Sore Throat

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Key questions

What's the goal of treatment of sore throat

Acute rheumatic fever (ARF) prevention is the key goal in the NT context. Antibiotic (specifically IM penicillin) treatment of sore throat reduces ARF as a complication of group A beta haemolytic streptococcal (GABHS) sore throat to less than one-third of that expected in an untreated group.[8] The Cochrane review states ' . . . for Aborigines living in poor socioeconomic conditions, antibiotics (for the treatment of sore throat) may be justified to reduce the complication of ARF in this setting.'[8] Whether preventing ARF requires eradication of GABHS from the throat, rather than just treatment with penicillin per se, is controversial.[14 vs 8]

Symptom reduction? Antibiotic treatment has a relatively small effect on reducing symptom duration and severity.[7,8] However, most of the studies included in the Cochrane review were in adults, and many were not specific for group A strep-positive sore throat, thus the real benefit of antibiotics in symptom reduction in GABHS pharyngitis in children is likely to be substantially higher than reported by the Cochrane review.[16] Most GABHS pharyngitis patients improve in three to four days even without treatment.

Prevent suppurative complications? Antibiotic treatment does reduce these (e.g. quinsy), thought to be infrequent, complications.[8] Being so rare, they do not constitute a great burden of disease.

Reduce community load of GABHS? Given the already low (NT) throat carriage rates, anecdotal low GABHS pharyngitis rate, and high skin sore rates, this goal seems unlikely to be met.

Reduce infectivity? Patients are non-infective 24 hours after commencing antibiotic treatment.[14,9]

Minimise potential adverse effects of inappropriate antibiotic therapy.

Can streptococcal sore throat be diagnosed clinically

Most sore throats are of viral aetiology. Clinical prediction rules attempting to identify which sore throats are caused by GABHS have poor sensitivity and specificity[6], and are promoted in contexts of low ARF incidence (such as North America) to reduce antibiotic use. Rapid antigen tests have reasonable specificity[10], but poor sensitivity (see throat culture below), and detect only GABHS, not Streptococcus groups C or G.[7] The delay in 'diagnosis' and treatment inherent in the use of throat cultures would negate potential symptom improvement benefits of antibiotics, but would not affect ARF prevention (up to nine days post-onset of illness).

However, Del Mar reports ‘throat cultures probably only have a sensitivity of <30%, and a specificity of 70–80% for GABHS’[11], using a ‘gold standard’ of a rise in specific antibody titre, and allowing for a throat swab’s inability to differentiate carrier status from disease. Thus, current clinical prediction rules, rapid antigen tests, and throat cultures are mostly inappropriate for use in the NT, and not recommended in this protocol.

What is appropriate treatment for GABHS sore throat?

All treatment guidelines recommend penicillin, either benzathine penicillin IM single dose, or phenoxymethyl penicillin (penV) oral two to three times daily for 10 days.[4,14] For those penicillin allergic the options are oral erythromycin[14] or oral roxithromycin.[4] The addition of one to three days of procaine penicillin IM recommended in CARPA third edition is said to lead to more rapidly achieved higher serum concentrations of penicillin, in turn thought to lead to a quicker clinical resolution.[15] I could not find any published evidence on this. One published guideline offers the option of a single dose of procaine in addition to the benzathine[7], presumably because a commercial combination was available, while addition of procaine to benzathine makes the injection less painful. So the use of procaine is really on the recommendation of experienced clinicians, and the current CARPA manual. The weight of literature would support using only bicillin.

Compliance concerns have precluded the recommendation of 10 days oral penicillin in this guideline. If included, bd dosing is as good at ‘cure’ as tds or qid.[18]

Only IM penicillin has ‘level 1’ evidence supporting its role in prevention of ARF. Other newer agents have been shown to have equivalent GABHS throat clearance rates, and thus are proffered as alternatives, including daily amoxycillin for 10 days, and daily azithromycin for five days[2], but concerns including the rapid development of resistance of GABHS to macrolides[7], side effect profiles, cost, the ‘broad spectrum’ of some alternatives, and the decision to ‘save’ azithromycin for STDs and trachoma in the NT[15], all preclude the use of these agents in the current guideline.

