Comparison of initial clinic characteristics of hospitalized patients in Suzhou City during the COVID-19 Omicron wave with ancestral variant wave

Binbin Gu*, Lin Yao*, Xin-yun Zhu*, Tao Zou, Yan-jun Feng, Jin-yu Yan, Jian-ping Zhang, Pei-jun Tang* and Cheng Chen

Abstract
Background: Recently, the SARS-CoV-2 variant of concern, Omicron (B.1.1.529), was identified as responsible for a novel wave of COVID-19 worldwide. Here, we compared initial clinical features of hospitalized COVID-19 patients during recent wave (Omicron Variant) with those in ancestral variant wave (2020).

Methods: This is a cohort study of electronic health record (EHR) data from a signal center in the China. The clinical data of 116 cases of Omicron hospitalized in 2022 and 87 cases hospitalized in 2020 were collected. The comparisons were performed with the Mann–Whitney U test, Fisher exact test or the chi-square test, and multivariable logistic regression analysis.

Results: Clinically, compared with 2020-cohort, Omicron-cohort was more inclined to cluster in younger population and had more nonsymptomatic (25.0%) and nonsevere cases, as well as suffered from comparable extrapulmonary complication. Radiologically, although the major computed tomography (CT) findings of both cohorts were ground-glass opacities (GGOs), crazy-paving pattern was relatively less seen in the Omicron-cohort. Based on multiple logistic regression analysis, Omicron-cohort was associated with a lower risk of complaining with fever, the presence of lung opacity, and increased Sequential Organ Failure Assessment (SOFA) score.

Conclusion: This study provided the data of different patterns of clinic characteristics and reduced severity from infections that occurred in Omicron variant as compared with the outbreak of the epidemic in 2020 wave (ancestral variant).

Keywords: COVID-19, Omicron, pneumonia, radiology, risk

Introduction
The coronavirus disease 2019 (COVID-19) imposes a grand immediate challenge for global public health. Different variants of SARS-CoV-2 have been identified since the first COVID-19 infection.1–3 Following the D614G, Beta/Gamma, and Delta Variant of Concern (VOC), the Omicron variant could be the catalyst for the fourth wave of the COVID-19 outbreak. Especially, this variant is the most heavily mutated variant among all the VOC so far, which paves the way for enhanced transmissibility and partial resistance to immunity induced by COVID-19 vaccines.4,5

Various concerns have been raised on the source of emergence, the effect of mutations in the response to vaccinations, the influence of mutations on modulation of host immunity, spreading potency and lethality. Clinically, although many articles have established the clinical features of COVID-19 patients, the data on the severity of the disease caused by the Omicron variant are scarce and incomplete.6,7
Given beta or delta variant was not found during the initial wave of COVID-19 in 2020, in this study, we analyzed initial clinic characteristics of hospitalized patients during the COVID-19 Omicron wave and ancestral variant wave (2020) in terms of clinical presentations, laboratory tests, image characteristics, and complication, to provide some guidance for their differential consideration.

**Methods**

**Patients**

All of the COVID-19-infected subjects were confirmed by laboratory tests and were hospitalized at The Fifth People’s Hospital of Suzhou. In this study, all patients had the SARS-CoV-2 Omicron Variant BA1, which was confirmed by S gene target failure (SGTF). The Omicron-infected subjects were collected from 13–20 February 2022 (Omicron-cohort), and cases of previous ancestral variant were hospitalized from February to March 2020 (2020-cohort). All cases were defined according to the diagnostic and treatment guideline for COVID-19 pneumonia issued by the National Health and Family Planning Commission of P.R. China (Version 8).

