Group A beta-hemolytic streptococcus (GABHS) is the most common bacterial cause of acute pharyngitis and accounts for approximately 15-30% of all pharyngitis cases in children. It generally affects school-aged children (to 15 years), is found in temperate climates and usually occurs in winter to early spring.

Because the signs and symptoms of GABHS and other (often viral) pharyngitis overlap, a diagnosis of GABHS should not be based on epidemiological and clinical grounds alone. The guidelines from the Infectious Disease Society of America (IDSA) recommend obtaining a rapid antigen detection test (RADT) or a throat culture to establish diagnosis. Because some RADTs are less sensitive than throat cultures, a negative RADT for a child or adolescent should be followed by a throat culture.

GABHS pharyngitis is treated to prevent acute rheumatic fever, and suppurative complications; improve clinical signs and symptoms; and reduce transmission to close contacts. Several antibiotics are effective for the treatment of GABHS pharyngitis. Issues to consider when selecting an antibiotic include efficacy, safety, spectrum (broad or narrow), cost and likelihood of compliance to dosing schedule.

While early initiation of antimicrobial therapy results in faster resolution of signs and symptoms, GABSH pharyngitis is usually a self-limiting disease and constitutional symptoms disappear within 3-4 days of onset. Therapy can be postponed up to 9 days after the onset of symptoms and still prevent the occurrence of rheumatic fever.

Penicillin V (PCN) or intramuscular benzathine penicillin G remain the treatment of choice because of proven efficacy, safety, narrow spectrum, and low cost according to guidelines from the Infectious Disease Society of America (IDSA) and the American Academy of Pediatrics (AAP).

However, results from some studies demonstrated a 35% treatment failure in GABHS pharyngitis patients treated with PCN. A number of variables may be responsible for these failures, including noncompliance. It is easy to understand how noncompliance could contribute to antibiotic failure when taking the standard PCN regimen into consideration. PCN is prescribed three to four times daily for 10 days. A study on medication compliance, performed in 105 adults receiving antihypertensive medications, found three times daily dosing was associated with 30-50% compliance compared with 90% compliance for one to two times daily dosing.

For patients who are unlikely to complete a full 10 day course of oral therapy, a one time dose of intramuscular benzathine penicillin is recommended. Two brands of benzathine penicillin are available on the market, Bicillin LA and Bicillin CR. It should be noted that the dosing for Bicillin LA and Bicillin CR is not equivalent unit for unit.

Clinical failures have also been reported with benzathine penicillin which may be related to formulation deficiencies, incorrect dosing, or the presence of beta-lactamase producing bacteria. GABHS itself does not produce beta-lactamase, an enzyme capable of deactivating PCN's antibiotic action. However, co-infection with bacteria such as, H. influenzae, S. aureus, M. catarrhalis or beta-lactamase producing oral flora may be the source contributing to PCN failure. If this is the case, antibiotics resistant to beta-lactamase are a good treatment option.

Cephalosporins resist degradation by beta-lactamase and are very effective against co-pathogens if present. Cephalosporin therapy duration is 10 days, with the exception of cefdinir and cefpodoxime proxetil which are both approved for a 5-day course of therapy. Cephalosporins, an excellent alternative treatment option for GABHS, also have their drawbacks. They have a broader spectrum than PCN; therefore, when used routinely have an increased risk for developing resistant bacteria. They are also more expensive than PCN. Cephalosporins are not contraindicated in patients with PCN allergy; but should be used cautiously in patients with Immediate-hypersensitivity to PCN because cross-reactivity to cephalosporins may occur in rare cases (<1%).

Macrolides are the treatment class of choice for PCN allergic patients with GABHS pharyngitis, unless local resistance has been identified. Macrolides are also broad-spectrum and beta-lactamase-resistant antibiotics. Azithromycin is the most popular antibiotic in this class because it has fewer side effects, a short treatment regimen and simple once daily dosing. It is also more expensive than PCN and some of the cephalosporins.
**Treatment of GABHS Pharyngitis in Children (cont.)**

Erythromycin is a cheaper drug in this class, but it is associated with more gastrointestinal side effects and requires 10 days of therapy. Routine prescribing of azithromycin for the treatment of GABHS has raised concern about increasing macrolide resistance. In 2002-2003 there was a 7% resistance rate of GABHS to macrolides in the U.S. In children who fail macrolide therapy, a throat culture and susceptibility testing should be performed to determine if macrolide resistant GABHS is present.

For children who have multiple GABHS pharyngitis infections a year, amoxicillin-calvulanate and clindamycin are the treatment of choice and both have comparable efficacy in the eradication of GABHS. Amoxicillin-clavulanate contains a beta-lactamase inhibitor protecting its antibiotic activity. The most common adverse effect of amoxicillin-clavulanate is diarrhea, which can lead to diaper rash in the very young and bathroom issues for children in school. Clindamycin is useful for patients who have a severe PCN allergy and failed treatment with a macrolide. Clindamycin is not for routine use because of the infrequent but significant side effect of pseudomembranous colitis.

Oral PCN is still the treatment of choice recommended by many guidelines for the treatment of GABHS pharyngitis, despite the increasing failure rate. A number of antibiotics have been found effective for the eradication of GABHS however they tend to be broad-spectrum and expensive. Alternative treatments, however, should be used for children with compliance issues, allergy, or PCN treatment failure. Antibiotic selection requires consideration of efficacy, duration of therapy, frequency of administration, potential side effects, patient allergy, and cost.

References:


