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Change in the Age Range of Patients with Severe COVID-19 in Osaka Before and After the State of Emergency Declaration

Osaka'da Şiddetli COVID-19 Olan Hastaların Olağanüstü Hal Bildirimi Öncesi ve Sonrası Yaş Aralığındaki Değişim

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Abstract

On January 14, 2021, a state of emergency was declared in Osaka Prefecture owing to the Coronavirus disease-2019 (COVID-19) pandemic. However, as the number of patients decreased, lifting the state of emergency was proposed. After the emergency declaration was lifted, the number of patients with COVID-19 and severe COVID-19 in Osaka Prefecture increased rapidly. In Osaka Prefecture, the presence of the VOC 202012/01 variant was confirmed on February 22, 2021. As this variant contributes to a higher risk of death than the conventional strains, this study investigated change in the age range of patients with severe COVID-19, in Osaka with a rapidly growing population before and after the emergency declaration. The study included two periods: December 14, 2020, to January 13, 2021 (Period A: before the declaration) and March 8, 2021, to April 7, 2021 (Period B: after the declaration). Data were collected and analyzed to compare the proportions of severely ill COVID-19 patients in different age ranges and the presence or absence of primary illnesses in them between Periods A and B. The results showed that a higher proportion of younger individuals (aged <60 years) in Osaka had severe COVID-19 in Period B than in Period A. We must be more diligent in implementing infection control measures than before. Any change in infectivity and severity should be monitored in patients infected with VOC 202012/01 and conventional severe acute respiratory syndrome-Coronavirus-2 in Osaka.

Keywords: COVID-19, VOC 202012/01, descriptive epidemiology

Öz

14 Ocak 2021'de Osaka Eyaleti'nde Koronavirüs hastalığı-2019 (COVID-19) pandemisi nedeniyle olağanüstü hal ilan edildi. Ancak hasta sayısı azaldıkça olağanüstü halin kaldırılması önerildi. Olağanüstü hal ilanının kaldırılmasından sonra, Osaka Eyaleti'nde COVID-19 ve şiddetli COVID-19 olan hastaların sayısı hızla arttı. Osaka Eyaleti'nde, VOC 202012/01 varyantının varlığı 22 Şubat 2021'de doğrulandı. Bu varyant geleneksel suşlardan daha yüksek ölüm riskine sahip olduğundan, bu çalışmada hızla büyüyen bir nüfusa sahip Osaka'da olağanüstü hal ilanından önce ve sonra şiddetli COVID-19 olan hastaların yaş aralığındaki değişiklik araştırıldı. Çalışma iki dönemi içeriyordu: 14 Aralık 2020-13 Ocak 2021 arası (Dönem A: Olağanüstü hal ilanından önce) ve 8 Mart 2021-7 Nisan 2021 arası (Dönem B: Olağanüstü hal ilanından sonra). Veriler, farklı yaş aralıklarındaki ağır COVID-19 olan hastaların oranlarını, Dönem A ve Dönem B arasındaki birincil hastalıkların varlığını veya yokluğunu karşılaştırmak için toplandı ve analiz edildi. Sonuçlar, Osaka'da Dönem B'de Dönem A'ya kıyasla şiddetli COVID-19'un genç bireylerde (<60 yaş) daha yüksek oranda olduğunu gösterdi. Enfeksiyon kontrol önlemlerini uygulamada öncekinden daha gayretli olmalıyız. Osaka'da VOC 202012/01 veya konvansiyonel şiddetli akut solunum yetmezliği sendromu-Koronavirüs-2 ile enfekte olan hastalarda infektivite ve şiddette herhangi bir değişiklik olup olmadığı izlenmelidir.

Anahtar Kelimeler: COVID-19, VOC 202012/01, tanımlayıcı epidemiyoloji

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Introduction

In Osaka Prefecture, the government declared a state of emergency on January 14, 2021. This emergency declaration was scheduled to last until March 7. However, as the daily number of patients with Coronavirus disease-2019 (COVID-19) began decreasing, the Osaka government decided to lift the declaration before the announced date^[1]. Consequently, the emergency declaration in Osaka Prefecture ended on March 1. Despite lifting the declaration, restaurants in the center of Osaka continued to operate for short business hours. However, the number of patients-especially, that of critically ill patients-in Osaka Prefecture increased again, leading to a sharp increase in the use of critical care beds for the hospitalization of patients with severe COVID-19^[2]. In response, the government of Osaka Prefecture imposed a declaration of medical emergency on April 8, 2021^[3].

