Tohoku J. Exp. Med., 2022, **258**, 103-110

COVID-19-Related Symptoms during the SARS-CoV-2 Omicron (B.1.1.529) Variant Surge in Japan

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The exact profiles of the clinical symptoms related to the SARS-CoV-2 Omicron variant (B.1.1.529) remain largely uncertain. Therefore, this study aimed to clarify the clinical manifestations of infection with this variant. We enrolled individuals who were tested by quantitative nasopharyngeal swab reverse transcription-polymerase chain reaction (RT-PCR) test at a large screening center in a city of Japan during the B.1.1.529 Omicron variant wave between January and May 2022, after contact with COVID-19 patients. Swab tests were planned to be performed approximately 4-5 days after contact. The presence of COVID-19-related symptoms was assessed at the swab test site. Among the 2,507 enrolled individuals, 943 (37.6%) were RT-PCR test-positive and 1,564 (62.4%) were test-negative. Among the 943 PCR test-positive participants, the prevalence of the symptoms was as follows: 47.3% with cough, 32.9% with sore throat, 18.4% with fatigability, 12.7% with fever of ≥ 37.5℃, 9.9% with dyspnea, 2.1% with dysosmia, and 1.4% with dysgeusia. The prevalence of cough, sore throat, dyspnea, and fatigability was higher among adults aged ≥ 18 years than among children and adolescents. The prevalence of dysosmia and dysgeusia remarkably decreased during the Omicron wave (1-3%) compared to during the pre-Omicron variant waves (15-25%). In summary, common COVID-19-related symptoms during the Omicron variant wave included cough and sore throat, followed by fatigability, fever, and dyspnea. The prevalence of most of these symptoms was higher in adults than in non-adults. The prevalence of dysosmia and dysgeusia remarkably decreased with the Omicron variant than with pre-Omicron variants.

Keywords: coronavirus disease 2019 (COVID-19); Omicron variant (B.1.1.529); severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2); sore throat; symptoms
Tohoku J. Exp. Med., 2022 October, **258** (2), 103-110.
doi: 10.1620/tjem.2022.J067

Received July 14, 2022; revised and accepted August 9, 2022; J-STAGE Advance online publication August 25, 2022

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Introduction

Coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), remains a major global public health concern in 2022. As of June 2022, the B.1.1.529 (Omicron) variant remains prevalent (Karim and Karim 2021; Petersen et al. 2022). Although this variant is considered to result in milder symptoms with better outcomes compared to prior variants, disease is still not mild (Nealon and Cowling 2022; Zhang et al. 2022). In addition to the change in severity of Omicron, the variant has also been suggested to show a lower prevalence of smell and taste disturbances, and a higher prevalence of sore throat and odynophagia (Piersiala et al. 2022). However, the exact rate and predictive significance of these symptoms remains largely undetermined. Therefore, this study aimed to elucidate the prevalence of key COVID-19-related symptoms in the early phase of SARS-CoV-2 infection during the nationwide Omicron variant wave. This study further compared the clinical features of the infection during the Omicron wave and those during the pre-Omicron waves to delineate the clinical features of Omicron.

Materials and Methods

Study design

We initially recruited individuals living in Sendai City, Miyagi, Japan, who were tested using a nasopharyngeal swab reverse transcription-polymerase chain reaction (RT-PCR) test at a large screening center in the city, after contact with COVID-19 patients between January and May 2022 (n = 2,575). During this period, more than 99% of the SARS-CoV-2 infections in the locality were confirmed to be caused by the B.1.1.529 (Omicron) variant, based on the sampling genome analyses performed by the local governments and public health centers. The local epidemic status before and during the study period, along with the daily number of new COVID-19 patients in Miyagi Prefecture, is shown in Fig. 1. Among the initially recruited individuals, patients who failed to provide information about their completion status and dates of vaccination against COVID-19 (n = 68) were excluded.

To compare the prevalence of key COVID-19-related symptoms among patients between different time periods with different predominant SARS-CoV-2 variants in the locality, we further collected data regarding the prevalence of symptoms from individuals tested in April-June 2021 (B.1.1.7 Alpha wave) and August-October 2021 (B.1.617.2 Delta wave), using the same recruitment criteria. To adjust for potential selection bias for swab test recruitment between the different periods with different predominant variants, demographic data and clinical symptoms were evaluated in both populations with RT-PCR test-positive and test-negative results.

