SELECTED ARTICLES

Diagnosis and treatment of pharyngitis in adults

Reviewed by: Timothy A.D. Graham, MD
University of Alberta, Edmonton, Alta.
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Clinical question
What is the best evidence-based diagnostic and therapeutic strategy for adults with acute pharyngitis?

Article chosen
Cooper RJ, Hoffman JR, Bartlett JG, Besser RE, Gonzales R, Hickner JM, et al. Principles of appropriate antibiotic use for acute pharyngitis in adults: background. *Arch Intern Med* 2001;134(6):509-17.

Objective
To provide principles of diagnosis and appropriate antibiotic use for immunocompetent adults with acute pharyngitis.

Background
Sore throat accounts for 1%–2% of all outpatient physician visits. Although the differential diagnosis is large, the vast majority have acute infectious pharyngitis. In adults, 5%–15% of these are caused by Group A β-hemolytic streptococci (GABHS), and most of the remainder are viruses. Historically, antibiotics have been prescribed in up to 75% of cases of acute pharyngitis in the United States, with the intention of decreasing the chances of getting rheumatic fever and other complications such as peritonsillar abscess. Inappropriate use of antibiotics can have significant negative consequences both to individual patients and to public health.

Study design
Using the key words sore throat, group A streptococcus, pharyngitis, tonsillitis, streptococcal pharyngitis, throat culture and strep, the authors conducted a systematic review of the English language literature from 1950 to 2000. They identified all randomized, controlled trials (RCTs) or meta-analyses of RCTs that contained clear definitions for inclusion, diagnosis and outcomes, as well as studies evaluating diagnostic strategies for GABHS pharyngitis. Medline, the Cochrane Library, and the references to the inception articles were searched to identify other studies. Many articles were methodologically flawed (for example, use of convenience samples), and these limitations were considered in their recommendations. The studies were too heterogeneous to mathematically summarize.

Evidence for antibiotic treatment of pharyngitis caused by GABHS
Trials conducted in the 1950s treating GABHS with penicillin administered intramuscularly showed that the number needed to treat for benefit (NNT_B) was 63 patients to prevent one case of acute rheumatic fever (ARF). However, the incidence of ARF was 60 times greater in 1965 than it was in 1994, raising the current NNT_B into the range of 3000–4000. Of those who do get ARF, permanent valvular dysfunction is most common after clinically severe carditis. Only about one-third of adults will get carditis, most will be mild or asymptomatic, and the likelihood of permanent cardiac dysfunction seems to be very small. Therefore the NNT_B to prevent a single case of clinically significant carditis is undoubtedly higher than above.

In addition, there is no clear evidence suggesting that antibiotic treatment decreases the chances of post-streptococcal glomerulonephritis. Studies in the 1950s and 1960s showed that the NNT_B was 27 to prevent 1 case of peritonsillar abscess. However, a recent review of 30 000 patients suggested that almost half of patients with peritonsillar abscesses present with an abscess, without having been treated for a sore throat beforehand.

Antibiotics may be useful in reducing disease transmission during epidemics and in areas of overcrowding or close contact. Antibiotics started within 2 to 3 days of symptom onset reduce symptom duration by 1–2 days in patients with GABHS, but confer no benefit to those who have other causes of sore throat. Overall patient satisfaction seems more closely related to the physician addressing the patient's concerns rather than receiving an antibiotic.

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Diagnosing GABHS

The authors no longer recommend throat cultures in the routine work up of pharyngitis, citing their inability to distinguish acute infection from carrier status, problems with unpredictable user- and lab-dependant variables, and the fact that culture results are rarely available in time to decrease symptoms. Using clinical decision tools such as the Centor criteria[1] or rapid antigen testing (RAT) are recommended,[2] each resulting in diagnostic accuracy of ≥70% (sensitivity ≥70%, specificity ≥70%). They allow real time decision-making, and the opportunity to decrease symptoms. Culture is not generally recommended to confirm a negative RAT.

