Comparison of polymerase chain reaction and the indirect particle agglutination antibody test for the diagnosis of Mycoplasma pneumoniae pneumonia in children during two outbreaks.

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BACKGROUND: Diagnosis of Mycoplasma pneumoniae pneumonia is challenging because of the lack of standardized rapid tests. Many serologic tests and polymerase chain reaction (PCR) based methods are used with different diagnostic criteria.

METHODS: This retrospective study was conducted to compare the diagnostic values of the indirect particle agglutination test and nested PCR of nasopharyngeal aspirates for the diagnosis of M. pneumoniae pneumonia in children. These assays were evaluated in 234 hospitalized children with community-acquired lower respiratory tract infections during 2 outbreaks of M. pneumoniae pneumonia in 2000 and 2003.

RESULTS: The cumulative PCR positive rate was 26.7% in patients with maximum antibody titers of $< \text{or}=1:320$ and 78.2% in those with titers of $> \text{or}=1:640$. Based on these data, a positive PCR, a 4-fold increase in antibody titer, or a single titer $> \text{or}=1:640$ were considered to indicate acute M. pneumoniae infection. Overall, 152 children were diagnosed to have M. pneumoniae pneumonia; 27 (18%) by serology only, 26 (17%) by PCR only, and 99 (65%) by both methods. Children who were diagnosed by PCR only were significantly younger ($P = 0.003$) and were more often immunocompromised ($P = 0.019$) than those that were PCR negative. Duration of cough before PCR diagnosis was shorter in cases diagnosed by PCR only than those that were PCR negative ($P = 0.045$).

CONCLUSIONS: In conclusion, during the 2 outbreaks of M. pneumoniae infection, we found that the PCR test may be useful for the rapid diagnosis of M. pneumoniae pneumonia, particularly in young children and in immunocompromised patients and in early stage disease.

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