Evaluated variables

Vaccine completion status (0, 1, 2, or 3 doses) was collected before the nasopharyngeal swab test. Data regarding the presence of key COVID-19-related symptoms, including body temperature (measured at home on the day of swab test), cough, dyspnea, sore throat, fatigability, dysosmia, and dysgeusia, were collected from the swab test site.

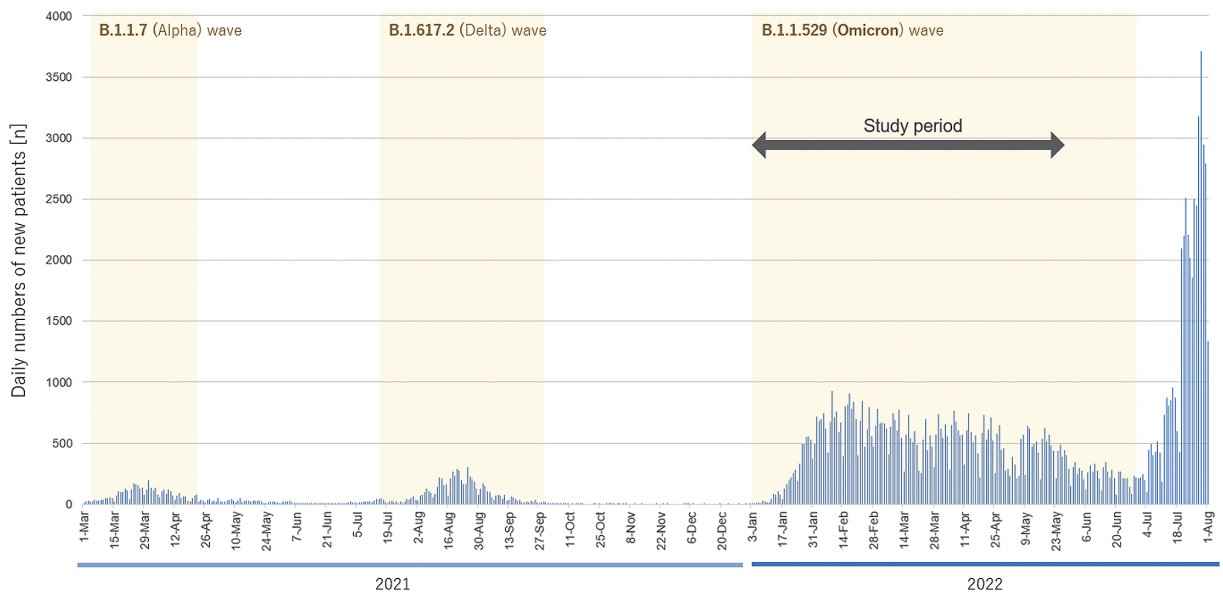

Fig. 1. Local daily numbers of new patients with COVID-19 in Miyagi Prefecture.
This graph shows the change in the daily number of new COVID-19 patients in the Miyagi Prefecture from March 2021. This study was performed during the B.1.1.529 (Omicron) wave in the locality between January and May 2022. To compare the clinical characteristics of patients with COVID-19 during the B.1.1.529 Omicron wave, clinical symptoms among patients with COVID-19 during the B.1.1.7 (Alpha) wave in April-June 2021 and the B.1.617.2 (Delta) wave in August-October 2021 were also collected for comparison.

Although not in all participants, the swab tests were scheduled to be performed 4-5 days after contact with patients with COVID-19. Therefore, data collected regarding the key COVID-19-related symptoms in RT-PCR test-positive individuals corresponded to the symptoms at approximately 4-5 days after infection. The presence of sore throat was assessed from February 14, 2022, and the individuals tested before this date were not checked for the presence of sore throat. Dysosmia and dysgeusia were observed in individuals aged ≥ 3 years.

