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REVIEW

The sore throat: a clinical approach to tonsillopharyngitis

A Marais, M Leuschner

Department of Pharmacology, School of Medicine, Faculty of Health Sciences, University of Pretoria, South Africa
Corresponding author, email: dramarais@gmail.com / andre.marais@up.ac.za

Acute sore throat is a common complaint encountered by medical practitioners and health care workers routinely. The disease is mostly caused by viral infections of the upper respiratory tract and is usually self-limiting. Symptoms rarely exceed two weeks, irrespective of the cause. Group A beta-haemolytic streptococci accounts for the majority of bacterial instances of tonsillopharyngitis. Clinical examination is not always adequate to diagnose bacterial infections, resulting in the irrational and over-prescribing of antibiotics, especially in upper respiratory tract infections, contributing to communal antimicrobial bacterial resistance. A few scoring systems are available to assist physicians in deciding on the aetiology without resorting to unnecessary laboratory investigations. This article briefly reviews the scoring systems and antimicrobial management of streptococcal throat infections.

Keywords: Centor score, FeverPAIN score, Group A beta-haemolytic streptococci, pharyngitis, tonsillitis

Introduction

Acute sore throat (mainly referring to pharyngitis and tonsillitis) is one of the most common reasons patients of all ages consult their family physician. It is argued that approximately 50% of all cases are seen in children and adolescents younger than 18 years, after which it steadily declines, but peaks again at 40 years.[1] Although precise local figures are difficult to substantiate, European and American epidemiological surveys suggest that infectious causes for sore throat account for approximately 95% of all cases.[2] Of these infectious causes, 50–80% may be attributed to viral pathogens in adults and children below the age of 5 years. These predominantly include the rhinovirus, adenovirus, coronavirus or various strains of influenza A and B viruses.[3] The incidence of viral infections in persons between 5 and 15 years is slightly lower and accounts for about 70%, with the remaining 30% attributed to bacterial organisms. Bacterial causes of sore throat in adults account for 5–15% of cases. It is common for bacterial tonsillopharyngitis to develop after a preceding viral infection.[4]

Streptococcus pyogenes, classified as a Group A beta-haemolytic streptococci (GAS), is the most common bacterial source of infection associated with acute tonsillopharyngitis. Etiological data suggests that 5–35% of all bacteriological cases of sore throat, can be attributed to this organism. Other less frequently isolated bacterial causes include Group B and C streptococci (*S. agalactiae, S.anginosus*), *Clamydia pneumonia, Heamophilus influenza, Neiseria meningitides, Mycoplasma pneumonia, Corynebacterium diphteriae and Fusobacterium necrophorum*.[3] The incidence of GAS pharyngitis usually peaks during winter and early spring.

Group A streptococcal prediction criteria

It is often a difficult decision to assess the need and employ rational prescription principles in treating patients presenting with sore throat or upper pharyngeal infections. According to the Infectious Diseases Society of America (IDSA), unsystematic clinical observations, physical examination and history taking provide a very low quality of evidence in reliably diagnosing GAS tonsillopharyngitis. Clinical features fail to differentiate between GAS and viral causes unless unmistakable symptoms such as oral ulcers, hoarseness, rhinorrhoea, conjunctivitis, rash and a non-productive cough are present, which favours the diagnosis of a viral origin.[5] Taking into account the local or area specific microbial/viral incidence patterns, antimicrobial resistance, and the ever-present patient expectations in receiving "something more than just symptomatic treatment" remains a reality faced by family physicians and medical practitioners on a daily basis. A recent European survey found that approximately 30% of patients presenting with symptoms of acute upper respiratory tract infections expect their physician to prescribe an antibiotic.[6]

Ideally, the features of an acute sore throat would show the most benefit in identifying the causative organism by performing a nasopharyngeal culture swab. This method still remains the gold standard in diagnosing GAS pharyngitis despite newer and quicker rapid antigen detection tests (RADT) being available.[7] However, culture determination is not always a practical investigational tool, and has created the need for developing well-founded clinical scoring systems to assist in reducing unnecessary laboratory investigations and the prescription of antibiotics.[8] Two of these scoring systems (or adaptions thereof) may be of benefit in treating sore throat, one being the Centor score (Table 1), and the other, the FeverPAIN score (Table 2). Both scoring tools measure interchangeable characteristics, and

are useful for predicting acute bacterial tonsillopharyngitis on condition that the onset of symptoms does not exceed three days. Patients presenting with longer duration or worsening of symptoms require additional investigations, since the differential diagnosis may be entirely different from that of uncomplicated acute tonsillopharyngitis. In these patients conditions such as Epstein-Barr virus (infective mononucleosis), cytomegalovirus, peritonsillar abscess, retropharyngeal abscess, epiglottitis, acute HIV or Lemierre syndrome (postanginal septicaemia) need to be excluded as they may lead to a multitude of complications, including airway obstruction.[9]

The Centor criteria were developed for patients attending UK emergency rooms with complaints of sore throat. The score provides an indication of the likelihood of a sore throat being due to bacterial infection.[10] Scores range from 0 to 4 and one point is allocated to each positive predictor as indicated in Table 1. An additional point may be added in patients below the age of 15 years, while another point may be subtracted in those aged above 44 years.

