

Abstract Quiz

by Laura King, MA, MFA, ELS

ANSWER KEY

Directions: For reports of original research, systematic reviews (including meta-analyses), and clinical reviews, structured abstracts (abstracts that use section heads) are recommended. The JAMA Network journals use the following heads: Importance; Objective; Design, Setting, and Patients or Other Participants; Interventions or Exposures; Main Outcomes and Measures; Results; Conclusions and Relevance. If no intervention was performed, that heading may be omitted. Many journals limit the number of words to 250, but some (such as the JAMA Network journals) allow 350 words for reports of original research and for systematic reviews without meta-analyses and Advances in Diagnosis and Treatment Reviews (§2.5.1, Structured Abstracts).

Reformat the following unstructured abstract into a structured abstract using the headings listed above.

The diagnosis of *Mycoplasma pneumoniae* infection as the cause of mucocutaneous disease is challenging because current diagnostic tests are not able to differentiate *M pneumoniae* infection from carriage. This study examined the frequency and clinical presentation of *M pneumoniae*-induced mucocutaneous disease in children with community-acquired pneumonia (CAP) using improved diagnostics. This prospective, longitudinal cohort study included 152 children aged 3 to 18 years with CAP enrolled in a CAP study from May 1, 2016, to April 30, 2017, at the University Children's Hospital Zurich. Children were inpatients or outpatients with clinically defined CAP according to the British Thoracic Society guidelines. Data analysis was performed from July 10, 2017, to June 29, 2018. Frequency and clinical presentation of *M pneumoniae*-induced mucocutaneous disease in childhood CAP. *Mycoplasma pneumoniae* infection was diagnosed by polymerase chain reaction (PCR) of oropharyngeal samples and confirmed with the measurement of specific peripheral blood IgM antibody-secreting cells by enzyme-linked immunospot assay to differentiate *M pneumoniae*-infected patients from carriers with CAP caused by other pathogens. Mucocutaneous disease was defined as any eruptive lesion that involved skin and/or mucous membranes occurring during the CAP episode. Among 152 enrolled children with CAP (median [interquartile range] age, 5.7 [4.3–8.9] years; 84 [55.3%] male), 44 (28.9%) tested positive for *M pneumoniae* by PCR; of these, 10 children (22.7%) developed mucocutaneous lesions. All 10 patients with mucocutaneous eruptions tested positive for specific IgM antibody-secreting cells. Skin manifestations were found in 3 cases (2.8%) of *M pneumoniae* PCR-negative CAP ($P < .001$). The spectrum of *M pneumoniae*-induced mucocutaneous disease included *M pneumoniae*-induced rash and mucositis (3 cases [6.8%]), urticaria (2 cases [4.5%]), and maculopapular skin eruptions (5 cases [11.4%]). Two patients had ocular involvement as the sole mucosal manifestation (bilateral anterior uveitis and nonpurulent conjunctivitis). Patients with *M pneumoniae*-induced mucocutaneous disease had longer duration of prodromal fever (median [interquartile range], 10.5 [8.3–11.8] vs 7.0 [5.5–9.5] days; $P = .02$) and higher C-reactive protein levels (median [interquartile range], 31 [22–59] vs 16 [7–23] mg/L; $P = .04$) than patients with CAP due to *M pneumoniae* without

mucocutaneous manifestations. They were also more likely to require oxygen (5 [50%] vs 1 [5%]; $P=.007$), to require hospitalization (7 [70%] vs 4 [19%]; $P=.01$), and to develop long-term sequelae (3 [30%] vs 0; $P=.03$). Mucocutaneous disease occurred significantly more frequently in children with CAP due to *M pneumoniae* than in children with CAP of other origins. *Mycoplasma pneumoniae*-induced mucocutaneous disease was associated with increased systemic inflammation, morbidity, and a higher risk of long-term sequelae.

ANSWER:

Importance The diagnosis of *Mycoplasma pneumoniae* infection as the cause of mucocutaneous disease is challenging because current diagnostic tests are not able to differentiate *M pneumoniae* infection from carriage.

Objective To examine the frequency and clinical presentation of *M pneumoniae*-induced mucocutaneous disease in children with community-acquired pneumonia (CAP) using improved diagnostics.

Design, Setting, and Participants This prospective, longitudinal cohort study included 152 children aged 3 to 18 years with CAP enrolled in a CAP study from May 1, 2016, to April 30, 2017, at the University Children's Hospital Zurich. Children were inpatients or outpatients with clinically defined CAP according to the British Thoracic Society guidelines. Data analysis was performed from July 10, 2017, to June 29, 2018.

Main Outcomes and Measures Frequency and clinical presentation of *M pneumoniae*-induced mucocutaneous disease in childhood CAP. *Mycoplasma pneumoniae* infection was diagnosed by polymerase chain reaction (PCR) of oropharyngeal samples and confirmed with the measurement of specific peripheral blood IgM antibody-secreting cells by enzyme-linked immunospot assay to differentiate *M pneumoniae*-infected patients from carriers with CAP caused by other pathogens. Mucocutaneous disease was defined as any eruptive lesion that involved skin and/or mucous membranes occurring during the CAP episode.

Results Among 152 enrolled children with CAP (median [interquartile range] age, 5.7 [4.3–8.9] years; 84 [55.3%] male), 44 (28.9%) tested positive for *M pneumoniae* by PCR; of these, 10 children (22.7%) developed mucocutaneous lesions. All 10 patients with mucocutaneous eruptions tested positive for specific IgM antibody-secreting cells. Skin manifestations were found in 3 cases (2.8%) of *M pneumoniae* PCR-negative CAP ($P<.001$). The spectrum of *M pneumoniae*-induced mucocutaneous disease included *M pneumoniae*-induced rash and mucositis (3 cases [6.8%]), urticaria (2 cases [4.5%]), and maculopapular skin eruptions (5 cases [11.4%]). Two patients had ocular involvement as the sole mucosal manifestation (bilateral anterior uveitis and nonpurulent conjunctivitis). Patients with *M pneumoniae*-induced mucocutaneous disease had longer duration of prodromal fever (median [interquartile range], 10.5 [8.3–11.8] vs 7.0 [5.5–9.5] days; $P=.02$) and higher C-reactive protein levels (median [interquartile range], 31 [22–59] vs 16 [7–23] mg/L; $P=.04$) than patients with CAP due to *M pneumoniae* without mucocutaneous manifestations. They were also more likely to require oxygen (5 [50%] vs 1 [5%]; $P=.007$), to require hospitalization (7 [70%] vs 4 [19%]; $P=.01$), and to develop long-term sequelae (3 [30%] vs 0; $P=.03$).

Conclusions and Relevance Mucocutaneous disease occurred significantly more frequently in children with CAP due to *M pneumoniae* than in children with CAP of other origins. *Mycoplasma pneumoniae*-induced mucocutaneous disease was associated with increased systemic inflammation, morbidity, and a higher risk of long-term sequelae.