**Study design and data collection**

This was a cohort study with historical comparator. We compared two independent cohorts of patients infected with COVID-19. The data of all patients were collected from an electronic case report form and included the following: demographic characteristics (age and sex), comorbidities, clinical symptoms, laboratory tests (blood routine test, arterial blood gas analysis, blood chemistry, and PCT value), the date of disease onset, hospital admission date, the severity of disease, images of the lung [chest computed tomography (CT)], Sequential Organ Failure Assessment (SOFA), as well as CUBR-65 score. PCT was measured using B.R.A.H.M.S PCT automated immunoassays. The analytical sensitivity of all assays was <0.25g/l. The Ethics Committee of The Fifth People’s Hospital of Suzhou approved this study (2022-005).

**Definitions**

The diagnosis of severe COVID-19 will have to meet the following criteria: (1) identification of 2019-nCoV via reverse transcription polymerase chain reaction (RT-PCR); (2) having at least one of the following conditions: respiratory distress (≥30 times/min), oxygen saturation ≤93% at rest, arterial partial pressure of oxygen (PaO₂)/ fraction of inspiration O₂ (FiO₂) ≤300 mmHg, respiratory failure requiring mechanical ventilation, septic shock development, or critical organ failure requiring intensive care unit (ICU) care.

Septic shock was defined according to the 2016 Third International Consensus Definition for Sepsis and Septic Shock. Extrapolmonary complication was defined as follows: (1) acute kidney injury was diagnosed according to the KDIGO clinical practice guidelines; (2) acute cardiac injury was diagnosed if serum levels of cardiac biomarkers (e.g. high-sensitive cardiac troponin I) were above the 99th percentile upper reference limit; (3) acute liver injury was diagnosed if serum levels of alanine aminotransferase (ALT) or total bilirubin (TBIL) was above twofold of upper reference limit; (4) coagulopathy was defined as a 3-s extension of prothrombin time (PT).

**Statistical analysis**

Data were described as the median (interquartile range, IQR) or frequency (%). The comparisons of the features between the different subtypes of virus were performed with Mann–Whitney U test to compare the distributions of continuous variables, and Fisher exact test or the chi-square test to compare proportions. To identify risk factors associated with Omicron infection, we performed a multivariable logistic regression analysis adjusted for baseline covariates. Statistical analyses were performed using SPSS, version 24.0 for Windows, probabilities were two-tailed, and the significance level was set at 0.05.

**Results**

**Demographics**

As shown in Table 1, the proportion of males in Omicron-cohort was 52.6%, which was comparable with that of 2020-cohort (54%, p > 0.05). The median age of Omicron-cohort was 34.5 years old, which was younger than that of 2020-cohort (46 years old, p < 0.01). In detail, of patients in the Omicron versus 2020-cohort, 7.8% versus 2.3% were ≤10 years old, 3.4% versus 1.1% were 11–18 years old, 58.6% versus 34.5% were 19–40 years old.
Table 1. Characteristics of COVID-19 subjects.