The ‘new’ recommendation that antibiotic treatment of ‘simple’ sore throat be limited to those aged two to 25 years or with a history of ARF/rheumatic heart disease (RHD) brings CARPA in line with the Therapeutic Guidelines[4], and follows the observations that GABHS pharyngitis is rare in those under three years of age, and initial episodes of ARF rare outside the ages of five to 25 years.[15]

The use of ‘symptomatic’ treatment (antipyretics, oral fluids, rest, and aspirin or warm saltwater gargles) is widely recommended[4,7], though the evidence base could not be located.

Other issues in the NT context

Is GABHS pharyngitis the most significant precursor of ARF in the NT?

There are low pharyngeal carriage rates of GABHS in Aboriginal communities in the NT, but high pharyngeal carriage rates of group C and G streptococcus.[1] While there is no supporting evidence, this has raised conjecture as to whether strep C or G infection might lead to ARF.[1]

The incidence of sore throat and GABHS pharyngitis in Aboriginal children is unknown, but only 2–4% of ARF cases are preceded by sore throat in this group.[16,17] There is anecdotal evidence that only GABHS sore throat is

uncommon in Aboriginal children. Thus, the significance of the treatment of sore throat in primary prevention of ARF is not clear.[16]

The very high rates of group A streptococcal skin infections have implicated these in the epidemiology of ARF [3,5] but this 'requires further study'.[5]

The differential diagnosis

The protocol does not currently mention the differential diagnosis, especially URTI, EBV, gonococcal infection, herpes, and diphtheria. The editorial committee might consider inclusion of an opening statement such as: 'Most sore throats are caused by viruses, as part of an URTI. Clinical findings that make this more likely are: rhinorrhoea, cough, absence of large tonsils, absence of pus on the tonsils, and absence of tender cervical lymphadenopathy.'[4,6] The 'danger' of this would be undertreatment of GABHS pharyngitis. Also consider a closing statement such as: 'Also consider the possibility of other causes of sore throat, including URTI (the most common cause), glandular fever, gonococcal infection, herpes, and diphtheria.'

No data on the percentage of NT sore throats that are caused by GABHS, or other causes, or reinfection rates after treatment could be found.

Other issues of concern in the literature

Some studies suggest that immediate antibiotic treatment, while shortening the duration of symptoms and contagion, increases re-infection rates and decreases eradication, compared to a two to three day delay in treatment (in USA context).[12] Furthermore, recurrences are often milder illnesses, therefore may lead to less 'presentations' with GABHS pharyngitis, though the risk of sequelae is still real. It's possible that a more liberal use of penicillin may increase streptococcal carriage rates, with perhaps implications for ARF.

There is also a recent report of reduced microbiological efficacy of penicillin in eradicating GABHS after pharyngitis (>1/3 patients GABHS positive swabs at 10–14, or 29–31 days post treatment)[13], raising questions as to a possible need for increased doses of penicillin, and the role of re-infection, and family and close contacts.

Summary statement

Although antibiotic treatment of group A streptococcal pharyngitis may have some benefit in reducing severity and/or duration of symptoms, in Aboriginal patients the main aim is to prevent rheumatic fever and also to prevent the spread of disease-causing bacteria to others. Because of concerns about the timely availability of throat culture results and the limited sensitivity of throat culture when not performed by experienced staff, and because of the importance of not missing group A streptococcal pharyngitis in this population, it is recommended that all sore throats (in Aboriginal people aged two to 25 years, and in all patients with a history of ARF/RHD) be treated with antibiotics. Health staff should not attempt to use clinical features to distinguish likely group A streptococcal infection from other bacterial or viral pharyngitis, as clinical diagnosis is unreliable. Although most cases of rheumatic fever in the Aboriginal population do not follow a sore throat, and therefore will not be prevented

using this guideline, some cases of rheumatic fever may be prevented by antibiotic treatment.

[Editor: Given that the evidence for the benefit of giving additional high dose penicillin is anecdotal, we felt it was better to use wording that reflected this. Otherwise the management of severe tonsillitis is the same as any other pharyngitis, and the differentiation is not clear, so the separate protocol for severe cases was removed.

The option for refused benzathine was included partly because we are aware that many staff object to giving up their autonomy to make an assessment about someone being able to take a full 10 days of oral penicillin. This option, worded for those that refuse, should guide towards Pen V rather than roxithro.]

Medline key words: sore throat, streptococcus, rheumatic fever

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