Update on Group A Streptococcal Pharyngitis

James K. Todd, MD

It has been six years since we updated our recommendations regarding the management of group A streptococcal infection in children (GAS). Actually, not that much has changed, but we thought it would be worthwhile to reinforce some of the latest AAP Red Book recommendations (in Italics) with some of our own thoughts thrown in.

Who should get a Strep Test?
“Children with acute onset of sore throat and clinical signs and symptoms such as pharyngeal exudate, pain on swallowing, fever, and enlarged tender anterior cervical lymph nodes or exposure to a person with GAS pharyngitis are more likely to have GAS infection and test and/or throat culture performed…. A specimen should be obtained by vigorous swabbing of both tonsils and the posterior pharynx for culture and/or rapid antigen testing.”

Our friend, Dr. Jules Amer calls this “taking a tonsillar biopsy”. It has been shown that obtaining a proper specimen will yield the best results and probably should be obtained by the most skilled person in the office and not relegated to less experienced staff. A favorite saying in our laboratory is “garbage in, garbage out”.

Who should not routinely get a Strep test?
“Children with manifestations highly suggestive of viral infection, such as coryza, conjunctivitis, hoarseness, cough, anterior stomatitis, discrete ulcerative lesions, or diarrhea, are unlikely to have GAS pharyngitis and generally should not be tested…. GAS pharyngitis is uncommon in children younger than 3 years of age, but outbreaks of GAS pharyngitis have been reported in young children in child care settings. The risk of ARF (acute renal failure) is so remote in young children in industrialized countries that diagnostic studies for GAS pharyngitis often are not indicated for children younger than 3 years of age.”

What’s the problem with taking too many Strep tests?
“Recovery of group A streptococci from the pharynx does not distinguish patients with true streptococcal ….Throat culture surveys of healthy asymptomatic children during school outbreaks of pharyngitis have yielded GAS prevalence rates as high as 20%. These surveys identified children who were pharyngeal carriers.”

Carrier rates may be lower in some pediatrics settings but still complicate diagnostic decision making. It seems like we often hear of children who have shown up in an emergency room or urgent care who had a positive Strep test. Should they be treated? Are they really a carrier with some more severe illness that we would hate to miss (e.g. leukemia, appendicitis)? A good rule of thumb is to only do a Strep test when the results will adequately explain the clinical findings in that patient.

How reliable is the rapid antigen test?
Most rapid tests, which use enzyme-immunoassay methods, range in sensitivity from 80-90% when compared to the gold standard of selective blood agar plate cultures. They are highly specific, so a positive test can be considered equivalent to a positive throat culture. In situations where suspicion is high (see above) a negative rapid test should be backed up by a throat culture unless your lab has documented equivalence of the two techniques.

Should we encourage or discourage home Strep tests?
“The Food and Drug Administration has approved a variety of rapid tests for use in home settings. Parents should be informed about these tests and told that their use should be discouraged. However, when a child or adolescent suspected of having GAS pharyngitis has a negative rapid streptococcal test result either at home or in the physician's office, a negative result of throat culture can provide more assurance that the patient does not have GAS infection.”

See aforementioned comments in “What’s the problem with doing too many Strep tests?” above.

Should animals or environment be cultured for children with apparently recurrent GAS?
“Fomites and household pets, such as dogs, are not vectors of GAS infection. Transmission of GAS infection, including in school outbreaks of pharyngitis, almost always follows contact with respiratory tract secretions.”

Why treat GAS pharyngitis?
“The goals of antimicrobial therapy for GAS upper respiratory tract disease are to reduce acute morbidity, nonsuppurative sequelae (acute rheumatic fever and acute glomerulonephritis), and transmission to close contacts.”

What is the best option for treating Group A Strep?
“Although penicillin V is the drug of choice for treatment of GAS pharyngitis, amoxicillin equally is effective. A clinical GAS isolate resistant to penicillin or cephalosporin never has been documented. Prompt administration of penicillin therapy shortens the clinical course, decreases risk of suppurrative sequelae and transmission, and prevents acute rheumatic fever, even when given up to 9 days after illness onset.”
The most recent Cochrane Review concluded: “Seventeen trials (5352 participants) were included; 16 compared with penicillin (six with cephalosporins, six with macrolides…… Evidence is insufficient for clinically meaningful differences between antibiotics for GAS tonsillopharyngitis. Limited evidence in adults suggests cephalosporins are more effective than penicillin for relapse, but the number needed to treat is high. ….. Data on complications are too scarce to draw conclusions. Based on these results and considering the low cost and absence of resistance, penicillin can still be recommended as first choice.”