|                                | 2020-cohort \(n = 87\) | Omicron-cohort \(n = 116\) | IPR (95% CI)       | \(p\) value |
|--------------------------------|--------------------------|----------------------------|--------------------|-------------|
| **Age [median, years]**        | 46 (36–60)               | 34.5 (25–41.8)             |                   | <0.001      |
| **Age [\(n, \%\)]**           |                          |                            |                    |             |
| \(\leq 10\)                   | 2 (2.3)                  | 9 (7.8)                    |                   | <0.001      |
| 11–18                          | 1 (1.1)                  | 4 (3.4)                    | 0.92 (0.15–5.56)   |             |
| 19–40                          | 30 (34.5)                | 68 (58.6)                  | 0.94 (0.84–1.06)   |             |
| 41–65                          | 48 (55.2)                | 27 (23.3)                  | 0.78 (0.64–0.95)   |             |
| \(> 65\)                      | 6 (6.9)                  | 8 (6.9)                    | 0.63 (0.33–1.19)   |             |
| **Gender [\(n, \%\)]**        |                          |                            |                    |             |
| Male                           | 47 (54)                  | 61 (52.6)                  | 0.97 (0.75–1.26)   | 0.839       |
| **Underlying disease [\(n, \%\)]** |                      |                            |                    |             |
| Hypertension                   | 6 (6.9)                  | 13 (11.2)                  | 1.63 (0.64–4.1)    | 0.297       |
| Diabetes                       | 5 (5.7)                  | 2 (1.7)                    | 0.30 (0.06–1.51)   | 0.244       |
| Chronic airway diseases        | 3 (3.4)                  | 2 (1.7)                    | 0.50 (0.09–2.93)   | 0.744       |
| Hepatic disease                | 1 (1.1)                  | 2 (1.7)                    | 1.50 (0.14–16.28)  | 1.000       |
| Kidney disease                 | 1 (1.1)                  | 0                           |                    | 0.429       |
| Malignant disease              | 2 (2.3)                  | 2 (1.7)                    | 0.75 (0.11–5.22)   | 1.000       |
| COVID-19 vaccination history [\(n, \%\)] | 0                      | 97 (83.6)                  |                    |             |
| Pregnancy [\(n, \%\)]         | 1 (1.1)                  | 1 (0.9)                    | 0.75 (0.05–11.82)  | 1.000       |
| **Clinical manifestations [\(n, \%\)]** |                |                            |                    |             |
| Asymptomatic infection         | 0                        | 29 (25)                    |                    | <0.001      |
| Fever                          | 77 (88.5)                | 38 (32.8)                  | 0.37 (0.28–0.49)   | <0.001      |
| Cough                          | 59 (67.8)                | 34 (29.3)                  | 0.43 (0.32–0.59)   | <0.001      |
| Dyspnea                        | 11 (12.6)                | 0                           |                    | <0.001      |
| Myalgia                        | 11 (12.6)                | 12 (10.3)                  | 0.82 (0.38–1.77)   | 0.609       |
| Nasal congestion               | 11 (12.6)                | 10 (8.6)                   | 0.68 (0.3–1.53)    | 0.352       |
| Pharyngodynia                  | 2 (2.3)                  | 37 (31.9)                  | 13.88 (3.44–56.01) | <0.001      |
| Gastrointestinal symptoms      | 10 (11.5)                | 3 (2.6)                    | 0.23 (0.06–0.79)   | 0.010       |
| Hemoptysis                     | 0                        | 0                           |                    |             |
old, 23.3% versus 55.2% were 41–65 years old, and 6.9% versus 6.9% were >65 years old.

In total, 13.8% of cases in Omicron-cohort had a history of underlying diseases, whereas that of 2020-cohort was relatively higher, at 19.5% (p=0.272). In both cohorts, the main chronic condition was hypertension (11.2% versus 6.9%, p=0.297). And no significant difference in the history of diabetes, chronic airway diseases, hepatic disease, kidney diseases and malignant diseases between the two cohorts was observed (p > 0.05). No other self-reported diseases (including allergic rhinitis and autoimmune disease) were declared.

COVID-19 vaccination was documented in patient’s electronic health records (EHRs). Notably, of the 116 patients in the Omicron-cohort, 83.6% (97/116) were vaccinated. In addition, 42.3% (41/97) were vaccinated patients, 94.8% (92/97) received inactivated vaccine. In addition, 42.3% (41/97) were vaccinated more than 6 months before the omicron wave, and 57.7% (56/97) were vaccinated less than 6 months. However, none of 2020-cohort had a history of COVID-19 vaccination (p < 0.001).

**Clinical manifestations at diagnosis**
At admission (Table 1), more subjects in Omicron-cohort were reported as asymptomatic cases compared with 2020-cohort (25% versus 0, p < 0.01). In brief, 32.8%, 29.3%, 0%, and 2.6% of Omicron-cohort patients had fever, cough, dyspnea, and gastrointestinal symptoms, respectively, which was less than those of 2020-cohort (88.5%, 67.8%, 12.6%, 11.5%, p < 0.05 for each), whereas the proportion of pharyngodynia (31.9%) in Omicron-cohort was higher than that of 2020-cohort (2.3%, p < 0.001).

