CLINICAL PRACTICE GUIDELINES

April 2003   **MOH/P/PAK/   (GU)**

MANAGEMENT OF SORE THROAT

MINISTRY OF HEALTH MALAYSIA   **ACADEMY OF MEDICINE MALAYSIA**

Statement of Intent

These guidelines are meant to be a guide for clinical practice, based on the best available evidence at the time of development. Adherence to these guidelines may not necessarily ensure the best outcome in every case. Every health care provider is responsible for the management of his/her unique patient based on the clinical picture presented by the patient and the management options available locally.

Review of the Guidelines

These guidelines were issued in April 2003 and will be reviewed in April 2005 or sooner if new evidence becomes available

CPG Secretariat
c/o Health Technology Assessment Unit
Medical Development Division
Ministry of Health Malaysia
21st Floor, Bangunan PERKIM
Jalan Ipoh
51200 Kuala Lumpur.

Available on the following website   : http:// www.moh.gov.my/medical/htm
                                     : http:// www.acadmed.org.my

FOREWORD

Sore throat is inevitably one of the most common symptoms experienced by people at one time or another. As there are many causes of sore throats, it is important that the medical practitioner be familiar with the possibilities so that the best evidence-based treatment can be offered to the patient. As infective etiologies of sore throat are arguably among the most common causes of sore throat and with widespread injudicious antimicrobial therapy for sore throat in the community, there is a danger of increasing antimicrobial resistance and untoward side effects of therapy. Furthermore, accurate clinical diagnosis of the most common infective pathogen for sore throat, i.e. Group A Streptococcus, is often difficult to establish. Diagnostic facilities for accurate detection of this particular organism are often lacking and results are often delayed in most ambulatory practices, compounding the difficulties in accurate diagnosis and appropriate management. Also, tonsillectomy has often been recommended for patients with recurrent sore throat although the indications may be questionable. It is with this multi-faceted background that a working group was commissioned to formulate a clinical practice guideline (CPG) on the management of sore throat, with unique reference to Group A Streptococcal pharyngitis because it is the most common bacterial cause of sore throat where treatment is indicated. It is hoped that this CPG will be able to address some of these issues and meet the needs of the medical practitioner towards managing this common symptom. Finally, I would like to acknowledge the fervent support of the Malaysian Society of Infectious Diseases & Chemotherapy and Pharmacia Malaysia for excellent secretarial assistance and publication of this document.

Dr Tan Kah Kee
Chairman

CLINICAL PRACTICE GUIDELINES DEVELOPMENT GROUP

Dr Tan Kah Kee   (Chairman)
Pediatric Infectious Disease Consultant
Department of Pediatrics
Seremban Hospital

A/Prof Dr Christina Tan
Dept of Primary Care
University Malaya Medical Centre, Kuala Lumpur

Dr Christopher Lee
Infectious Disease Consultant
Department of Medicine
Hospital Kuala Lumpur

Dr David Manickam
Consultant Pediatrician
Ipoh Specialist Center, Ipoh

A/Prof MT Koh
Pediatric ID Consultant
Department of Pediatrics
University Malaya Medical Centre, Kuala Lumpur

Dr Koh Tat Nee
Consultant ENT Surgeon
Department of Otorhinolaryngology
University Malaya Medical Centre, Kuala Lumpur

Dr Sobani Din
Consultant ENT Surgeon
Departmentt of Otorhinolaryngology
Selayang Hospital

Dr Tan Lian Huat
Consultant Physician
Infectious Disease Unit
University Malaya Medical Centre, Kuala Lumpur

GUIDELINE DEVELOPMENT AND OBJECTIVES

Guideline Development

Sore throat is a very common symptom in both children and adults, caused by many etiologies including infections due to bacterial and viral pathogens. It is also a common cause of presentation to medical practitioners. Sore throat is a frequent indication of antibiotic prescription in the community, resulting in significant healthcare costs and may potentially contribute to increasing antimicrobial resistance with widespread and inappropriate use of antibiotics. Furthermore, tonsillectomy is often recommended unjustifiably for patients with recurrent sore throat although the outcome is as yet undefined, and may potentially cause appreciable morbidity in some patients. Sore throat in this guideline refers to both tonsillitis and pharyngitis or both, occurring in the context of infection.

Objectives

The main aim of the guideline is to present evidence based recommendations to assist medical practitioners in providing a rational approach in the management of sore throat and also would highlight the need for rational and judicious use of antibiotics in its management.

Clinical Question

The clinical questions of these guidelines are:

    i.   What is the rational approach to the management of sore throat in the community?
    ii.   What is a reasonable criterion to refer cases for tonsillectomy?