Nasopharyngeal swab quantitative RT-PCR test

The screening test center has been managed by local governments (Sendai City, Miyagi Prefecture) and Tohoku University Hospital since July 2020, which is located remote from Tohoku University Hospital (Ishii et al. 2021). This testing center is a drive-through-type facility, and nasopharyngeal swab samples were collected through a car window with the tested individuals remaining inside the car unless they could not remain seated during the sampling process. For the subsequent probe-based quantitative RT-PCR test, the primer/probe set designed by the National Institute of Infectious Diseases in Japan to detect viral nucleocapsid protein set no. 2 (N2) gene (NIID_2019-nCoV_N_F2, R2, and P2) was used (Shirato et al. 2020). To clarify the clinical features of the B.1.1.529 (Omicron) variant, compared to other previous variants, the prevalence of each key COVID-19-related symptoms among RT-PCR test-positive participants were evaluated by age group.

Statistical analysis

The prevalence of each evaluated COVID-19-related symptom was compared between the RT-PCR test-positive and -negative individuals using the chi-square test or Fisher's exact test according to the sample size in each cell. The 95% confidence interval (CI) for the prevalence of each symptom was further obtained. Using the number of individuals with RT-PCR test-positive and -negative results for each evaluated symptom, the sensitivity, specificity, odds ratio (OR), positive predictive value (PPV), and negative predictive value (NPV), and the 95% CI were calculated for each symptom. ORs were obtained as crude OR and adjusted OR, which were calculated by performing a logistic regression analysis adjusting for age (years) and vaccine completion status (0, 1, 2, or 3 doses) at the time of the nasopharyngeal swab test. Comparisons of the prevalence of symptoms between participant groups were performed using the chi-square test or Fisher's exact test, according to the number of participants in each subgroup. The predictive impacts of the clinical symptoms and vaccination status on the subsequent RT-PCR test positivity were evaluated by performing binary logistic regression analysis. Comparisons of the prevalence of symptoms between the three periods with different predominant SARS-CoV-2 variants were performed by the chi-square test. Statistical significance was set at $p < 0.05$. Adjustment for multiple comparisons was not performed because of the nature of the study. Statistical analyses were performed using R Statistical Software (version 4.0.5; R Foundation, Vienna, Austria).

Ethics

The Institutional Review Board of Tohoku University Graduate School of Medicine approved the present study (approval number: 2020-1-535). The review board waived the need for written informed consent, and informed consent was secured in an opt-out manner.

Results

Participants

This study enrolled a total of 2,507 participants who underwent nasopharyngeal swab RT-PCR test after contact with COVID-19 patients during the B.1.1.529 (Omicron) wave, and for whom detailed information regarding the vaccination status was available. Among the 2,507 enrolled participants, 1,091 (43.5%) were adults aged ≥ 18 years and 1,416 (56.5%) were non-adults aged < 18 years. The RT-PCR test results were positive in 943 participants (37.6%) and negative in 1,564 participants (62.4%). When evaluated by age, 450 (41.2%) of the 1,091 tested adults and 493 (34.8%) of the 1,416 tested non-adults were RT-PCR positive.

Symptoms in the whole participants

The prevalence of each evaluated key COVID-19-related symptom in the RT-PCR test-positive and negative individuals is summarized in Table 1. The adjusted ORs were significant for body temperature, cough, dyspnea, sore throat, and fatigability ($p < 0.0001$ for all), but not for dysosmia ($p = 0.0538$, logistic regression analysis) or dysgeusia ($p = 0.1762$). The most prevalent key symptoms among the RT-PCR test-positive COVID-19 patients were cough (47.3%) and sore throat (32.9%). Meanwhile, the prevalence of dysosmia (2.1%) and dysgeusia (1.4%) among RT-PCR test-positive participants was much lower. Among the 943 individuals with RT-PCR test-positive results during the B.1.1.529 Omicron wave, only 178 (18.9%) were asymptomatic at the time of nasopharyngeal swab test, without any of the evaluated key COVID-19-related symptoms.

Symptoms between adults and non-adults

The prevalence of each evaluated key symptom in adults aged ≥ 18 years and non-adults aged < 18 years is summarized in Table 2. The prevalence of body temperature ≥ 37.5°C, dysosmia, and dysgeusia was not significantly different between adults and non-adults. Conversely, the prevalence of cough ($p = 0.0006$), dyspnea ($p = 0.0354$), sore throat ($p < 0.0001$), and fatigability ($p < 0.0001$) was higher in adults than in non-adults.

