Comparison of Laboratory Diagnostic Procedures for Detection of *Mycoplasma pneumoniae* in Community Outbreaks

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Background: Mycoplasma pneumoniae continues to be a significant cause of community-acquired pneumonia (CAP). A more definitive methodology for reliable detection of *M. pneumoniae* is needed to identify outbreaks and to prevent potentially fatal extrapulmonary complications.

Methods: We analyzed 2 outbreaks of CAP due to *M. pneumoniae*. Nasopharyngeal and/or oropharyngeal swab specimens and serum samples were obtained from persons with clinically defined cases, household contacts, and asymptomatic individuals. Real-time polymerase chain reaction (PCR) for *M. pneumoniae* was performed on all swab specimens, and the diagnostic utility was compared with that of 2 commercially available serologic test kits.

Results: For cases, 21% yielded positive results with real-time PCR, whereas 81% and 54% yielded positive results with the immunoglobulin M and immunoglobulin G/immunoglobulin M serologic tests, respectively. For noncases, 1.8% yielded positive results with real-time PCR, whereas 63% and 79% yielded serologically positive results with the immunoglobulin M and immunoglobulin G/immunoglobulin M kits, respectively. The sensitivity of real-time PCR decreased as the duration between symptom onset and sample collection increased, with a peak sensitivity of 48% at 0-21 days. Real time PCR may be most sensitive when collected within 21 days of symptoms. A specificity of 43% for the immunoglobulin M antibody detection assay was observed for persons aged 10-18 years, but the sensitivity increased to 82% for persons aged 19 years. The IgM antibody Meridian test was more sensitive than the Remel test.

Discussion: No single test proved reliable for the identification of an outbreak of CAP due to *M. pneumoniae*. A combination of testing methodologies proved to be the most reliable approach for identification of outbreaks of CAP due to *M. pneumoniae*, especially in the absence of other suspected respiratory pathogens.

Editorial Comment by Victor L Yu: Laboratory diagnosis for Mycoplasma pneumoniae in sporadic pneumonia (as opposed to outbreak) cases is unreliable. Serologic tests can be used but acute and convalescent samples need to be drawn to allow a 4-fold increase in antibody titer rise. Definitive diagnosis for *M pneumoniae* remains elusive.

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