Target Population

These guidelines are to be applied to both paediatric and adult patients from the community with complaints of sore throat.

Target Group

These guidelines are developed for all health care professionals involved in the diagnosis and management of cases with sore throat.

LEVELS OF EVIDENCE SCALE

I	Evidence obtained from at least one properly randomized controlled trial
II - 1	Evidence obtained from well-designed controlled trials without randomization
II - 2	Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one center or research group
II - 3	Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of the introduction of penicillin treatment in the 1940s) could also be regarded as this type of evidence
III	Opinions of respected authorities, based on clinical experience; descriptive studies and case reports; or reports of expert committees

SOURCE: U.S. / CANADIAN PREVENTIVE SERVICES TASK FORCE

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1.   INTRODUCTION

1.1   Epidemiology

The epidemiology of sore throats in Malaysia with respect to its prevalence, age-specific incidence, aetiology and complications has not been well studied and documented. In a 1984 hospital-based study involving three general hospitals in Kuala Lumpur, Kota Baru and Ipoh, acute respiratory infections (ARIs) was responsible for 44.1 % of all paediatric admissions (1). In a later study in 1996, the prevalence for ARIs in the preceding 2 weeks in children below 5 years was 39.3 %, of which 91% of the cases were upper respiratory tract infections (URTI). Although the prevalence of tonsillopharyngitis in these studies was not documented, undoubtedly URTI is the most common reason for seeking treatment in general practice and hospital outpatient departments. (2, 3)

Epidemiological data from Western countries on sore throat in general and specifically GABHS infections, both community and hospital-based, are more readily available. However, there is considerable variation in the prevalence of GABHS sore throats from one country to another (4-9). For example, in Dhaka 22 % of 601 children studied had a positive culture but only 2.2 % is due to GABHS. In Israel the prevalence is 15 % among 152 symptomatic children aged 3 month to 5 years old. In the Italian-French study, 26 % of 865 children from 5 months to 14 years had GABHS pharyngitis. Overall, the figure is less than 30 % in most countries. In the adult population GABHS is responsible for 5-10% of cases of acute pharyngitis (9, 10).

1.2   Economic cost

The economic impact of pharyngitis locally is not known due to paucity of studies, although this has been studied in some Western countries. In the adult population, about 6.7 million visits annually to a medical practitioner were for sore throat (12). In the UK it is estimated that visits for consultation for sore throat alone (before any investigation or treatment) cost the NHS £60 million per annum (13). Consequently, treating pharyngitis in both children and adults has significant economic and health impact.

2.   CLINICAL MANIFESTATIONS OF SORE THROAT

The etiologic agents of sore throat are listed in Table 1 (14). Viral pathogens are more frequent causes of infective sore throat compared to bacterial pathogens. GABHS is the most common bacterial cause of acute pharyngitis ,accounting for approximately 15-30% of cases in children and is also the only common form of pharyngitis for which antibiotic therapy is indicated (9,15). Streptococcal sore throat is usually rare in children < 3 years, occurring more frequently in children between 5-15 years old (9). Symptoms and signs of GABHS pharyngitis are fairly similar in children and adults. Symptoms include sudden onset of sore throat, pain on swallowing, fever, headache, abdominal pain, nausea and vomiting. Signs include tonsillopharyngeal erythema, tonsillopharyngeal exudate, soft-palate petechiae; beefy-red swollen uvula, swollen and tender anterior cervical lymph nodes and rash (9). Not all patients have the full-blown syndrome and many cases are milder and do not have exudates.

Table 1. Microbial Causes of Sore Throat*

Pathogen	Estimated %
Viral	
Rhinovirus	20
Coronavirus	>5
Adenovirus	5
Herpes virus	4
Parainfluenza virus	2
Influenza virus	2
Coxsackie A	<1
Epstein-Barr virus	<1
Cytomegalovirus	<1
HIV	<1
Bacterial	
Streptococcus , Group A	15-30
Streptococcus , Group C	5
Neisseria gonorrhoea	<1
Corynebacterium diptheriae	<1
Arcanobacterium haemolyticus	<1
Chlamydia pneumoniae	Unknown
Mycoplasma pneumoniae	<1

 * Adapted from Gwaltney JM et al (14)

Prevalence of GAS pharyngitis is significantly lower in adults, accounting for only 5-10% of cases (9). A recent study in Hong Kong revealed a rate of only 2.65% in those > 14 years of age (17). In both children and adults, the usual incubation period for streptococcal pharyngitis is 2-5 days (18).
The clinical picture in adults is characterized by an abrupt onset of the following:
- Sore throat associated with difficulty in swallowing
- Fever moderate (39-40.5°C)
- Chills maybe present but rigors rare
- Malaise
- Headache
- GI symptoms: anorexia, nausea, vomiting & abdominal pains (35-50% of cases) but not verified by objective studies.