Furthermore, to exclude the possibility that the prevalence of each symptom was significantly influenced by the

Table 1. Prevalence and predictive values of COVID-19-related symptoms during the Omicron variant surge in Japan.

	RT-PCR (+), n	RT-PCR (−), n	Sensitivity (95% CI)	Specificity (95% CI)	Crude OR (95% CI)	Adjusted OR (95% CI)*	PPV	NPV
BT ≥ 37.5℃	120	15	12.7%	99.0%	15.06	15.12 (8.78- 26.03;	88.9%	65.3%
BT < 37.5℃	823	1,549	(10.7-15.1)	(98.4-99.4)	(8.74-25.93)	p < 0.0001)	(82.0-93.4)	(63.3-67.2)
Cough (+)	446	242	47.3%	84.5%	4.89	4.87 (4.04-5.88;	64.8%	72.6%
Cough (−)	497	1,318	(44.1-50.5)	(82.6-86.2)	(4.05-5.89)	p < 0.0001)	(61.1-68.4)	(70.5-74.6)
Dyspnea (+)	93	55	9.9%	96.5%	2.99	3.01 (2.134.24;	62.8%	63.9%
Dyspnea (−)	850	1,504	(8.1-12.0)	(95.4-97.3)	(2.12-4.22)	p < 0.0001)	(54.5-70.5)	(61.9-65.8)
Sore throat (+)†	164	65	32.9%	90.3%	4.58	5.06 (3.666.99;	71.6%	64.5%
Sore throat (−)	334	606	(28.9-37.3)	(87.8-92.4)	(3.33-6.28)	p < 0.0001)	(65.2-77.3)	(61.3-67.5)
Fatigability (+)	173	45	18.3%	97.1%	7.56	7.84 (5.5811.03;	79.4%	66.3%
Fatigability (−)	770	1,515	(16.0-21.0)	(96.1-97.9)	(5.39-10.62)	p < 0.0001)	(73.3-84.4)	64.3-68.2)
Dysosmia (+)‡	15	12	2.1%	99.0%	2.06	2.13 (0.99 4.60;	55.6%	62.2%
Dysosmia (−)	698	1,150	(1.2-3.5)	(98.1-99.4)	(0.96-4.43)	p = 0.0538)	(35.6-–74.0)	(60.0-64.4)
Dysgeusia (+)‡	10	9	1.4%	99.2%	1.82	1.87 (0.754.64;	52.6%	62.1%
Dysgeusia (−)	707	1,158	(0.7-2.6)	(98.5-99.6)	(0.74-4.50)	p = 0.1762)	(29.5-74.8)	(59.8-64.3)

The estimated predictive values are for the population after contact with COVID-19 patients. The prevalence of dysosmia and dysgeusia were as low as 1-3% among the RT-PCR test-positive participants.

BT, body temperature; CI, confidence interval; OR, odds ratio; NPV, negative predictive value; PPV, positive predictive value; RT-PCR, reverse transcription polymerase chain reaction.

*Adjusted odds ratio was calculated by performing logistic regression analysis, using age and vaccine completion status (within 6 months from the second or third vaccine dose) as covariates.

†The presence of a sore throat was collected from February 2022.

‡Presence of dysosmia and dysgeusia was collected from individuals aged ≥ 3 years.

Table 2. Comparison of symptoms between non-adult and adult patients with COVID-19 during the Omicron variant surge.

	RT-PCR test-positive, non-adults (0-17 years old)		RT-PCR test-positive, adults (≥ 18 years old)		p-values
	Symptom (+), n	Symptom (−), n	Symptom (+), n	Symptom (−), n	
BT ≥ 37.5°C	64 (13.0%)	429 (87.0%)	56 (12.5%)	393 (87.5%)	0.8148
Cough	207 (42.0%)	286 (58.0%)	239 (53.1%)	211 (46.9%)	0.0006
Dyspnea	39 (7.9%)	454 (92.1%)	54 (12.0%)	396 (88.0%)	0.0354
Sore throat	36 (18.8%)	156 (81.2%)	128 (41.8%)	178 (58.2%)	< 0.0001
Fatigability	67 (13.6%)	426 (86.4%)	106 (23.6%)	343 (76.4%)	< 0.0001
Dysosmia	5 (1.9%)	264 (98.1%)	10 (2.3%)	434 (97.7%)	0.7946
Dysgeusia	3 (1.1%)	270 (98.9%)	7 (1.6%)	437 (98.4%)	0.7494

P-values were obtained with the chi-square test for dysosmia and dysgeusia and with Fisher's exact test for other evaluated symptoms.
BT, body temperature; COVID-19, coronavirus disease 2019.