**Laboratory findings in the Omicron versus 2020-cohort**
At admission (Tables 2 and 3), the median level of white blood cell, lymphocyte, and platelet in the Omicron-cohort was different from those in 2020-cohort [6.02 (IQR 5.23–7.25) versus 4.90 (3.49–6.11), 1.10 (0.76–1.49) versus 2.77 (1.97–3.87), 221.5 (180.25–262.5) versus 167 (132–207), 10/µl, p < 0.001 for each]. Accordingly, lymphopenia (50% versus 3.4%, p < 0.001) and thrombocytopenia (5.2% versus 20.7%, p = 0.001) was both observed in Omicron-cohort and 2020-cohort, respectively.

In terms of organ function, the level of ALT, TBIL, blood urea nitrogen (BUN), creatinine (Cr), NT-pro-BNP, and troponin I (TnI) is shown in Table 2. Accordingly (Table 3), acute kidney injury, acute liver injury, and acute cardiac injury occurred in 4.3%, 3.4%, and 3.4% of patients in the Omicron-cohort, which was comparable with those of 2020-cohort (6.9%, 2.3%, 2.3%, p > 0.05 for each).

Furthermore, significant increase in levels of PT [15.75 (IQR 14.9–18.98) versus 12.1 (11.7–12.7) s], APTT [32.15 (IQR 27.9–35.45) versus 24.9 (22.3–27.1) s], fibrin/fibrinogen degradation products (FDP) [1.75 (IQR 1.36–2.82) versus 0.66 (0.44–1.1) g/l], and AT-IIIa [114.9% (IQR 97–140.8) versus 97.4% (89.3–106.1)] was associated with Omicron-cohort compared with 2020-cohort (p < 0.05 for each). As indicated, more patients in Omicron-cohort suffered from coagulation disorders, which was different from that in 2020-cohort (45.7% versus 0, p < 0.001). PCT, HRCRP, and lactate dehydrogenase (LDH) were selected as infectious biomarkers. As shown in Table 2, the PCT in Omicron-cohort was mildly higher than that of 2020-cohort, which did not strongly indicate occurrence of severe infection. However, the serum LDH value in Omicron-cohort was significantly lower than that of 2020-cohort [311.5 (IQR 176.75–395.75) versus 424 (321–525.75) U/l, p < 0.001], suggesting that systematic inflammation was decreased in the population of Omicron wave.

**Lower disease severity in the Omicron versus 2020-cohort**
At admission, of patients in the Omicron versus 2020-cohort, 1.7% versus 11.5% were categorized into severe COVID-19 (Table 3, p < 0.05). In detail, no septic shock occurred in Omicron-cohort and 2020-cohort. The Sequential Organ Failure Assessment (SOFA) score of Omicron-cohort was lower than that of 2020-cohort [0 (IQR 0–3) versus 4 (4–5), p < 0.001]. Accordingly, the proportion of patients requiring oxygen therapy significantly decreased as did the percentage receiving breathing support.

**Imaging findings in the Omicron and 2020-cohort**
Almost all patients of two cohorts (109/116, 87/87) were performed with chest CT scan as early as
possible. It was noticed that the proportion of no pneumonia in CT scan was far higher in Omicron-cohort as compared with 2020-cohort (81.7% versus 8.1%, $p < 0.001$). Accordingly, lung opacities in initial chest CTs were observed in 20 and 80 cases in Omicron-cohort and 2020-cohort, respectively. As shown in Table 4, less patients in Omicron-cohort exhibited bilateral and multilobar distribution of lung opacities, which was significantly lower than those of 2020-cohort (40% versus 78.8%, 60% versus 83.8%, $p < 0.001$). In terms of radiographic feature, ground-glass opacity was comparable in Omicron-cohort (50%) and 2020-cohort (30%, $p > 0.05$), and crazy-paving pattern was relatively less seen in Omicron-cohort than in 2020-cohort (5% versus 30%, $p = 0.021$).