Rhinorrhea, cough, hoarseness, conjunctivitis, and diarrhea are typically not seen in streptococcal infection, being more often seen in infections of viral aetiology (9, 19). However, there is a broad overlap in the clinical presentation of streptococcal and viral pharyngitis making it difficult clinically to differentiate between them. Some of these features have been used as a form of clinical scoring (one of which is described below) to assist clinicians in making a clinical diagnosis of GABHS pharyngitis (20-22).

A scoring system has been devised by McIsaac to increase the clinical diagnostic accuracy , based on age and four clinical symptoms ,i.e. tonsillar swelling /

exudates, swollen anterior cervical nodes, fever > 38^{0}C & lack of a cough (22). Even if a patient has all four classic symptoms, there is a significant probability that it is not Group A streptococcal sore throat. However , presence of certain clinical features such as rhinorrhea ,hoarseness , cough , conjunctivitis ,diarrhea and oropharyngeal ulceration may suggest a likely viral etiology (9,19,23).

3.   DIAGNOSIS AND LABORATORY INVESTIGATIONS

As the precise clinical diagnosis of GABHS pharyngitis is difficult , it is recommended that the clinician's decision to perform a laboratory test for a patient with suspected GABHS pharyngitis be based on the McIssac scoring system (Evidence level II-2)(22) . This system attempts to predict the probability that the pharyngitis is caused by GABHS. Hence, testing need not be performed for patients with acute pharyngitis whose clinical and epidemiological features do not suggest GABHS infection. Unless diagnosis of group A streptococcal pharyngitis can be confidently excluded, bacteriologic studies should be performed guided by this scoring system (Evidence level II-2). Selective use of the suggested diagnostic test for group A streptococci will result in an increase in both the proportion of positive test results and the percentage of patients with positive test who are truly infected than are merely carriers (Evidence level II-2). Methods for the diagnosis of group A streptococcal pharyngitis are based on recommendations from the Public Health Laboratory Service Standard Operating Procedure on Investigation of Throat Swabs (24) and the guideline on diagnosis of GAS pharyngitis by the Infectious Diseases Society of America (25).

3.1   Laboratory diagnosis

Culture of throat swab for the presence of GABHS remains the gold standard for the confirmation of the clinical diagnosis of acute streptococcal pharyngitis (Evidence level II-2). A single throat swab collected, transported and cultured under recommended conditions has a sensitivity of 90%-95% in detecting the presence of group A streptococcus in the pharynx. Variations in the collection, transport and culture methods can affect the accuracy of the culture results.

3.2   Specimen collection

Throat swab specimens must be obtained from surface of both the tonsils and the posterior pharyngeal wall. The mouth, uvula and oropharynx are not acceptable sites for sampling and the swab should not be contaminated by touching these sites before or after the sampling process. Manner in which the swab is obtained has an impact on the yield of streptococci from the throat culture (26, 27). Optimal time of specimen collection is at the onset of symptoms and before antimicrobial therapy is started.

3.3   Specimen transport and storage

Specimens should be transported and processed as soon as possible. Swabs should be transported in Amies or Stuart's transport medium. If processing is

delayed, refrigeration is preferable to storage at ambient temperature (24). Delays of over 48 hours are undesirable.

3.4   Specimen processing

The culture should be plated and streaked carefully and efficiently as described by Kaplan (28).The swab should be firmly rolled over onto approximately one-fifth of the 5% sheep blood agar surface (primary inoculation), this will ensure organisms present on one part of the swab make contact with the culture medium. Secondary inoculation is then carried out with a sterile loop and without heating the loop. A final inoculation with the loop is done with several stabs into the agar to allow observation of subsurface haemolysis. Some strains of group A streptococci are haemolytic only under conditions of reduced oxygen tension. Detection of *Streptococcus pyogenes* from culture plates is based on typical colony morphology with beta haemolysis. Figure 1 is an illustration of the streaking method reproduced from an American Heart Association's brochure (29). This method of streaking the culture medium is to minimize overgrowth or antagonism of *Streptococcus pyogenes* by the normal flora and to maximize the ability to detect beta – haemolysis.

