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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 $\leq 1:320$ and 78.2% in those with titers of $\geq 1:640$. Based on these data, a positive PCR, a 4-fold increase in antibody titer, or a single titer $\geq 1:640$ 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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