Initial symptoms of patients with coronavirus disease 2019 in Japan.

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Short Report

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Abstract

Background: Fever, cough, malaise, and throat pain are the most common initial symptoms of coronavirus disease 2019 (COVID-19). However, no studies have ever been conducted to investigate the initial symptoms of COVID-19 in Japan.

Methods: We investigated 707 consecutive COVID-19 patients who were diagnosed in ten prefectures of Japan until May 16, 2020 by using publicly available data. The primary outcome was initial symptoms on the day of symptom onset. The proportion of patients with individual symptoms among symptomatic patients was calculated.

Results: Of all the patients, 79 (11.2%) were asymptomatic. Among the 628 symptomatic patients, the most common initial symptom was fever (65.9%), followed by cough (23.5%), malaise (23.5%), and throat pain (12.9%). At least one of these four symptoms was reported in 88.2% of all symptomatic patients. Nineteen patients (3.0%) reported gastrointestinal symptoms without respiratory symptoms, while six patients (1.0%) reported only loss of smell or taste as the initial symptom.

Conclusions: Like other countries, the most common initial symptoms of COVID-19 patients in Japan are fever, cough, malaise, or throat pain. Gastrointestinal symptoms without respiratory symptoms and loss of smell and taste are uncommon initial symptoms in Japan.

Introduction

In China, the first case of severe acute respiratory syndrome coronavirus 2 (SARS-CoV–2) was confirmed in December 2019 [1]. Since then, the number of coronavirus disease 2019 (COVID–19) cases has reached more than four million, and 0.3 million patients have died worldwide [2]. In Japan, the number of patients with COVID–19 has also reached more than 16 thousand cases as of June 1, 2020. To prevent the spread of COVID–19, it is important to know the initial symptoms of COVID–19.

Initial studies reported that most patients presented with fever and cough [3–5]. Subsequent studies revealed that the frequencies of fever and cough as initial symptoms were not as high as initially thought [6], and atypical presentations including gastrointestinal symptoms, dysgeusia, and anosmia were not uncommon [7,8]. However, few studies have focused on initial symptoms [5] rather than symptoms reported at admission or during hospitalization [3,4,6–8]. Furthermore, no studies have ever investigated clinical features of COVID–19 in Japan. Therefore, we evaluated the initial symptoms of COVID–19 patients in Japan.

Methods

Study design and setting

A descriptive study was conducted by analyzing publicly available data from ten prefectures of Japan (Aomori, Akita, Yamagata, Miyagi, Fukushima, Niigata, Tochigi, Gunma, Ibaraki, and Yamanashi). These prefectures report all COVID–19 cases confirmed by SARS-CoV–2 polymerase chain reaction testing. These prefectures were chosen because detailed information on initial symptoms was documented in reports from each prefecture. All patients with confirmed COVID–19 through May 16, 2020 were included. As of May 16, 2020, 795 COVID–19 cases were confirmed in the ten prefectures. Eighty-eight patients without detailed information about initial symptoms were excluded, and 707 patients were included in the final analysis.

Data collection and outcome measures

Information on age, sex, symptoms, and time to diagnosis from symptom onset were extracted. The primary outcome was initial symptoms, defined as all symptoms reported on the day of symptom onset. Symptoms reported from onset until COVID–19 diagnosis were also collected.

Statistical analysis

The characteristics of the included patients were reported by using descriptive statistics. The proportion of patients with each individual symptom among symptomatic patients was calculated. The frequency of gastrointestinal symptoms without respiratory symptoms and only loss of smell or taste as an initial symptom among symptomatic patients was also determined. These analyses were conducted by using STATA version 15 (LightStone, Tokyo, Japan).

Results

Among the 707 COVID–19 patients, 6.3% were less than 20 years old, 48.7% were women, and 11.2% were asymptomatic (Table 1). Forty-four patients (7.9%) were diagnosed with pneumonia before being diagnosed with COVID–19. Among 627 symptomatic patients, the median days from onset to diagnosis was 6 (IQR 4 to 9). The most common initial symptom on the day of onset was fever (n = 410, 65.9%), followed by cough (n = 148, 23.5%), malaise (n = 148, 23.5%), and throat pain (n = 81, 12.9%). (Table 2). One of these four symptoms was reported in 88.2% of all symptomatic patients. Nineteen patients (3.0%) reported gastrointestinal symptoms without respiratory symptoms, while six patients (1.0%) reported only loss of smell or taste as an initial symptom.

The most common symptoms reported during the median six days from onset until diagnosis were fever (n = 523, 83.3%), cough (n = 231, 36.8%), malaise (n = 215, 34.2%), and throat pain (n = 112, 17.8%). None of the four symptoms appeared in 32 patients (5.1%). Although loss of smell or taste was uncommon as an initial symptom, it developed before diagnosis of COVID–19 in a substantial proportion of patients.