4
Stabs with loop

1
Primary inoculation from cotton swab

2
Secondary inoculation with loop

3
Final inoculation with loop
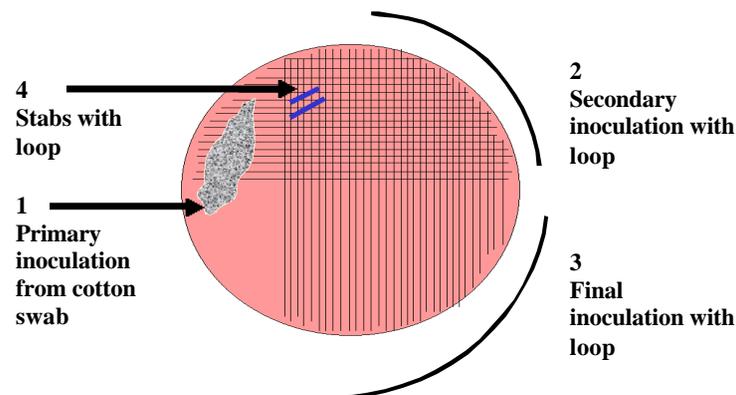
Figure 1.
Proper method for inoculation of blood agar plate for
**identification of group A beta haemolytic streptococci**

3.5   Atmosphere of incubation

The culture plates are then incubated at 35°C– 37°C for 18 –24h, aerobically, before they are read. Additional overnight incubation at room temperature allows identification of a considerable number of positive throat cultures (24). Therefore, it is recommended that plates which are negative during the first 24 hours are reexamined at 48 hours for growth resembling group A beta-haemolytic streptococci. Any colonies usually less than 1mm in diameter, grey-white or colourless with beta-haemolysis, dry or shiny and usually with an irregular outline is suggestive of group A streptococcus (Figure 2). Not all beta-haemolytic streptococci are Lancefield group A, therefore differentiation of group A from non-group A strains should be accomplished as stated below.
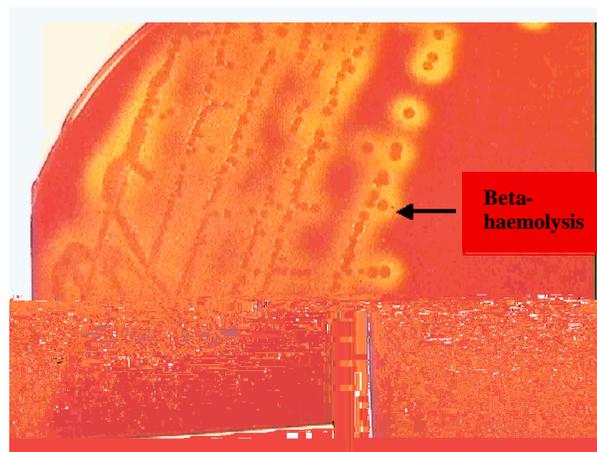
Figure 2.
Beta-haemolytic streptococci on sheep blood agar

Sensitivity to bacitracin (using a 0.004u disc) is used to assist in the identification of group A streptococci. This test provides a presumptive identification based on the observation that more than 95% of group A streptococci show a zone of inhibition around a disc of bacitracin (Figure 3) while 83%-97% of non-group A streptococci do not (30, 31).
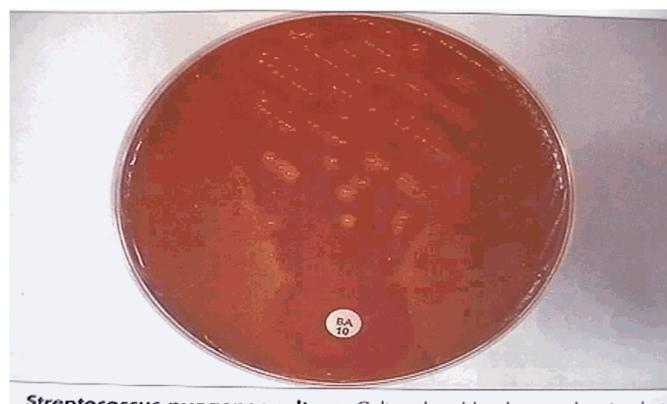
Figure 3.
Streptococcus pyogenes : zone of inhibition around
bacitracin disc.