**Table 2.** Initial laboratory test of COVID-19 patients.

|                  | 2020-cohort | Omicron-cohort | $p$ value |
|------------------|-------------|----------------|-----------|
| **Blood cell count** |             |                |           |
| WBC ($\times 10^9$/ml) | 4.90 [3.49–6.11] | 6.02 [5.23–7.25] | $<0.001$ |
| Ly ($\times 10^9$/ml) | 2.77 [1.97–3.87] | 1.10 [0.76–1.49] | $<0.001$ |
| PLT ($\times 10^9$/ml) | 167 [132–207] | 221.5 [180.25–262.5] | $<0.001$ |
| **Coagulation function** |             |                |           |
| DD (μg/l) | 200 [140–290] | 220 [142.5–377.5] | 0.267 |
| PT (s) | 12.1 [11.7–12.7] | 15.75 [14.9–18.98] | $<0.001$ |
| APTT (s) | 24.9 [22.3–27.1] | 32.15 [27.9–35.45] | $<0.001$ |
| FDP (μg/l) | 0.66 [0.44–1.1] | 1.75 [1.36–2.82] | $<0.001$ |
| AT-III (%) | 97.4 [89.3–106.1] | 114.85 [97.03–140.8] | $<0.001$ |
| **Liver function** |             |                |           |
| ALT (U/l) | 29 [24–38] | 33.5 [25–40] | 0.119 |
| TBIL (μmol/l) | 9.05 [6.65–13.98] | 7.35 [5.6–10.55] | 0.004 |
| **Kidney function** |             |                |           |
| Cr (μmol/l) | 63.85 [48.15–77.73] | 56 [40.65–68] | 0.004 |
| BUN (μmol/l) | 3.82 [3.09–4.79] | 4.33 [3.56–5.13] | 0.058 |
| **Cardiac injury** |             |                |           |
| TnT (pg/ml) | 4 [3–6] | 4 [3–6] | 0.917 |
| NT-pro-BNP (μg/ml) | 21 [8–46] | 29 [20–63] | 0.001 |
| **Inflammatory biomarker** |             |                |           |
| HRCRP (mg/l) | 7.6 [0.8–20.4] | 4.39 [1.4–8.94] | 0.055 |
| PCT (ng/ml) | 0.03 [0.02–0.05] | 0.13 [0.10–0.19] | $<0.001$ |
| LDH (U/l) | 424 [321–525.75] | 311.5 [176.75–395.75] | $<0.001$ |

ALT, alanine aminotransferase; APTT, activated partial thromboplastin time; BUN, blood urea nitrogen; Cr, creatinine; DD, D-dimer; FDP, fibrin/fibrinogen degradation products; HRCRP, hypersensitive C-reactive protein; LDH, lactate dehydrogenase; PCT, procalcitonin; PLT, platelet count; PT, prothrombin time; TBIL, total bilirubin; WBC, white blood cells.
Table 3. Initial diseases evaluation of COVID-19 patients.

|                          | 2020-cohort | Omicron-cohort | IPR (95% CI) | p value |
|--------------------------|-------------|----------------|-------------|---------|
| Onset to confirm diagnosis (d) | 6 (4–10)    | 1 (1–2)        |             | <0.001  |
| Severity                 |             |                |             |         |
| Sepsis shock (%)         | 0           | 0              |             |         |
| SOFA score               | 4 (4–5)     | 0 (0–3)        |             | <0.001  |
| Oxygenation index (mmHg) | 355.71 (309.11–413.98) | 473.43 (434.23–529.50) |             | <0.001  |
| Complication (n, %)      |             |                |             |         |
| Lymphopenia              | 3 (3.4)     | 58 (50)        | 14.5 (4.7–44.74) | <0.001  |
| Thrombocytopenia         | 18 (20.7)   | 6 (5.2)        | 0.25 (0.1–0.6) | 0.001   |
| Acute kidney injury      | 6 (6.9)     | 5 (4.3)        | 0.63 (0.2–1.98) | 0.623   |
| Acute liver injury       | 2 (2.3)     | 4 (3.4)        | 1.5 (0.28–8)  | 0.952   |
| Acute cardiac injury     | 2 (2.3)     | 4 (3.4)        | 1.5 (0.28–8)  | 0.952   |
| Coagulation              | 0           | 53 (45.7)      |             | <0.001  |
| Clinic classification (n, %) |             |                |             | 0.003   |
| Nonsevere                | 77 (88.5)   | 114 (98.3)     |             |         |
| Severe                   | 10 (11.5)   | 2 (1.7)        |             |         |

