

Hospital Peer Review

July 2009

Hospital Peer Review is a monthly newsletter sponsored by the Rural Healthcare Quality Network to alert Critical Access Hospitals regarding findings from the Peer Review Program. Summarized are a few of the key findings and best practices that would be helpful for other critical access hospitals to be knowledgeable about. This newsletter is edited by Myron Bloom, Medical Director and he can be reached at drmbloom@msn.com.

Doctor, I Want Some Antibiotics...For My Sore Throat

But "Sometime you find you get what you need" — R. Stones

Pharyngitis is diagnosed in 11 million patients in U.S. emergency departments and ambulatory settings annually of which Group A beta-hemolytic streptococcus (GABHS) is the most common bacterial etiology, accounting for 15 to 30 percent of cases of acute pharyngitis in children and 5 to 20 percent in adults with an incubation period of 24 to 72 hours. In addition to sore throat, signs and symptoms frequently associated with streptococcal pharyngitis include fever with temperature greater than 100.4°F (38°C), tonsillar exudates, and cervical adenopathy. Infants with GAS (group A streptococci) infections might present with excoriated nares or purulent nasal discharge, while viral pharyngitis is more likely than streptococcal pharyngitis to be associated with cough, coryza, and diarrhea.

Diagnosing simply on the basis of clinical findings yields a predictive value of less than 70%, with 30% of people receiving antibiotics unnecessarily. The gold standard for streptococcal pharyngitis remains the throat culture. However, there have been significant improvements in sensitivity and specificity of rapid antigen detection testing (RADT). To facilitate management, the modified Centor score can help clinicians determine which patients would not need testing, would benefit from testing with RADT or throat culture, or empiric treatment with antibiotics without testing.

The Centor clinical decision tool assigns 1 point for each of the following:

- 1) absence of cough,
- 2) swollen and tender anterior cervical nodes,
- 3) elevated temperature of more than 100.4°F (38°C),
- 4) tonsillar exudates or swelling, and
- 5) ages 3 to 14 years. (One point is subtracted for age 45 years and older.)

For a score of 0, the risk for GABHS pharyngitis is 1% to 2.5% and no further testing or antibiotics are indicated. For a score of 1, it is 5% to 10% and antibiotics are not indicated, although RADT or throat culture may be considered while considering other factors such as

recent family contact with documented streptococcal infection, which would lower the threshold for testing and/or treatment.

For a score of 2, the risk for GABHS pharyngitis is 11% to 18%, while a score of 3 has a 28% to 35% risk. Therefore, RADT or throat culture should be performed after which antibiotics are appropriate if culture results are positive.

For a score of 4 or more, the risk for GABHS pharyngitis is 51% to 53% and empiric treatment with antibiotics should be considered without further testing for the index patient's benefit.

Despite appropriate antibiotic treatment, chronic GABHS colonization is common. Neither rapid antigen tests or throat culture can differentiate between people who have GAS infection and those who are carriers. There is generally no need to treat chronic carriers because they are thought to be at low risk of transmitting disease or developing invasive GABHS infections.

Complications of GABHS pharyngitis may be either suppurative or non-suppurative. The suppurative complications may include bacteremia, cervical lymphadenitis, endocarditis, mastoiditis, meningitis, otitis media, peritonsillar or retropharyngeal abscess, and/or pneumonia. Non-suppurative complications may include rheumatic fever and poststreptococcal glomerulonephritis (which cannot be prevented). It is still unclear whether tonsillectomy or adenoidectomy reduces the incidence of GABHS pharyngitis, but the costs and surgical risks probably exceed potential benefit.

Rheumatic heart disease is the most important sequela of acute rheumatic fever (RF), which is caused by group A streptococci (GAS) and usually presents in childhood, affecting 5 to 15 year-olds — although it can strike people up to the age of 30. Acute GABHS and RF are rare in children younger than 3 years. One third of acute RF episodes result from streptococcal infections that are not evident. In 20% to 30% of cases, there is no cardiac involvement, but people often contract rheumatic fever more than once and the damage can be cumulative. Therefore, patients with a history of rheumatic fever (or household contact) should start antibiotics immediately and if the culture is negative, then stop antibiotics. There have been occasional focal outbreaks of the rheumatic fever (Salt Lake City in the 1980s) but the incidence of acute rheumatic fever has decreased dramatically.

A confirmatory throat culture is unnecessary in adults who are less likely to have strep throat and in whom initial attacks of rheumatic fever are rare, but may be considered in children given the higher risk. Patients who have had rheumatic fever are at high risk of developing recurrences with subsequent GAS pharyngitis and should receive continuous antimicrobial prophylaxis. Serologic testing [antistreptolysin O (ASO) and antideoxyribonuclease B (ADB)] may be performed to confirm a previous GAS infection when someone was suspected of having rheumatic fever or poststreptococcal glomerular nephritis. However, the inexpensive and easily performed slide agglutination test [Streptozyne (Wampole Laboratories, Stamford, CT)] is considered to be unreliable by the World Health Organization.

Researchers in Australia conducted a 16-month prospective, population-based study of 828 patients from 196 families with at least one child aged 3 to 12 years. Throat cultures for GAS pharyngitis were obtained at baseline and every 3 to 4 months throughout the study period. In addition, cultures were obtained when patients had a sore throat. Patients with cultures positive for GAS pharyngitis (index cases) were visited at home 1 to 2 weeks later for serology testing,

and throat cultures were taken from all family members. Secondary cases underwent the same follow-up.

In children aged 5 to 12 years, the incidence of cases (index and secondary cases combined) of sore throat was 33 per 100 person years overall, with a culture-positive GAS pharyngitis of 13 per 100 person years, and of serologically confirmed GAS pharyngitis was 8 per 100 person years. Adults had a lower incidence of sore throat (14 per 100 person-years) but were as likely to have culture-positive GAS pharyngitis. 13% of family members exposed to a primary case of GAS pharyngitis developed a secondary case. Only about two thirds of positive cultures were serologically confirmed (false positive or carrier?). GAS pharyngeal carriage rates ranged between 8% and 16% for children, depending on the season, and was 2% for adults, regardless of the season.

The treatment of choice is oral or intramuscular penicillin [penicillin V for strep throat for 10 days (minimum of BID) or Benzathine penicillin G (CR is less painful though a larger volume)], but once-a-day amoxicillin is a more palatable alternative for children. For those who are allergic to penicillin, the new recommendations deemphasize the use of macrolides such as azithromycin because of increasing GAS resistance and poor tolerance (20mg/kg dosage now may be required) and favor a narrow-spectrum cephalosporin or clindamycin. Antibiotics started within 2-3 days of symptom onset may reduce symptoms by only 1-2 days if the sore throat is because of GABHS; however, if there is failure to improve clinically after 48 hours of treatment, rule out peritonsillar or retropharyngeal abscess.

Bisno AL. Prevention of rheumatic fever, today and tomorrow. *Circulation*. 2009.

Cooper RJ, Hoffman, JR, Bartlett JG et al. Principles of appropriate antibiotic use for acute pharyngitis in adults: *Annals of Internal Medicine*. 2001;134:509-517.

Danchin MH, Rogers S, Kelpie L, et al. Burden of acute sore throat and group A streptococcal pharyngitis in school-aged children and their families in Australia. *Pediatrics*. November 2007;120:950-957.

Gerber MA, Baltimore RS, Eaton CB, et al. Prevention of rheumatic fever and diagnosis and treatment of acute streptococcal pharyngitis. *Circulation* 2009;119:1541-1551.