A highly specific method (32) for identifying group A streptococci is by the detection of group specific cell wall carbohydrate antigen directly from bacterial cultures (Figure 4) , using group specific antiserum which are obtained commercially.
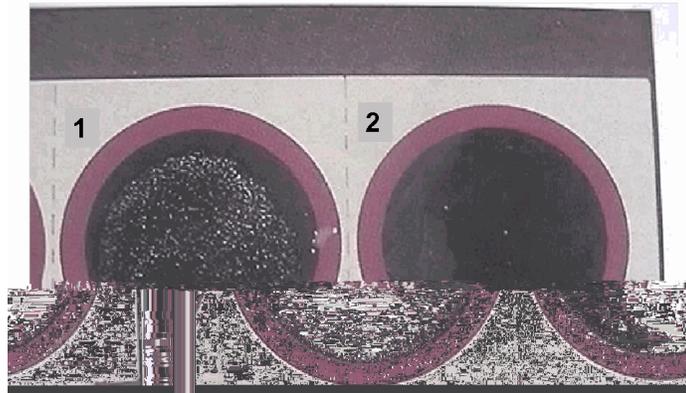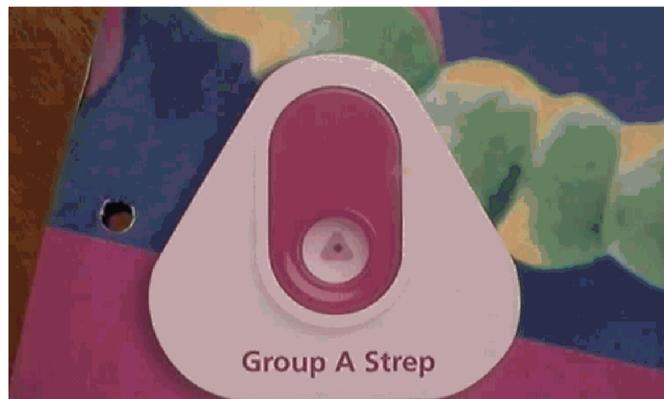

Figure 4.
Detection of group specific carbohydrate antigen from bacterial cultures.
Showing : 1-Agglutination (Confirms group A streptococcus)
2-No agglutination (Negative control)

3.6   Rapid Antigen Detection Tests (RADT)

With the availability of RADT (Figure 5) , group A streptococci can be identified directly from throat swabs. The former has an advantage of speed in providing

Figure 5.
Rapid Antigen Detection Test.

results (within minutes) as compared to the gold standard culture method (48 hours). Other advantages of this diagnostic test, besides being a point of care test, in view of its turn around time would help reduced the risk of spread of this infection, allow patients to return to work or school earlier, reduce acute morbidity as well as increase the number of patients appropriately treated for streptococcal pharyngitis (33). With the availability of RADT locally, as well as the excellent

specificity (>95%), this test allows therapeutic decisions to be made with greater degree of confidence during the patient's initial encounter with the clinician. Techniques of RADT include optical immunoassay and EIA (19, 34). Since local evaluation of the RADT has not been carried out and validated against throat culture, it is recommended that a negative RADT result should be confirmed with conventional culture methods (Evidence level II-2).

3.7   Recommendations for diagnosis

Diagnosis of acute GAS pharyngitis should be suspected on clinical and epidemiological grounds, and then supported by laboratory test. Either a positive throat culture or RADT provides adequate confirmation of GAS in the pharynx, but a negative RADT result should be confirmed with a throat culture, whenever possible. (Evidence level II-2).

4.   COMPLICATIONS

Complications of GABHS pharyngitis include both suppurative and nonsuppurative. Suppurative complications are peritonsillar abscess (PTA) and retropharyngeal abscess (RPA). Peritonsillar abscess is the most common complication of acute tonsillitis (35). 15-36% of patients with PTA had prior history of oropharyngeal infections (36-38).   PTA occur as a direct communication and progression of acute exudative tonsillitis and the incidence is mainly in adolescent (39, 40). 12-45% of patients with RPA had preceding history of upper respiratory illness and is more common in children under 3 years of age (41-45). Nonsuppurative complications include acute rheumatic fever, acute post streptococcal glomerulonephritis and reactive arthritis (16). The most important nonsuppurative complication is acute rheumatic fever which occurs approximately 3 weeks after streptococcal pharyngitis and its major clinical manifestations are arthritis, carditis, chorea, erythema marginatum and subcutaneous nodules (16). The risk of acute rheumatic fever complicating untreated streptococcal pharyngitis is 1% and at least one third of episodes of acute rheumatic fever result from sub clinical streptococcal infections (23, 46). However, a delay of therapy up to 9 days is acceptable without compromising the beneficial effects of antibiotics on the prevention of rheumatic fever (19, 23). Acute post streptococcal glomerulonephritis also usually occurs 3 weeks after throat or skin infection by Group A streptococci of specific nephritogenic serotypes. Although the general underlying mechanisms may be similar, they differ in their pathogenesis, clinical manifestations, epidemiology and potential morbidity.

5.   MANAGEMENT

Management of sore throat include 1) symptomatic treatment, 2) antibiotic therapy for GABHS pharyngitis and, if clinically indicated, 3) surgical treatment, including tonsillectomy.

5.1 Symptomatic treatment

Symptomatic treatment is an integral part in the management of children and adults with sore throat. It can be broadly divided into following categories:

1. General Measures (Evidence level III) (9, 47)
(a) Maintain adequate fluid intake.
(b) Warm water gargle

2. Simple Analgesics / Antipyretics (48, 49)
Paracetamol is an effective and safe analgesic and antipyretic. It is the drug of choice for analgesia in sore throat (Evidence level I). Aspirin is not recommended for general use especially in children because of the risk of Reye's syndrome.

3. Non-Steroidal Anti-inflammatory Agents (NSAIDs)
Ibuprofen, one of the many non-steroidal anti-inflammatory agents (NSAIDs) available has been used increasingly in the recent years for the treatment of pain and fever in children as well as adults with sore throat. Studies suggest that it is safe and effective alternative for analgesia and antipyrexia compared to placebo, aspirin or paracetamol but their sample size were relatively small(Evidence level I) (48-50). As NSAIDs are well recognised to be associated with significant risk of gastrointestinal bleeding, their routine use in the management of sore throat is not recommended.

4. Throat Lozenges / Gargles
Throat lozenges and gargles are frequently used by the patient even before they see a general practitioner. They are helpful as adjunctive therapy especially in those with significant throat pain or discomfort (Evidence level I & II-2)(51-55).

5. Others
Dexamethasone has been used as an adjuvant therapy for severe acute exudative pharyngitis and was found to be able to result in more rapid onset and greater degree of pain relief (Evidence level 1)(56). However, the study only involved small number of patients and further studies are needed to evaluate its effectiveness and safety especially those with positive culture.

Vaccination against both influenza and pneumococcus has been shown to be able to result in significant reductions in the number of future episodes of acute sore throat (Evidence level I) (48). Similarly, spraying the throat to colonise it with less pathogenic streptococcus appeared to reduce sore throat recurrences. However data on these measures are still limited and need further evaluation before they can be recommended for routine use in sore throat.

5.2 Antibiotic therapy for GABHS pharyngitis

The majority of sore throats are of viral origin and do not need antibiotic therapy.Antibiotics should not be used routinely to secure symptomatic relief in sore throat (Evidence level I) (57). Antimicrobial therapy is of no proven benefit in the treatment of acute pharyngitis due to bacteria other than Group A streptococci (9). The exceptions are infections caused by Corynebacterium diptheriae and Neisseria gonorrhea. Over-prescription of antibiotics for sore

throat may lead to emergence of antibiotic resistance and exposes the patient to potential adverse effects (9). Ideally, a throat swab should be taken before starting empiric antibiotics and treatment started only for documented Group A streptococcal infection. However, due to practical constraints such as lack of accessibility and cost of throat cultures and lack of follow-up, antibiotics may be started if streptococcal sore throat is clinically suspected, the patient is toxic-looking and follow-up is not possible. The objectives of treating Group A streptococcal pharyngitis are to prevent acute rheumatic fever, prevent suppurative complications, decrease infectivity and shorten the clinical course of the disease. Penicillin remains the drug of choice for Group A streptococcal pharyngitis because of its proven efficacy, narrow spectrum, safety and low cost (Evidence level I) (19, 23, 58). There has never been a clinical isolate of Group A streptococci documented to be resistant to penicillin so far. If oral therapy is chosen, a full 10-day course of treatment is recommended to ensure maximal rate of eradication of the infection from the pharynx. Erythromycin may be considered in patients who are allergic to penicillin (Evidence level I) (59-61), while clindamycin may be offered to those patients who are both penicillin-allergic and erythromycin-intolerant (Evidence level II-1) (60).

5.2.1 Antibiotics for streptococcal sore throat: Pediatric age group

Oral: Penicillin V – 250mg bid or tid x 10 days
Intramuscular: Benzathine penicillin - <27kg: 600,000 units x 1 dose;
>27kg: 1,200,000 units x 1 dose

For patients allergic to penicillin:

> erythromycin estolate: 20-40mg/kg/day bid-qid (max. 1g/day) x 10 days
> erythromycin ethylsuccinate: 40mg/kg/day bid-qid (max. 1g/day) x 10 days

For patients allergic to penicillin & also erythromycin-intolerant:

> Clindamycin : 20-30 mg/kg/day tid x 10 days

Clinical response of children with Group A streptococcal pharyngitis to appropriate antimicrobial therapy is usually evident within 24-48 hours. Persistence of symptoms beyond 48 hours may indicate alternative causes such as viral pharyngitis, development of suppurative complications such as peritonsillar abscess and warrant reassessment. Recurrence of acute streptococcal pharyngitis following a course of antibiotic therapy may be due to inappropriate antibiotic therapy (e.g. cotrimoxazole), inadequate dose or duration of previous therapy, non-compliance and co-pathogenicity by beta-lactamase producing organisms (19). Therapy with intramuscular benzathine penicillin (Evidence level I) (62), clindamycin (Evidence level II-1) (63-65), amoxycillin-clavulanate (Evidence level II-1) (66) and cefuroxime (Evidence level II-1) (67) may be beneficial in these cases. Although broader spectrum oral antibiotics such as second and third generation cephalosporins and newer macrolides demonstrate both clinical and bacteriologic efficacy, emergence of antimicrobial resistance and high cost are practical concerns (19, 68).

5.2.2 *Antibiotics for streptococcal sore throat: Adults*

Acute pharyngitis (sore throat) is one of the most frequent illnesses seen at primary care level. Although the group A streptococcus is the most common bacterial cause of acute pharyngitis, only a small percentage of patients with this condition are infected by group A streptococci. The majority of sore throats are viral in nature. Antibiotics confer relative benefits in the treatment of sore throat. However, the absolute benefits are modest (Evidence level I) (69).

Group A streptococcal pharyngitis is the only commonly occurring form of acute pharyngitis for which antibiotic therapy is definitely indicated (19). Antibiotics reduce the incidence of both suppurative and non-suppurative complications of sore throat (70). Therefore, for a patient with acute pharyngitis, the clinical decision that usually needs to be made is whether the pharyngitis is attributable to group A streptococci.

Patients with acute streptococcal pharyngitis should receive therapy with an antimicrobial agent in a dose and for a duration that is likely to eradicate the infecting organism from the pharynx. A number of antibiotics have been shown to be effective in treating group A streptococcal pharyngitis. These include penicillin and semi synthetic penicillin's, ampicillin and amoxycillin, as well as numerous cephalosporins and macrolides and clindamycin.

As in children, penicillin remains the drug of choice because of its proven efficacy, safety, narrow spectrum, and its low cost. Phenoxymethylpenicillin or penicillin V, 250 mg t.i.d. or q.i.d (Evidence level II-1) or 500 mg b.i.d(Evidence level III) is recommended for 10 days(71). Shorter treatment eradicates GAS less effectively and clinical recurrence level is more common (Evidence level I) (72-73).

Erythromycin is a suitable alternative for patients allergic to penicillin (in four times daily or twice daily dosage)(Evidence level II-2). However, unwanted gastrointestinal effects are common. Newer macrolides such as clarithromycin cause fewer unwanted side effects but are expensive and no more effective against resistant strains. First generation cephalosporins are also acceptable for patients allergic to penicillin and who do not manifest immediate-type hypersensitivity to β-lactam antibiotics.

For the rare patient infected with an erythromycin-resistant strain of group A streptococcus who is unable to tolerate β-lactam antibiotics, clindamycin is an appropriate alternative.

5.3 Surgical treatment

There are four randomized controlled trials (RCT) on tonsillectomy versus non surgical intervention studies in children (74-78) but no RCT in adults. Scottish Intercollegiate Guidelines Network advised more than 5 episodes (47) and American Academy of Otolaryngology more than 3 episodes as indication for tonsillectomy (74). Non-controlled studies demonstrated reduction in number of sore throats and improved general health with tonsillectomy (79-81).