In Osaka Prefecture, a British mutant strain (VOC 202012/01) was identified for the first time on February 22, 2021; this variant has a higher effective reproduction number^[4] and is associated with a higher risk of death^[5,6] than the conventional strains. Among patients with COVID-19, the proportion of patients infected with VOC 202012/01 in Osaka Prefecture was nearly 70%^[7], which may be related to the rapid increase in the number of infected and severely ill patients. Owing to the spread of VOC 202012/01, a highly infectious variant that confers a high risk of death, it is possible that the proportion of critically ill patients in Osaka is different than before, in terms of age and the presence or absence of primary illnesses. This study investigated changes in the age groups of critically ill patients and the presence or absence of primary diseases during the 31 days before the declaration of a state of emergency before VOC 202012/01 was discovered in Osaka Prefecture and during the 31 days after the declaration of a state of emergency after VOC 202012/01 was discovered.

This descriptive epidemiological study used publicly available surveillance data^[2]. The press release dataset was scanned for all reported patients with severe COVID-19 in Osaka. Ventilator use, extracorporeal membrane oxygenation use, tracheal intubation, and intensive care unit admission indicated that patients were severely ill. From these data, the age of critically ill patients and presence of primary illnesses were noted. Data on patients with severe COVID-19 during the 31 days before (December 14, 2020, to January 13, 2021; Period A) and after (March 8, 2021, to April 7, 2021; Period B) the emergency declaration were collected. The chi-square test was used to determine differences in the proportions of severely ill patients with COVID-19 in different age ranges and the presence or absence of primary illnesses in them between Periods A and B. During these periods,

the healthcare system was considerably strained owing to an increased number of infected and severely ill patients.

In total, 317 and 226 patients with severe COVID-19 were reported in Periods A and B, respectively. The distribution of severe patients based on age, sex, and the presence or absence of primary illnesses is shown in Table 1. Males accounted for 68.7% of all patients in Period A and 72.6% in Period B. In both periods, the highest number of severely ill patients was within the age range of 70-79 years. The number of severely ill patients aged <60 years^[8], who were considered to be at a relatively low risk of severe disease in previous studies, was higher in Period B than in Period A.

In severely ill patients reported in Periods A and B, differences were noted between the proportions of patients with and without primary illnesses as well as between the proportions of severely ill patients aged ≥60 years and <60 years. The results showed that Period A had a significantly higher percentage of critically ill patients without any primary illness than Period B ($p<0.001$). The proportion of patients aged <60 years was

Table 1. Distribution of patients with severe Coronavirus disease-2019 based on age, sex, and the presence or absence of primary illness during Periods A and B

Period A (December 14, 2020, to January 13, 2021)			
Age of severely ill patients (years)	Number of severely ill patients (men)	Primary illness	
		Available	Not available
>20	1 (1)	0	1
>30	3 (2)	2	1
>40	11 (7)	5	6
>50	37 (27)	18	19
>60	56 (46)	16	40
>70	129 (89)	9	120
>80	70 (41)	7	63
>90	10 (5)	0	10
Total	317 (218)	57	260
Period B (March 8, 2021, to April 7, 2021)			
Age of severely ill patients (years)	Number of severely ill patients (men)	Primary illness	
		Available	Not available
>20	3 (3)	0	3
>30	5 (4)	1	4
>40	19 (15)	5	14
>50	34 (25)	15	19
>60	61 (47)	20	41
>70	70 (49)	39	31
>80	34 (21)	16	18
>90	0 (0)	0	0
Total	226 (164)	96	130

COVID-19: Coronavirus disease-2019

significantly higher in Period B than in Period A ($p=0.004$). The proportion of severely ill patients aged 20–59 years with no primary illness was higher in Period B than in Period A. This finding may suggest that the spread of VOC 202012/01 has further increased the risk of severe disease in those with primary illnesses and those aged <60 years.

VOC 202012/01 is more infectious than the conventional severe acute respiratory syndrome-Coronavirus-2 (SARS-CoV-2) strains, and several studies have shown a higher mortality rate in patients infected with VOC 202012/01^[4–6]. However, some studies have shown the opposite^[9,10], and opinions have been divided. This descriptive analysis was too simplistic to conclusively determine a causal relationship between VOC 202012/01 and the chronological change in the number of severely ill patients in Osaka. However, it showed that the number of severely ill patients aged <60 years is currently increasing in Osaka Prefecture. Therefore, we must be more diligent in implementing infection prevention measures than before. In future, patients infected with VOC 202012/01 and conventional SARS-CoV-2 in Osaka should be monitored to check for possible changes in infectivity and severity.

