PA31) Distribution and Characterization of Airborne Respiratory Pathogens in Public Facilities

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1. Interduction

Respiratory infections, which are caused by airborne pathogens, are the most common disease of all ages worldwide.

2. Materials and Methods

This study was conducted to characterize the airborne respiratory pathogens in the public facilities in Busan, South Korea. A total of 260 public facilities were investigated in 2017, 52 seasonal indoor air from 2 hospitals and 208 indoor air samples from 208 randomly selected daycare centers.

Among respiratory pathogen, 8 viral pathogens including human adenovirus (HAdV), human bocavirus (HBoV), human rhinovirus (HRV), human parainfluenzavirus (HPIV), human respiratory syncytial virus (HRSV), human metapneumovirus (HMPV), human coronavirus (HCoV) and influenzavirus (IFV), and 3 bacterial pathogens including *Mycoplasma pneumoniae*, *Bordetella pertussis*, and *Chlamydophila pneumoniae*, were investigated by multiplex real-time reverse transcription polymerase chain reaction.

3. Results and Discussion

Pathogens were detected in 9 cases (3.4%). Among 9 positive samples, 6 (2.3%) cases were positive for HBoV and 3 (1.2%) cases were positive for IFV. All the positive cases were detected in daycare centers. Additionally, the concentration of HBoV was determined. In HBoV-positive samples, the cycle threshold (C_t) values of HBoV were 29.73 ~ 36.84, which are corresponding to the viral concentration of 4.91×10^{0}-9.57×10^{2}copies/㎖. Serotype distribution of isolated HBoV was analyzed by sequencing of VP1/VP2 gene. All of the HBoV isolates were identified as HBoV type 1 with a high similarity among the isolates (>97%). No bacterial pathogen was identified in indoor air samples.

Although virus concentration was not high in public facilities (daycare center), the presence of respiratory viral pathogens has been identified. Effective ventilation and air purification strategies are needed to reduce the indoor concentration of respiratory pathogens. A long-term and ongoing surveillance plan for respiratory pathogen management should be established.

4. References

Gravesen, S., 2000, Microbiology on Indoor Air‘99-what is new and interesting? An overview of selected papers presented in Edinburgh, August, 1999. Indoor Air 10, 74-80.

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