 (20%) had difficulties in breathing.

The route of infection was unknown in 17 (68%), and 8 (32%) had close contact with infected individuals and had known routes of infection. The route of hospitalization was most frequently via the request of a public health center (18 patients, 72%), followed by 4 (16%) at the request of an admission follow-up center and 3 (12%) as referrals from the outpatient/emergency outpatient clinic of the city hospital.

The mean duration of hospitalization was 18.2 ± 9.17 days, 21 (84%) were discharged due to recovery, 2 (8%) were transferred to other hospitals due to clinical deterioration, and 1 (4%) was discharged for home care. The remaining 1 patient

had 2 consecutive negative tests and was judged to have been cured but could not be discharged to home, and was transferred to a non-COVID-19 ward in the hospital. Both patients transferred due to deterioration were in their 70s and had close contact with each other. One had diabetes, but the other had no underlying disease.

During hospitalization, 0-7 PCR tests were performed in each patient. Three patients (12%) without PCR testing were either transferred to another hospital due to deterioration or discharged for home care. Eleven patients (44%) underwent 2 PCR tests, which were both negative. Eleven patients (44%) required 3 or more PCR tests.

No nosocomial infection occurred during the period reviewed.

Discussion

This hospital is a city hospital, and its primary responsibility is to accept patients in the city during epidemics. Of the 25 COVID-19 patients hospitalized, 18, or about 70%, were city residents, and the hospital is considered to have fulfilled its responsibility. In Japan, COVID-19 patients are required to report their state of health daily to the public health centers in their hometowns. During hospitalization, the hospital is responsible for reporting and was required to submit the reports to the public health center of each patient's place of residence. This was a factor that complicated communication and coordination. The use of ICT, by which multiple members could share information, was effective to circumvent this factor.

Next, regarding the age composition of the admitted patients, while more than 50% of the patients in the entire prefecture were in their 20s-40s, many of the patients admitted to this hospital were in their 70s. The percentage of older patients was high, possibly because many of our patients had familial infection, and because both individuals of some couples were positive.

Of the patients with underlying diseases, the percentage of those with diabetes was highest at 20%, which is higher than the prevalence of diabetes in COVID-19 patients in 8 areas in 3 regions of the world (15.1%) [1]. This may reflect the fact that Japan has a large population of diabetic patients aged 65 years and over [2].

The body temperature on admission was $\geq 37.5^{\circ}\text{C}$ in 40% of the patients, and this low rate of patients with fever may have been related to the criterion, "fever sustained for 4 or more days", for consultation with suspected COVID-19 proposed by the MHLW of Japan. Some patients may have had fever for a few days after the onset, but, because they were first examined after observation for 4 days, fever may have resolved at the time of admission.

During hospitalization, 96% of the patients were symptomatic, and the symptoms included those commonly observed in pneumonia, such as cough, fever, and malaise, and others such as diarrhea and taste/smell disorders. It is reported that taste/smell disorders occurred in 64.4% of patients with mild-moderate COVID-19 [3]. In Japan, taste/smell disorders have attracted attention due to the reports of celebrities who experienced taste/smell disorders. However, since taste/smell disorders had not been checked before the reports of these cases, their true prevalence rate may have been higher.

The number of PCR tests during hospitalization was high, because a condition of discharge during this period was "having 2 consecutive negative PCR tests". Less than half the patients were negative on 2 consecutive PCR tests after admission, and

many patients were negative on 1 test but were positive on a re-test. This was a factor that prolonged the duration of hospitalization compared with the mean hospitalization period in this hospital (11.1 days in 2019). However, as confirmation of a negative PCR test was made unnecessary for discharge by the notification of the MHLW on June 12, 2020, the duration of hospitalization will be shortened in the future.

The frequency of clinical deterioration in the patients admitted to this city hospital was 8%. Since the hospital was assigned to treat mild-moderate COVID-19 patients, the percentage of critically ill patients was low. However, as the 2 patients showing clinical deterioration had close contact with each other, individuals who have had close contact with patients who have shown clinical deterioration may also be at risk of clinical deterioration.

The data used for this analysis was collected by the access authority to give it to a general nurse. This suggests that even the staff nurse who does not have authority to use an information management system like DWH is able to do information utilization. In the future, I will present this result to a system engineer, and try to construct the system which extracts the patient who is at increased risk of the clinical deterioration automatically.

Conclusion

1. About one-third of the COVID-19 patients accepted at this city hospital were non-residents of the city, and arrangements, such as the use of ICT for communication and coordination for their treatment, are necessary.
2. Cough was the most frequent symptom, but non-respiratory symptoms, such as diarrhea and taste/smell disorders, were observed in some patients.
3. Although the percentage of patients who show clinical deterioration was low, precautions against clinical deterioration are necessary in individuals who have had close contact with patients who have shown clinical deterioration.

Compliance with Ethical Standards

There are no conflicts of interest to declare concerning this study. This study was carried out with approval by the institutional review board of the hospital.

References

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