**How do we define a Strep Carrier?**

“Patients who have repeated episodes of pharyngitis at short intervals and in whom GAS infection is documented by culture or antigen detection test present a special problem. Most often, these people are chronic GAS carriers who are experiencing frequent viral illnesses and for whom repeated testing and use of antimicrobial agents are unnecessary. In assessing such patients, inadequate adherence to oral treatment also should be considered. Although relatively uncommon, macrolide and azalide resistance among GAS strains occurs, resulting in erythromycin, clarithromycin, or azithromycin treatment failures. Testing asymptomatic household contacts usually is not helpful. …..To determine whether the patient is a long-term streptococcal pharyngeal carrier who is experiencing repeated episodes of intercurrent viral pharyngitis (which is the situation in most cases), the following should be determined: (1) whether the clinical findings are more suggestive of a GAS or a viral cause; (2) whether epidemiologic factors in the community support a GAS or a viral cause; (3) the nature of the clinical response to the antimicrobial therapy (in true GAS pharyngitis, response to therapy usually is 24 hours or less); (4) whether laboratory test results are positive for GAS infection between episodes of acute pharyngitis; and (5) whether a serologic response to GAS extracellular antigens (e.g., antistreptolysin O) has occurred.”

**What about antibody titers?**

A single elevated antibody titer (ASO) does not rule in or rule out current active GAS infection since many carriers will have elevated titers as well. The only usefulness of titers appears to be as an adjunct in the diagnosis of acute rheumatic fever and acute poststreptococcal glomerulonephritis. A titer rise is the best confirmation of a recent infection.

**Should we treat asymptomatic GAS carriage?**

We do not recommend looking for GAS carriers as they generally do not warrant treatment and it only increases family paranoia. However, eradication may be considered in the following situations:

1. Families with repeated cases of apparent GAS pharyngitis
2. Patients in a community with an outbreak of serious GAS infections or acute rheumatic fever
3. Patients with a history of acute rheumatic fever or a positive family history
4. Household contacts of invasive GAS
5. Parental “strep paranoia” unresponsive to rational discussion

The options for treatment of asymptomatic GAS carriage are outlined in Table 1.

**Table 1. Summary of some common antibiotics for the treatment of group A streptococcal pharyngitis (summarized from AAP Red Book, 2012)**

<table>
<thead>
<tr>
<th><strong>Antibiotic</strong></th>
<th><strong>Dose</strong></th>
<th><strong>Notes</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Penicillin</td>
<td>Penicillin VK 250mg 2-3 times per day for 10 days if less than 27kg, 500 mg 2-3 times per day for 10 days if greater than 27kg. Benzathine Penicillin 600,000 units IM as single dose if less than 27kg, 1.2 million units IM as single dose if greater than 27kg.</td>
<td>Resistance to penicillin, amoxicillin, and 1st generation cephalosporins has not been reported. Each is equally effective if compliance is assured.</td>
</tr>
<tr>
<td>Amoxicillin</td>
<td>50mg/kg/day once daily for 10 days (max 1200 mg)</td>
<td></td>
</tr>
<tr>
<td>Cephalexin</td>
<td>25-50mg/kg/day in 2 divided doses for 10 days</td>
<td></td>
</tr>
<tr>
<td>Clindamycin</td>
<td>20mg/kg/day in 3 divided doses for 10 days</td>
<td>Rare resistance reported in US.</td>
</tr>
<tr>
<td>Azithromycin</td>
<td>12mg/kg once daily for 5 days (max 500mg/day)</td>
<td>Some resistance reported in US.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Eradication of Carrier State</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Clindamycin 20mg/kg/day in 3 divided doses for 10 days</td>
</tr>
<tr>
<td>Cephalexin 25-50mg/kg/day in 2 divided doses for 10 days</td>
</tr>
<tr>
<td>Penicillin + Rifampin See above penicillin doses; give Rifampin 20mg/kg/day twice a day for final 4 days</td>
</tr>
</tbody>
</table>

*Tetracyclines, sulfonamides (including trimethoprim-sulfamethoxazole) and quinolones should not be used for treating GAS infections.

**Parental “strep paranoia” unresponsive to rational discussion**
Is PANDAS a real Strep sequela"

“An association between GAS infection and sudden onset of obsessive-compulsive or tic disorders—pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections (PANDAS)—has been proposed but is unproven.”

There are many other diseases that can cause all the same symptoms including: hyperthyroidism, autoimmune diseases, hereditary disease and adverse drug reactions. Because GAS colonization and GAS antibody are commonly found in school age children, GAS is often blamed for this disorder, delaying implementation of more effective management strategies.

References


We are modifying our distribution process for Contagious Comments. If you wish to receive this publication please provide us with your E-mail address below.

Name: __________________________________________________

E-mail Address: ___________________________________________

Both the Contagious Comments and Bug Watch publications are always posted on Children’s Hospital Colorado website at:


Please return your E-mail address to: Carolyn Brock Children’s Hospital Colorado, Epidemiology – Box B276, 13123 E. 16th Avenue, Aurora, CO 80045 or E-mail address: carolyn.brock@childrenscolorado.org.

Thank you for your interest in our publication.