Table 1. The Centor score

Centor criteria	Score
Tonsillar exudate	1
Tender anterior cervical adenopathy	1
Fever over 38 degrees	1
Absence of cough	1

The FeverPAIN score (Table 2) is based on a diagnostic cohort study in which five clinical variables were associated with the presence of Group A - β-haemolytic streptococci. A value of one point is assigned to each positive variable, and provides an indication of the likelihood of a sore throat being caused by a streptococcal infection.[8]

Table 2. The FeverPAIN score

FeverPAIN criteria	Score
Fever (during the previous 24 hours)	1
Purulence or puss on the tonsils	1
Attend rapidly (within 3 days after onset of symptoms)	1
Severely inflamed tonsils	1
No cough or coryza	1

People who are unlikely to benefit from an antibiotic or throat culture include those with a FeverPAIN score of 0 or 1, or a Centor score of 0, 1 or 2.

Management

Acute sore throat usually does not require intense treatment and often resolves after 10–14 days regardless of the cause. People who are unlikely to benefit from an antibiotic, as determined by scoring tools, should be encouraged to seek medical help if no improvement is witnessed after one week, or when a worsening of symptoms is experienced. Backup antibiotic prescriptions may be considered in patients with FeverPAIN scores of 2 or 3, on the condition that the antibiotic should only be taken if no symptom improvement is observed after 3–5 days of conservative treatment.[11] The use of immediate appropriate antimicrobial therapy in GAS, as determined from FeverPAIN scores of 4 or 5, or Centor scores of 3 or 4, have shown an average reduction in symptoms of 16 to 24 hours.[12] Antimicrobial therapy is useful in reducing both the suppurative (sinusitis, otitis media, peritonsillar abscess, cellulitis, meningitis or bacteremia), and non-suppurative (glomerulonephritis, acute rheumatic fever, and reactive arthritis) complications associated with streptococcal infections.[13]

The current standard treatment guidelines and essential medicines list for South Africa still recommend oral penicillin V (phenoxymethylpenicillin) 500 mg two to three times daily for 10 days in adults and adolescents weighing more than 30 kg as the first line option in those with GAS. A single intramuscular dose of 1.2 million units of benzathine penicillin (Pen G) could also be considered. Equivalent dosages in children weighing less than 30 kg amount to 250 mg oral penicillin V, or 600 000 units Pen G intramuscularly for the same duration given to adults.[14] Penicillin is favoured because of the relatively low cost, narrow spectrum and limited side effects. In addition, penicillin is the only antibiotic used in the treatment of GAS tonsillopharyngitis which reduces the incidence of acute rheumatic fever.[15] Oral amoxicillin (or amoxicillin-clavulanate) at a dose of 50 mg/kg for 10 days may be used as an alternative in both adults and children. Amoxicillin suspensions are commonly preferred in smaller children due to the more pleasant taste and ease of administration compared to penicillin V. In addition, amoxicillin displays more reliable absorption, longer plasma half-life and lower protein binding.[16] Alternative first options for individuals with penicillin allergy or intolerance include a loading dose of 12 mg/kg azithromycin followed by 6 mg/kg for 5 days, or a course of clarithromycin 7.5 mg/kg/dose twice daily for 10 days. Generally, cephalosporins should be avoided in individuals with a penicillin allergy owing to the similar mechanism of action and cross sensitivity it shares with penicillin. A third line option with 7 mg/kg/dose clindamycin three times daily may also be effective in patients with resistance towards the macrolide antibiotics.[5,11] With the exception of azithromycin displaying a prolonged post-antibiotic effect, more effective eradication of GAS is achieved if treatment is continued for at least 10 days. Individuals may return to school or work following at least 24 hours of antibiotic treatment, since the disease is no longer infectious after this period.[15] Follow-up visits are seldom required.

Analgesic and antipyretic therapy with paracetamol or non-steroidal anti-inflammatory agents such as ibuprofen or diclofenac are recommended to treat moderate or severe pain and fever associated with tonsillopharyngitis. However, these drugs provide restricted and often unsatisfactory pain relief.[17] Administration of a single low dose corticosteroid, such as 10 mg dexamethasone, has been shown to provide significant and sustained pain relief in both adults and children above 5 years with acute sore throat. Contrary to belief, several studies have shown that short courses and low doses of corticosteroids do not elicit adverse events associated with those of long term use, and are therefore beneficial in symptomatic treatment of sore throat.[18] Additional symptomatic treatment consists of

local anaesthetic and anti-inflammatory gargles or lozenges, including adequate hydration and rest.

Conclusion

Sore throat is a common symptom which is predominantly caused by viral pathogens. Group A *Streptococcus* is the leading global bacterial cause of tonsillopharyngitis. Different scoring tools are available to assist in deciding the necessity of prescribing antibiotics, or to embark on laboratory investigations. Streptococcal tonsillopharyngitis is generally associated with fever, cervical lymphadenopathy and the absence of rhinorrhoea or a cough. The mainstay of treatment involves analgesics and antipyretic agents, since the disease is mostly self-limiting. Narrow spectrum penicillin remains the drug of choice should treatment necessitate the use of antimicrobial agents. Persistent or recurrent symptoms warrant further investigation, including the possibility of antimicrobial resistance or debilitating chronic conditions. Strep throat has a low incidence of mortality unless the airways are compromised.

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