Table 3. Binary logistic regression analysis for SARS-CoV-2 RT-PCR test positivity during the Omicron variant surge.

Variables	B	SEB	Wald	OR (95% CI)	p-values
(Constant)	−33.055	7.431	19.785	-	-
Age	−0.017	0.004	15.311	0.983 (0.975-0.992)	< 0.0001
Male	+0.083	0.161	0.270	1.087 (0.794-1.489)	0.6036
Within 6 months from the last vaccination	−0.202	0.181	1.234	0.817 (0.573-1.167)	0.2665
BT [°C]	+0.892	0.203	19.322	2.441 (1.640-3.633)	< 0.0001
Cough	+1.619	0.200	65.756	5.048 (3.413-7.465)	< 0.0001
Sore throat	+1.018	0.228	20.005	2.767 (1.771-4.321)	< 0.0001
Dyspnea	+0.129	0.443	0.085	1.138 (0.477-2.713)	0.7711
Fatigability	+0.713	0.342	4.339	2.040 (1.043-3.991)	0.0372
Dysosmia	−2.179	1.306	2.784	0.113 (0.009-1.463)	0.0952
Dysgeusia	+1.894	1.538	1.516	6.643 (0.326-135.344)	0.2665

Multivariate analysis suggested that age, body temperature, cough, sore throat, and fatigability had a significant impact on predicting RT-PCR test positivity. Age and body temperature in the independent variables were numeric variables, not ordinal variables. The OR values were equal to $exp(B)$. The Wald χ^2 statistics (Wald) were calculated as $(B/SEB)^2$, which is a marker of the significance of each coefficient.
B, unstandardized regression coefficient; BT, body temperature; CI, confidence interval; SEB, standard error of the coefficient; OR, odds ratio.

completion status of the mRNA COVID-19 vaccines, the prevalence of cough, sore throat, fatigability, and dyspnea among RT-PCR test-positive adults was compared between those who were within 6 months of receiving the second or third dose (n = 262) and others (n = 188). The prevalence of cough (55.3% vs. 50.0%, p = 0.2626, chi-square test), sore throat (41.4% vs. 42.4%, p = 0.8544), fatigability (20.7% vs. 27.7%, p = 0.0862), and dyspnea (11.5% vs. 12.8%, p = 0.6719) did not significantly differ based on the time since vaccination completion.

Binary logistic regression analysis

Finally, to compare the predictive impact of the evaluated demographic data and clinical manifestations for predicting RT-PCR test positivity during the B.1.1.529 (Omicron) wave, a binary logistic regression analysis was performed using the RT-PCR test results as the objective variable. The results of this analysis are shown in Table 3. Age ($p < 0.0001$), body temperature ($p < 0.0001$), cough ($p < 0.0001$), sore throat ($p < 0.0001$), and fatigability ($p = 0.0372$) were suggested to have a significant impact on predicting RT-PCR positivity. Sex ($p = 0.6036$), vaccination status ($p = 0.2665$), dyspnea ($p = 0.7711$), dysosmia ($p = 0.0952$), and dysgeusia ($p = 0.2665$) were not statistically significant predictors of RT-PCR test positivity.

Symptoms by the periods with different prevalent variants

Finally, to clarify the clinical features of individuals infected with the B.1.1.529 Omicron variant strain, the clinical data collected during the B.1.1.7 (Alpha) wave in April-June 2021 and during the B.1.617.2 (Delta) wave in August-October 2021 were collected and compared. The results are summarized in Table 4. The number of adult patients with COVID-19 significantly decreased in the B.1.1.529 (Omicron) wave. The prevalence of body temperature ≥ 37.5°C was higher in the B.1.617.2 (Delta) and B.1.1.529 (Omicron) waves than the B.1.1.7 (Alpha) wave. The prevalence of cough, dyspnea, and fatigability did not significantly change with the Omicron variant compared with those with the Alpha and Delta variants. Conversely, the prevalence of dysosmia and dysgeusia significantly decreased with the Omicron variant compared to that with the Alpha and Delta variants.