CI, confidence interval; IPR, incremental prevalence ratios; SOFA, Sequential Organ Failure Assessment.

Table 4. Initial radiologic findings of COVID-19 patients.

|                          | 2020-cohort | Omicron-cohort | IPR (95%CI) | p value |
|--------------------------|-------------|----------------|-------------|---------|
| No pneumonia (n, %)      | 7/87 (8)    | 89/109 (81.7)  | 10.15 (4.96–20.76) | <0.001  |
| Pneumonia (n, %)         | 80/87 (92)  | 20/109 (18.3)  | 0.2 (0.13–0.3) | <0.001  |
| Distribution (n, %)      |             |                |             |         |
| Bilateral                | 63/80 (78.8)| 8/20 (40)      | 0.51 (0.29–0.88) | <0.001  |
| Multilobar               | 67/80 (83.8)| 12/20 (60)     | 0.72 (0.5–1.04) | <0.001  |
| Diffusive                | 12/67 (17.9)| 0/12 (0)       |             | <0.001  |
| Features (n, %)          |             |                |             |         |
| Ground-glass opacity     | 24/80 (3)   | 10/20 (50)     | 1.67 (0.96–2.89) | 0.091   |
| Crazy-paving pattern     | 24/80 (3)   | 1/20 (5)       | 0.17 (0.02–1.16) | 0.021   |
| Consolidative            | 14/80 (17.5)| 1/20 (5)       | 0.29 (0.04–2.05) | 0.294   |
| Mix                      | 18/80 (17.5)| 8/20 (40)      | 1.78 (0.91–3.49) | 0.111   |

CI, confidence interval; IPR, incremental prevalence ratios. *No available chest CT on seven cases.*
Multivariable analysis

Based on multiple logistic regression analysis (Table 5), compared with parameters in 2020-cohort, Omicron-cohort was associated with a lower risk of recorded fever [odds ratio (OR) = 0.07, 95% CI = 0.01–0.38, \( p = 0.002 \)], the presence of pneumonia (OR = 0.05, 95% CI = 0.01–0.26, \( p = 0.001 \)), and increased SOFA score (OR = 0.01, 95% CI = 0–0.07, \( p < 0.001 \)).

Discussion

Currently, the Omicron variant is more contagious than the Delta variant. However, the data on the severity of the disease caused by the Omicron variant are scarce and incomplete. In this study, we compared the initial clinical features of patients with COVID-19 caused by the ancestral variant (2020-cohort) to the Omicron variant (Omicron-cohort).

First, SARS-CoV-2-infected patients in the period when the Omicron variant emerged were demographically different from those infected during the previous period. It was noticed that younger, especially pediatric patients were involved in Omicron-cohort compared with 2020-cohort, despite both had similar health conditions. However, we could not draw a conclusion that younger people are more susceptible to the omicron variant. Therefore, large-scale epidemiological study might produce more accurate conclusion.

The Omicron-cohort also differed significantly from the 2020-cohort in symptom, whereas the proportion of asymptomatic subjects was increased. These findings indicated that virus variant influences infectivity, with the Omicron variant displaying more atypical infection than the wild type. Therefore, it was important to pay attention and take the required steps to strengthen surveillance and undertake public health measures.

