Epidemiological characteristics of common respiratory viruses among children in Hangzhou, China: comparison of COVID-19 before, during and after the pandemic

Jianming Zhou¹, Yanhong Sun¹, Hao Shen¹, Liuqiao Yang¹, qing ye¹, and Zhiwen Zhu¹

¹Zhejiang University School of Medicine Children’s Hospital

October 30, 2023

Abstract

Background: Non-Pharmaceutical Interventions (NPIs) against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) not only curbed the spread of novel coronavirus (COVID-19) but also affected common respiratory viruses infected by children. The purpose of this study was to explore the effect of NPIs on common respiratory viruses in children. Methods: Samples of children diagnosed with respiratory tract infection in Children’s Hospital affiliated with Zhejiang University from January 2019 to August 2023 were collected, and ADV, Flu A, Flu B and RSV were detected. To analyze the changes in common respiratory viruses in children in three stages: pre-COVID-19, pandemic and late. Statistical analysis was carried out with R software. Results: From January 2019 to August 2023, a total of 567,858 samples were tested, including 308,163 males, accounting for 54.26%, and 259,695 females, accounting for 45.73%. Among them, there were 173,956 positive samples (30.63%), 40,279 ADV-positive samples (23.15%), 78,580 Flu A-positive samples (45.17%), 26,888 Flu B-positive samples (15.45%) and 28,209 RSV-positive samples (16.21%). Among children of different ages in Hangzhou before, during and after COVID-19, the highest total detection rate of respiratory virus was 1-3 years old (accounting for 40.24%), followed by 4-6 years old (accounting for 26.59%). The distribution in different seasons shows that the number of children infected with respiratory viruses reaches a peak in winter and spring. Compared with 2019 (35.60%) before the COVID-19 epidemic, the total detection rate of common respiratory viruses in children was lower during the COVID-19 pandemic (2020-2022) (27.89%, 22.71%, 24.63%), and it was increased in 2023 while after NPIs were cancelled (accounting for 33.75%). Conclusion: NPI measures can effectively reduce the spread of common respiratory viruses, but at the same time, they will weaken human immunity to these respiratory viruses.

Hosted file