

Impact of Coronavirus Disease 2019 on Respiratory Surveillance and Explanation of High Detection Rate of Human Rhinovirus During the Pandemic in the Republic of Korea

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Abstract

Background: After the detection of the first case of coronavirus disease 2019 (COVID-19) in South Korea on January 20, 2020, it has triggered three major outbreaks. To decrease the disease burden of COVID-19, social distancing and active mask wearing were encouraged, reducing the number of patients with influenza-like illness and altering the detection rate of influenza and respiratory viruses in the Korea Influenza and Respiratory Viruses Surveillance System (KINRESS). We examined the changes in respiratory viruses due to COVID-19 in South Korea and virological causes of the high detection rate of human rhinovirus (hRV) in 2020. **Methods:** We collected 52,684 oropharyngeal or nasopharyngeal swab samples from patients with influenza-like illness in cooperation with KINRESS from 2016 to 2020. Influenza virus and other respiratory viruses were confirmed using real-time RT-PCR. The weekly detection rate was used to compare virus detection patterns. **Results:** Non-enveloped virus (hRV, human bocavirus, and human adenovirus) detection rates during the COVID-19 pandemic were maintained. The detection rate of hRV significantly increased in 2020 compared with that in 2019 and was negatively correlated with number of COVID-19-confirmed cases in 2020. The distribution of strains and genetic characteristics in hRV did not differ between 2019 and 2020. **Conclusions:** The extremely low detection rate of enveloped viruses resulted from efforts to prevent the spread of COVID-19 in South Korea. The high detection rate of hRV may be related to resistance against environmental conditions as a non-enveloped virus and the long period of viral shedding from patients.

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