The Centor criteria[1] include 1) tonsillar exudate, 2) anterior cervical adenopathy, 3) history of fever >38C°, and 4) no cough. The Centor criteria have sensitivities of 65%–83% and specificities of 67%–91%. The presence of 3 or 4 of these criteria have a positive predictive value of 40%–60% and the absence of 3 or 4 have a negative predictive value of approximately 80%. Compared with throat culture, the sensitivity and specificity of the presence of 3 or 4 criteria are 75% and 75%.

Recommendations

1. The authors recommend clinically screening all patients with pharyngitis using the Centor criteria [level A evidence].
2. Do not test or treat patients with none or 1 of these criteria; they are unlikely to have GABHS [A].
3. For patients with 2 or more criteria, 3 strategies are appropriate: a) test using RAT, and limit therapy to those with a positive result [D]; b) test patients with 2 or 3 criteria by doing a RAT, and limit therapy to those with a positive RAT or 4 criteria [D]; c) do not do any diagnostic tests and limit antibiotic therapy to patients with 3 or 4 criteria [B].
4. Do not perform throat cultures for the routine evaluation of adults with acute pharyngitis, or for confirmation of negative RAT when the test sensitivity exceeds 80% [A]. Cultures may be indicated to investigate outbreaks, for monitoring for resistant organisms or when pathogens such as gonococcus are being considered [A].
5. Administer appropriate analgesics, antipyretics and supportive care to all patients with pharyngitis [A].
6. Penicillin is the antibiotic of first choice. If allergy is a concern then erythromycin is second choice.

Conclusion

A diagnostic and therapeutic rationale that limits antibiotic therapy to those most likely to benefit must take into account the low prevalence of GABHS in adults, the low chance of adverse sequelae if they do have GABHS, and the risk to benefit ratio of prescribing antibiotics.

Comments

This is one of a series of articles presenting evidence-based clinical practice guidelines for common disease like sinusitis and bronchitis that are endorsed by the Centers for Disease Control, the American Academy of Family Physicians and the American College of Physicians–American Society of Internal Medicine. Their position on throat cultures has created controversy and may seem unfamiliar in the Canadian context, where RAT is less common that in the US. Using strictly clinical criteria alone results in a strategy that identifies and treats most people with GABHS, at the expense of overtreating some. It recognizes, however, that this is a disease for which there is no perfect gold standard test. It contains interesting commentary on the pitfalls of diagnostic testing for a disease that has a low incidence and few sequelae. The rareness of clinically significant sequelae of GABHS should be comforting. Although the authors stop short of saying that this is a disease for which we should not test or treat, in some countries (e.g., Norway and the Netherlands[2,3]) this approach is being adopted. The Cochrane database concludes that antibiotics confer only modest benefit and that preventing suppurative and non-suppurative complications in modern Western society can only be achieved at the expense of treating many with antibiotics who will derive no benefit.[4] Using the Centor criteria for most treatment decisions and reserving throat cultures for tracking epidemics and resistance may be the most cost-effective approach and may de-medicalize sore throats, although this has yet to be studied.

Competing interests: None declared.

References

1. Centor RM, Witherspoon JM, Dalton HP, Brody CE, Link K. The diagnosis of strep throat in adults in the emergency room. Med Decis Making 1981;1(3):239-46.
2. Rosenberg P, McIsaac W, MacIntosh D, Kroll M. Diagnosing streptococcal pharyngitis in the emergency department: Is a sore throat score approach better than rapid streptococcal antigen testing? CJEM 2002;4(3):178-84.
3. Flottorp S, Oxman AD, Cooper JG, Hjortdahl P, Sandberg S, Vorland LH. [Guidelines for diagnosis and treatment of sore throat.] Lakartidningen 2000;97(40):4437-42, 4445-6, 4448.
4. van den Bosch WJ. [Penicillin for acute throat infections. Are there arguments for modifying the guidelines of the Dutch College of General Practitioners?] Ned Tijdschr Geneeskd. 2001; 145(13):612-3.
5. Del Mar CB, Glasziou PP, Spinks AB. Antibiotics for sore throat [review]. Cochrane Database Syst Rev 2000;(2):CD000023; Update in: Cochrane Database Syst Rev 2000;(4):CD000023.

Correspondence to: Dr. Timothy A.D. Graham; drtimgraham@yahoo.com