Abstract

Epidemiological and clinical characteristics of COVID-19 variants of concern in the Republic of Korea

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From January 20, 2020 to March 1, 2021, a total of 90,029 cases of Coronavirus disease-19 emerged after the first confirmed case was reported in Korea. A total of 162 patients of Variants of Concern (VOCs) have been confirmed since the first case was confirmed in Korea in December 2020. The purpose of this paper was to analyze and share the epidemiological and clinical characteristics of VOC patients in Korea. This paper is relevant because its findings offer suggestions as to how to respond to VOCs that can affect transmissibility and mortality among variants.

The epidemiological and clinical characteristics of 162 VOC cases in Korea were analyzed using initial and in-depth epidemiological investigation results reported through the Korea Disease Control and Prevention Agency's (KDCA) COVID-19 information management system; the information system for managing confirmed patients (HIRAe).

The 162 VOC cases were divided into three groups: 501Y.V1, 501Y.V2 and 501Y.V3. Among the 162 cases, there were 127 imported cases (78.4%) and 35 locally-acquired cases(21.6%). There were 106 male cases (65.4%) and 56 female cases (34.6%). The average age was 36.4. By age group, people aged 30 to 39 accounted for 25.9%. 105 cases (64.8%) were Korean nationals. One hundred cases (61.7%) were symptomatic at diagnosis. Among the symptoms, 37 (22.8%) was mild respiratory symptoms without fever, and 27 (16.7%) was mild respiratory symptoms with fever. Most symptoms of VOC patients in Korea were mild, but five of the 501Y.V1 (VOC originating from the UK) patients were severe/critical (including one death). The rate of severe/critical symptoms was 3.09%, and the fatality rate was 0.6%.

However, since researches on VOCs are ongoing worldwide and the number of VOCs detected in Korea is increasing, it is important to establish strategy for variant virus patient management through continuous monitoring and analysis.

Keywords: Covid-19, Variant Of Concern (VOC), Clinical characteristic

Table 1. Route of infection and detection of VOCs in Korea

	Total	501Y.V1 (originating from the UK)	501Y.V2 (originating from the South Africa)	501Y.V3 (originating from the Brazil)	p−value**
Total	162 (100.0%)	138 (100.0%)	18 (100.0%)	6 (100.0%)	
Imported cases	127 (78.4%)	104 (75.4%)	17 (94.4%)	6 (100.0%)	
At entry screening	58 (35.8%)	48 (34.8%)	8 (44.4%)	2 (33.3%)	
During home quarantine	67 (41.4%)	54 (39.1%)	9 (50.0%)	4 (66.7%)	0.398
Others*	2 (1.2%)	2 (1.4%)	0 (0.0%)	0 (0.0%)	
Locally−acquired cases	35 (21.6%)	34 (24.6%)	1 (5.6%)	0 (0.0%)	
Contact with confirmed cases	32 (19.8%)	31 (22.5%)	1 (5.6%)	0 (0.0%)	0.270
Under investigation (unclassified)	3 (1.9%)	3 (2.2%)	0 (0.0%)	0 (0.0%)	

* Home quarantine exemption; ** χ^2 test

Table 2. Epidemiological characteristics of VOCs in Korea

	Total	501Y.V1 (originating from the UK)	501Y.V2 (originating from the South Africa)	501Y.V3 (originating from the Brazil)	p−value**
Total	162 (100.0%)	138 (85.2%)	18 (11.1%)	6 (3.7%)	
Gender					
Male	106 (65.4%)	91 (65.9%)	11 (61.1%)	4 (66.7%)	0.919
Female	56 (34.6%)	47 (34.1%)	7 (38.9%)	2 (33.3%)	
Nationality					
Koreans	105 (64.8%)	90 (65.2%)	9 (50.0%)	6 (100.0%)	0.082
Foreigners	57 (35.2%)	48 (34.8%)	9 (50.0%)	0 (0.0%)	
Age group (yrs)					
0−9	10 (6.2%)	9 (6.5%)	1 (5.6%)	0 (0.0%)	
10−19	11 (6.8%)	10 (7.2%)	1 (5.6%)	0 (0.0%)	
20−29	33 (20.4%)	28 (20.3%)	4 (22.2%)	1 (16.7%)	
30−39	42 (25.9%)	34 (24.6%)	6 (33.3%)	2 (33.3%)	
40−49	30 (18.5%)	26 (18.8%)	4 (22.2%)	0 (0.0%)	0.878
50−59	18 (11.1%)	17 (12.3%)	0 (0.0%)	1 (16.7%)	
60−69	15 (9.3%)	11 (8.0%)	2 (11.1%)	2 (33.3%)	
70−79	1 (0.6%)	1 (0.7%)	0 (0.0%)	0 (0.0%)	
80+	2 (1.2%)	2 (1.4%)	0 (0.0%)	0 (0.0%)	
Isolation place					
Residential treatment center	78 (48.1%)	63 (45.7%)	11 (61.1%)	4 (66.7%)	
Hospital	81 (50.0%)	73 (52.9%)	6 (33.3%)	2 (33.3%)	0.619
Home treatment	2 (1.2%)	1 (0.7%)	1 (5.6%)	0 (0.0%)	
Others*	1 (0.6%)	1 (0.7%)	0 (0.0%)	0 (0.0%)	

* Death before COVID−19 confirmation; ** χ^2 test

Table 3. Clinical characteristics of VOCs in Korea

	Total	501Y.V1 (originating from the UK)	501Y.V2 (originating from the South Africa)	501Y.V3 (originating from the Brazil)	p-value*
Total	162 (100.0%)	138 (85.2%)	18 (11.1%)	6 (3.7%)	
Symptom					
Symptomatic	100 (61.7%)	85 (61.6%)	11 (61.1%)	4 (66.7%)	0.967
Asymptomatic	62 (38.3%)	53 (38.4%)	7 (38.9%)	2 (33.3%)	
Symptom classification					
Fever only	18 (11.1%)	11 (8.0%)	6 (33.3%)	1 (16.7%)	
Fever and respiratory symptoms	27 (16.7%)	27 (19.6%)	0 (0.0%)	0 (0.0%)	
Fever and other symptoms	8 (4.9%)	6 (4.3%)	2 (11.1%)	0 (0.0%)	
Respiratory symptoms without fever	37 (22.8%)	33 (23.9%)	2 (11.1%)	2 (33.3%)	0.027
Acute loss of sense of smell or taste	2 (1.2%)	1 (0.7%)	1 (5.6%)	0 (0.0%)	
Others	8 (4.9%)	7 (5.1%)	0 (0.0%)	1 (16.7%)	
Asymptomatic	62 (38.3%)	53 (38.4%)	7 (38.9%)	2 (33.3%)	
Severity					
Severe/critical	4 (2.5%)	4 (2.9%)	0 (0.0%)	0 (0.0%)	
Mild/asymptomatic	157 (96.9%)	133 (96.4%)	18 (100.0%)	6 (100.0%)	0.924
Death	1 (0.6%)	1 (0.7%)	0 (0.0%)	0 (0.0%)	

* χ^2 test