Discussion

To our knowledge, this was the first study to determine the initial symptoms of COVID–19 patients in Japan. The present study showed that fever, cough, malaise, and throat pain were the most common initial symptoms of COVID–19 in Japan. Approximately 90% of patients reported one of these four symptoms as an initial symptom, and gastrointestinal symptoms without respiratory symptoms were uncommon. Our findings are consistent with those of earlier Chinese studies [3–6] showing that fever, cough, malaise, and throat pain were common but gastrointestinal symptoms were uncommon in COVID–19. Although our results are not consistent with those of a previous study [8] reporting that approximately 40% of COVID–19 patients present with any gastrointestinal symptoms, a previous study [8] did not report the frequency of gastrointestinal symptoms without respiratory symptoms and investigated symptoms at admission rather than initial symptoms. Given that few studies have focused on the initial symptoms of COVID–19, further studies are needed to determine the typical initial symptoms of COVID–19.

Our result is consistent with that of a previous study showing that anosmia developed after the appearance of other symptoms in some COVID–19 patients [9]. Although the prevalence of dysgeusia or anosmia in this study was much lower than those in previous studies [7,9] investigating hospitalized COVID–19 patients, our result was similar to that of a previous study [10] investigating community COVID–19 patients with mild symptoms. Differences in the target populations and methods of symptom assessment might have caused the discrepancies in the results between these studies.

Several limitations must be mentioned. First, the limitations of this study are its retrospective study design. Therefore, collected data might be inaccurate. Second, we excluded 11% of all COVID–19 cases confirmed in these prefectures due to a lack of detailed information about initial symptoms. Therefore, selection bias might limit our results. Third, information on symptoms developed after diagnosis and prognosis are lacking.

Conclusion

Like other countries, the most common initial symptoms of COVID–19 patients in Japan are fever, cough, malaise, or throat pain. Gastrointestinal symptoms without respiratory symptoms are less common as initial symptoms in Japan than other countries.

Declarations

Competing interests: The authors declare no competing interests.

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Tables

Table 1. Demographic features of the symptomatic and asymptomatic COVID-19 patients.

	Asymptomatic (n = 79)	Symptomatic (n = 628)
%)		
19 years old	12 (15.2)	33 (5.3)
59 years old	42 (53.2)	424 (67.5)
ears old and older	25 (31.6)	171 (27.2)
sex, n (%)	53 (67.1)	291 (46.3)
days to diagnosis from onset	NA	6 (4 to 9)

COVID-19, coronavirus disease 2019; IQR, interquartile range; NA, not applicable.

Table 2. Symptoms of the 628 symptomatic COVID-19 patients in the initial phase.

	At onset[a]	Until diagnosis[b]
al symptoms		
ever	410 (65.3)	523 (83.3)
ore or 38.0 °C	215 (34.2)	317 (50.5)
.0 to 38.0 °C	195 (31.1)	206 (32.8)
h	148 (23.6)	231 (36.8)
ise or fatigue	148 (23.6)	215 (34.2)
at pain	81 (12.9)	112 (17.8)
ache	78 (12.4)	128 (20.4)
orrhea	53 (8.4)	83 (13.2)
algia	43 (6.9)	64 (10.2)
	33 (5.3)	36 (5.7)
l obstruction	23 (3.7)	39 (6.2)
at discomfort	22 (3.5)	29 (4.6)
of smell	21 (3.3)	63 (10.0)
hea	20 (3.2)	38 (6.1)
le ache	20 (3.2)	29 (4.6)
um	17 (2.7)	42 (6.7)
of taste	14 (2.2)	57 (9.1)
exia	14 (2.2)	31 (4.9)
ea or vomiting	14 (2.2)	28 (4.5)
nea	9 (1.4)	41 (6.5)
minal pain	4 (0.6)	10 (1.6)
pain	2 (0.3)	12 (1.9)
ne four common symptoms[c]	554 (88.2)	596 (94.9)
piratory tract symptoms	264 (42.0)	368 (58.6)
s of smell or taste	6 (1.0)	3 (0.5)
ntestinal symptoms without respiratory symptoms[d]	19 (3.0)	26 (4.1)

[a]All symptoms reported on the day of symptom onset.

[b]All symptoms reported until diagnosis of COVID-19 were confirmed from symptom onset.

[c]These include patients with fever, cough, malaise, or throat pain.

[d]These include patients with gastrointestinal symptoms (diarrhea, abdominal pain, anorexia, or nausea) but not respiratory symptoms.

COVID-19, coronavirus disease 2019.