Ethics

Peer-review: Externally peer-reviewed.

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References

1. Osaka Prefecture. Last Accessed Date: 15.04.2021. (Japanese) Available from: <http://www.pref.osaka.lg.jp/koho/kaiken2/20210224.html>
2. Osaka Institute of Public Health. Information related to new coronavirus infections. Last Accessed Date: 15.04.2021. (Japanese) Available from: <http://www.iph.pref.osaka.jp/infection/disease/corona.html>
3. Osaka Prefecture. New Coronavirus Infections. Last Accessed Date: 15.04.2021. (Japanese) Available from: <http://www.pref.osaka.lg.jp/iryo/osakakansensho/corona.html>
4. Davies NG, Abbott S, Barnard RC, Jarvis CI, Kucharski AJ, Munday JD, Pearson CAB, Russell TW, Tully DC, Washburne AD, Wenseleers T, Gimma A, Waites W, Wong KLM, van Zandvoort K, Silverman JD; CMMID COVID-19 Working Group; COVID-19 Genomics UK (COG-UK) Consortium, Diaz-Ordaz K, Keogh R, Eggo RM, Funk S, Jit M, Atkins KE, Edmunds WJ. Estimated transmissibility and impact of SARS-CoV-2 lineage B.1.1.7 in England. *Science*. 2021;372:eabg3055.
5. Davies NG, Jarvis CI; CMMID COVID-19 Working Group, Edmunds WJ, Jewell NP, Diaz-Ordaz K, Keogh RH. Increased mortality in community-tested cases of SARS-CoV-2 lineage B.1.1.7. *Nature*. 2021;593:270–4.
6. Challen R, Brooks-Pollock E, Read JM, Dyson L, Tsaneva-Atanasova K, Danon L. Risk of mortality in patients infected with SARS-CoV-2 variant of concern 202012/1: matched cohort study. *BMJ*. 2021;372:n579.
7. Osaka Prefecture. Positive identification rate in mutant PCR test (screening test). Last Accessed Date: 15.04.2021. Japanese. Available from: http://www.pref.osaka.lg.jp/attach/38215/00391361/1-2_henikabu_0331.pdf
8. Verity R, Okell LC, Dorigatti I, Winskill P, Whittaker C, Imai N, Cuomo-Dannenburg G, Thompson H, Walker PGT, Fu H, Dighe A, Griffin JT, Baguelin M, Bhatia S, Boonyasiri A, Cori A, Cucunubá Z, FitzJohn R, Gaythorpe K, Green W, Hamlet A, Hinsley W, Laydon D, Nedjati-Gilani G, Riley S, van Elsland S, Volz E, Wang H, Wang Y, Xi X, Donnelly CA, Ghani AC, Ferguson NM. Estimates of the severity of coronavirus disease 2019: a model-based analysis. *Lancet Infect Dis*. 2020;20:669–77.
9. Frampton D, Rampling T, Cross A, Bailey H, Heaney J, Byott M, Scott R, Sconza R, Price J, Margaritis M, Bergstrom M, Spyder MJ, Miralhes PB, Grant P, Kirk S, Valerio C, Mangera Z, Prabhakar T, Moreno-Cuesta J, Arulkumaran N, Singer M, Shin GY, Sanchez E, Paraskevopoulou SM, Pillay D, McKendry RA, Mirfenderesky M, Houlihan CF, Nastouli E. Genomic characteristics and clinical effect of the emergent SARS-CoV-2 B.1.1.7 lineage in London, UK: a whole-genome sequencing and hospital-based cohort study. *Lancet Infect Dis*. 2021;S1473-3099(21)00170-5.
10. Graham MS, Sudre CH, May A, Antonelli M, Murray B, Varsavsky T, Kläser K, Canas LS, Molteni E, Modat M, Drew DA, Nguyen LH, Polidori L, Selvaichandran S, Hu C, Capdevila J; COVID-19 Genomics UK (COG-UK) Consortium, Hammers A, Chan AT, Wolf J, Spector TD, Steves CJ, Ourselin S. Changes in symptomatology, reinfection, and transmissibility associated with the SARS-CoV-2 variant B.1.1.7: an ecological study. *Lancet Public Health*. 2021;6:e335–45.