Clinically, although Omicron-cohort had similar extrapulmonary complication to those observed in the 2020-cohort, they displayed the different incidence of lymphopenia and thrombocytopenia. In particular, the majority of Omicron-cohort had decreased coagulation activity, marked by increased PT. These experimental indexes were considered to be closely related to the pathogenicity of the various virus strains.

Radiologically, although the major CT findings of both cohorts were GGOs, crazy-paving pattern was relatively less seen in Omicron-cohort. Pan et al. reported that most COVID-19 pneumonia patients showed a gradual increase in the density of lesions from the early stage to the peak stage. We hypothesized that certain CT characteristics might correlate with the diseases course, as the time of onset to diagnosis in Omicron-cohort was within 2 days, which shorter than that in 2020-cohort.

This study also provided the data of reduced severity from infections that occurred in Omicron variant as compared with ancestral variant. There was a marked decrease in incidence of severe pneumonia, critical score, and breath support for patients. These data were similar to Rong Xu’s,

| Variable | Univariate analysis OR (95% CI) | \( p \) value | Multivariate analysis OR (95% CI) | \( p \) value |
|----------|--------------------------------|-------------|----------------------------------|-------------|
| Age > 40 years | 0.26 (0.15–0.48) | <0.001 | 0.66 (0.14–3.18) | 0.604 |
| Fever | 0.06 (0.03–0.14) | <0.001 | 0.07 (0.01–0.38) | 0.002 |
| Lymphopenia | 28 (8.37–93.69) | <0.001 | 12.08 (1.35–108.07) | 0.026 |
| Thrombocytopenia | 0.21 (0.08–0.55) | 0.002 | 0.92 (0.06–14.3) | 0.953 |
| SOFA score > 2 | 0.004 (0.001–0.01) | <0.001 | 0.01 (0–0.07) | <0.001 |
| Pneumonia | 0.02 (0.01–0.05) | <0.001 | 0.05 (0.01–0.26) | 0.001 |
| Severe | 0.14 (0.03–0.63) | 0.011 | 6.07 (0.38–97.04) | 0.203 |

CI, confidence interval; OR, odds ratio; SOFA, Sequential Organ Failure Assessment.
which indicated that Omicron variant was associated with significantly less severe outcomes than first-time infections when the Delta variant predominated.17

Notably, we found that majority of Omicron-cohort had been COVID-19-vaccinated. It has been reported that the Omicron variant could escape immune surveillance.18 The potential impact of the COVID-19 vaccine is still being analyzed against this new variant. In consideration of the moderate clinic severity of Omicron infections, it has been hypothesized that current COVID-19 vaccines will protect in reducing disease severity to the vaccinated individuals as a majority of the antigen epitopes recognized by vaccine-induced T cells are not shifted in the Omicron variant.19 In this study, although 74.3% cases (26/35) aged >40 years were vaccinated as well as 87.7% cases (71/81) aged ≤40 years were vaccinated, we did not observe the difference in disease severity for infections occurring naïve and vaccinated population (unpublished data). It was believed that difference identified between the 2020 ancestral variant wave and the 2022 omicron wave could be dominantly linked to the variant pathogenicity.

Finally, the study has several limitations. First, virus genotyping 2020-cohort was not available, which occurred during the outbreak period when no Omicron variant was recorded. Second, we could not conclude with certainty the causes of the differences between ancestral variant wave and the 2022-omicron, as the majority of omicron-cohort was vaccinated. Further research is needed to confirm if omicron may be less pathogenic than previous variants. Third, based on the time of onset to admission, we speculated that patients’ behavior and lockdown could have differed as contemporary local policy, which could produce bias of clinical profile of the two cohorts.

Ethical approval and consent to participate
The study was approved by the Ethics Committee of our Institute of The Fifth People’s Hospital of Suzhou (2022–005).

Consent for publication
In this retrospective study, written informed consent from the patients were waived, which was approved by the Ethics Committee of our Institute of The Fifth People’s Hospital of Suzhou (2022–005).

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