Discussion

This study evaluated the clinical manifestations in the early phase of infection at approximately 4-5 days after infection among RT-PCR test-positive participants with COVID-19 during the B.1.1.529 (Omicron) variant wave in Japan between January and May 2022. The obtained results demonstrated that cough (47.3%) and sore throat (32.9%) were the most common COVID-19-related symptoms in the

Table 4. Comparisons of COVID-19-related symptoms among the patients between periods with different prevalent variants.

	April-June 2021 (B.1.1.7 Alpha wave), n (%)	August-October 2021 (B.1.617.2 Delta wave), n (%)	January-May 2022 (B.1.1.529 Omicron wave), n (%)	p-values
Individuals with RT-PCR test-**positive** results				
Aged ≥18 years	265/323 (82.0%)	299/418 (71.5%)	450/943 (47.7%)	< 0.0001
BT ≥ 37.5°C	20/323 (6.2%)	77/418 (18.4%)	120/943 (12.7%)	< 0.0001
Cough	141/323 (43.7%)	226/418 (54.1%)	446/943 (47.3%)	0.0126
Dyspnea	34/323 (10.5%)	67/418 (16.0%)	93/943 (9.9%)	0.0037
Sore throat	Not evaluated	Not evaluated	164/498 (32.9%)	n.a.
Fatigability	71/323 (22.0%)	119/418 (28.5%)	173/943 (18.3%)	0.0002
Dysosmia	62/314 (19.7%)	74/366 (20.2%)	15/713 (2.1%)	< 0.0001
Dysgeusia	52/314 (16.6%)	66/366 (18.0%)	10/717 (1.4%)	< 0.0001
Individuals with RT-PCR test-**negative** results				
Aged ≥ 18 years	1,066/1,639 (65.0%)	791/1,839 (43.0%)	641/1,564 (41.0%)	< 0.0001
BT ≥ 37.5°C	44/1,638 (2.7%)	39/1,839 (2.1%)	15/1,564 (1.0%)	0.0015
Cough	285/1,639 (17.4%)	257/1,839 (14.0%)	242/1,560 (15.5%)	0.0214
Dyspnea	74/1,638 (4.5%)	69/1,839 (3.8%)	55/1,559 (3.5%)	0.3136
Sore throat	Not evaluated	Not evaluated	65/671 (9.7%)	n.a.
Fatigability	127/1,637 (7.8%)	78/1,839 (4.2%)	45/1,560 (2.9%)	< 0.0001
Dysosmia	21/1,560 (1.3%)	23/1,498 (1.5%)	12/1,162 (1.0%)	0.5300
Dysgeusia	13/1,563 (0.8%)	14/1,500 (0.9%)	9/1,167 (0.8%)	0.8979

The p-values are for the results obtained using the chi-squared test. The prevalence of sore throat could not be compared because this symptom was not assessed before the Omicron variant wave. The percentage shown in each cell represents that for the column in each period and not for the row.

BT, body temperature; COVID-19, coronavirus disease 2019; n.a., not available; RT-PCR, reverse transcription-polymerase chain reaction.