Indications for tonsillectomy are recurrent tonsillitis and peritonsillar abscess or quinsy that fulfills following criteria:
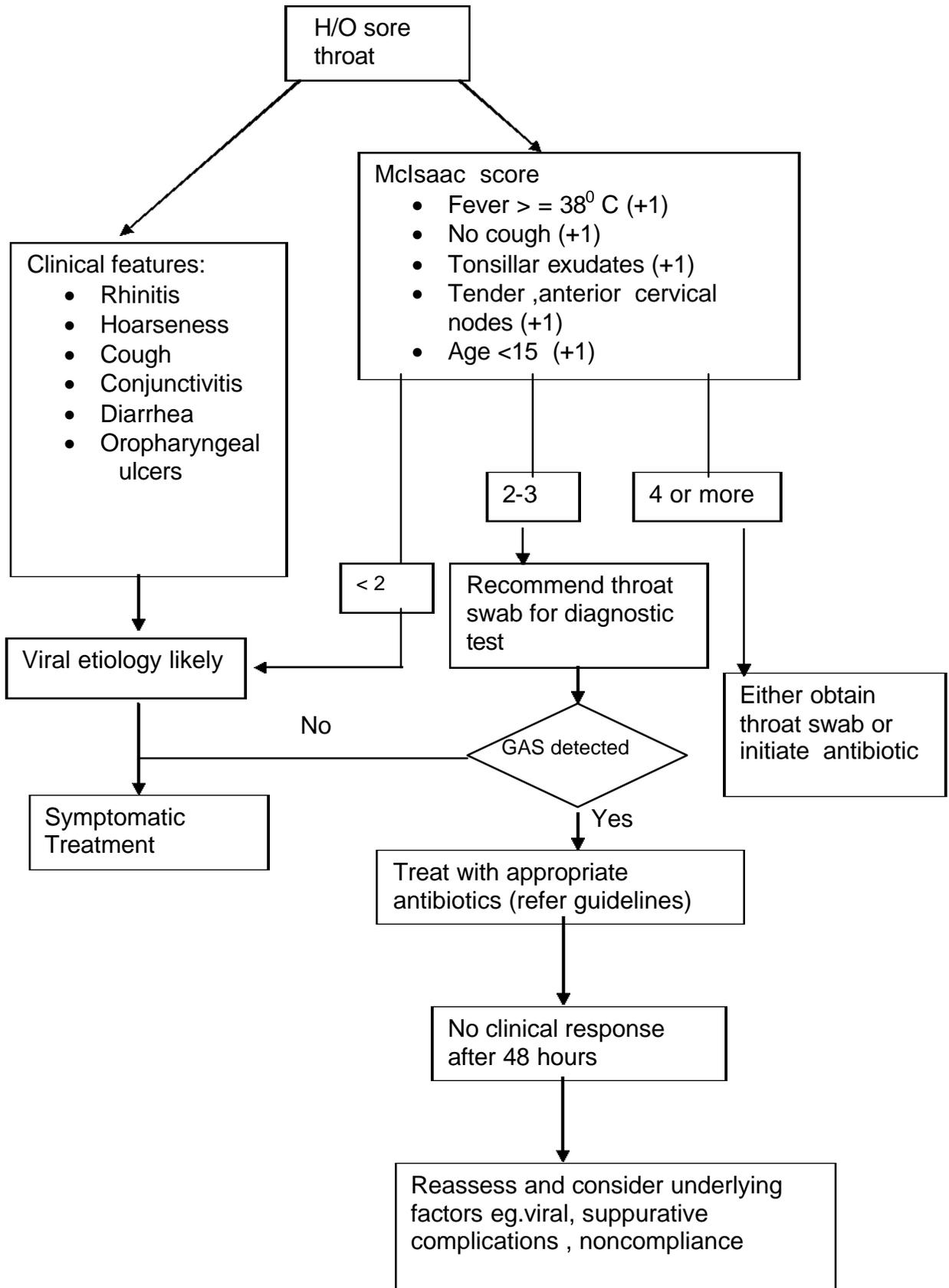
a) Recurrent tonsillitis
   i)   The symptom of sore throat is due to inflammation of the tonsils.
   ii)   > 6 episodes of tonsillitis over a 12-month period.
   iii)   Duration of symptoms should be over a 12-month period.
   iv)   The symptoms interfere with the patient's normal daily function.

   All the above criteria must be met before tonsillectomy is performed for recurrent tonsillitis (Evidence level III).

b) Peritonsillar abscess or quinsy
   i)   Tonsillectomy indicated when the abscess has failed to respond to appropriate antibiotics together with incision and drainage. This is rarely required (Evidence level III). It is an accepted surgical practice that all abscesses should be drained.
   ii)   Tonsillectomy is indicated if patients develop quinsy and has a history of recurrent tonsillitis (Evidence level III) (82-87). However, one episode of quinsy and no significant history of tonsillitis is not an indication for surgery.

6. ALGORITHM FOR MANAGEMENT OF SORE THROAT

H/O sore throat

Clinical features:
- Rhinitis
- Hoarseness
- Cough
- Conjunctivitis
- Diarrhea
- Oropharyngeal ulcers

McIsaac score
- Fever $> = 38^0$ C (+1)
- No cough (+1)
- Tonsillar exudates (+1)
- Tender ,anterior cervical nodes (+1)
- Age <15 (+1)

2-3

4 or more

< 2

Recommend throat swab for diagnostic test

Viral etiology likely

Either obtain throat swab or initiate antibiotic

No

GAS detected

Yes

Symptomatic Treatment

Treat with appropriate antibiotics (refer guidelines)

No clinical response after 48 hours

Reassess and consider underlying factors eg.viral, suppurative complications , noncompliance

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