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Development of rapid diagnostic reagents for respiratory viral and mycoplasmal infections in children

Establishment of rapid diagnosis of respiratory virus infections in children is important not only from the standpoint of clinical diagnosis but also infection control. We have developed and reported about the fundamental results of a rapid diagnostic reagent for measles that employs the lateral flow-based immuno-chromatography. The purpose of the present study is to investigate the possibility of diagnosing with rapid diagnostic reagents for viral and mycoplasmal antigens of respiratory tract. To investigate the etiology of pediatric community acquired respiratory infections, we conducted a prospective, population based study covering the total population less than 15 years of age in Nasu-shiobara, Tochigi, Japan, during the period of December 2010 to March 2013. Nasopharyngeal swabs were collected from 200 children with respiratory tract infections. RT-PCR analysis was used as the reference assay. Results are expressed as the equivalent of copies per micro-liter according to titration of control RNA. The correlation of the results between obtained by the diagnostic reagents and RT-PCR assays was investigated. Specific infecting agents were identified in a total of 64 (32.0%) out of 200 patients with mixed infection as follows: Respiratory syncytial (RS) virus, 29; *Mycoplasma pneumoniae*, 17; *metapneumovirus*, 7; *adenovirus*, 5; *influenza A virus*, 3; and *influenza B virus*, 3. We detected 100 copies in the sample/μl or more antigens of *Mycoplasma pneumoniae* and *metapneumovirus* which were difficult for detection by the conventional method. Minimum detection sensitivity of the reagent system in the clinical material was the 3×101 copies/micro-liter. The correlation of the results between obtained by the diagnostic reagents and RT-PCR was the positive results that match rates of 79.0 to 100% and 100% negative match. From the results of this study the importance of *M. pneumoniae* and RS virus in the etiology of lower respiratory infections in Japanese children was confirmed. Immuno-chromatography can be applied as a simple rapid diagnostic method from the beginning of the disease in general clinical practice.

Biography

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