early phase of SARS-CoV-2 infection during the Omicron variant wave, which agrees with the results of a recent report from China (Xu et al. 2022), and these symptoms were more frequent among adults than non-adults. The prevalence of the evaluated symptoms among RT-PCR test-positive cases was not significantly influenced by the completion status of the second or third vaccine doses. Comparisons of the key COVID-19-related symptoms between the three periods with different predominant variant strains revealed that the prevalence of fever, cough, dyspnea, and fatigability in the early phase of the infection did not differ remarkably between the Omicron variant and the pre-Omicron variants (Alpha and Delta). Meanwhile, the prevalence of dysosmia and dysgeusia with the Omicron variant significantly decreased compared to that with pre-Omicron variants (Akaishi et al. 2021). This finding, along with a remarkable decrease in dysosmia and dysgeusia, suggests that the anatomical site of infection and viral proliferation may have changed between the Omicron and pre-Omicron variants. This is further supported by the fact that the suggested serial interval with Omicron is shorter than with the Delta variant (Backer et al. 2022; Song et al. 2022). Considering that the rate of developing pneumonia with the Omicron variant is lower than that with the pre-Omicron variants, the site of infection and viral proliferation with the Omicron variant might be shifted to the upper airways distal from the lungs. The fact that the incidence of sore throat may increase with the Omicron variant further supports this hypothesis (Menni et al. 2022). Meanwhile, the exact mechanisms of the decreased dysosmia and dysgeusia in spite of the increased tropism toward the upper airway of the Omicron variant remain uncertain. As a possible theory, the levels of tissue and cellular damage caused by SARS-CoV-2 to nasal and tongue epithelial cells, both of which express many angiotensin-converting enzyme 2 receptors on their surfaces, could be alleviated with the Omicron variant from other previous variants (Wang et al. 2020; Xu et al. 2020; Sato et al. 2021). Prior studies have already shown that the clinical spectra in the early phase of SARS-CoV-2 infection may differ with different variants (Akaishi and Ishii 2022), with different rates of severity or fatality in the later stages (Davies et al. 2021; Twohig et al. 2022). Further studies are needed to determine the mechanisms by which altered cell tropism with the Omicron variant could have contributed to its milder clinical manifestations (Abdullah et al. 2022; Nealon and Cowling 2022).

This study has several limitations which should be considered. Firstly, our analyses were limited by the absence of data regarding the prevalence of sore throat during the early phase of the Omicron and pre-Omicron variant waves. This limitation made the eligible sample size used in the binary logistic regression analysis smaller, making it difficult to compare the prevalence of sore throat between the Omicron and pre-Omicron period. Another limitation was that not all enrolled participants were genetically confirmed to be infected with the Omicron variant. To genetically determine that all participants were truly infected by the B.1.1.529 (Omicron) variant, additional laboratory testing to investigate the sequence of the S gene is required. However, as shown in Fig. 1, the nationwide outbreaks with three predominant SARS-CoV-2 variants (Alpha, Delta, and Omicron) created three distinct waves with an obvious non-pandemic period between them. Furthermore, variant-specific RT-PCR tests from random sampling in the locality by the local governments suggested that more than 95% of patients with COVID-19 in each of the three periods (April-June 2021, August-October 2021, and January-May 2022) were infected with the Alpha, Delta, or Omicron variants, respectively. Therefore, we believe that the findings of the present study during the B.1.1.529 Omicron wave can be generalized to the entire population of patients infected during this period. Finally, the present study only evaluated the clinical symptoms approximately 4-5 days after the infection and did not follow-up the symptoms or clinical course thereafter, and the symptoms may have added after the swab test in some of the participants. To gain an overview of the clinical features of the Omicron variant throughout the Omicron course, more detailed data regarding clinical symptoms in the earlier and later infection phases are needed.

In conclusion, the most prevalent key COVID-19-related symptoms in the early phase of SARS-CoV-2 infection during the pandemic with the B.1.1.529 Omicron variant included cough and sore throat, followed by fever, fatigue, and dyspnea. The prevalence of fever, cough, dyspnea, and fatigability was suggested to be largely the same between the periods with Omicron and pre-Omicron waves. Meanwhile, the prevalence of dysosmia and dysgeusia remarkably decreased with the B.1.1.529 Omicron variant (1-3 %) compared to those with the pre-Omicron variants (15-25%). The prevalence of cough, sore throat, dyspnea, and fatigability with the Omicron variant was higher in adults than in non-adults.

Acknowledgments

The authors appreciate all the medical staff and local government staff (Sendai City, Miyagi Prefecture) who joined and cooperated with the drive-through RT-PCR testing project.

Author Contributions

T.A., S. Kushimoto, H.E. and T.I. drafted the manuscript. T.A. and S. Kushimoto performed statistical analyses. N.S. and Y.A. contributed to logistics management of the testing project. S. Kushimoto, Y. Katori, H.E., K. Igarashi, S. Kure, and T.I. supervised the study process. All authors contributed to the collection of samples, and critically reviewed and revised the manuscript.

Conflict of Interest

The authors declare no conflict of interest.

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