

Acute sinusitis and sore throat in primary care

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SUMMARY

Sore throat and acute sinusitis are not straightforward diagnoses. Trying to guess the responsible pathogen may not be the best approach.

Being guided by empirical evidence may be more useful. It suggests some, but very few, benefits for antibiotics. This has to be balanced with some, but few, harms from antibiotics, including diarrhoea, rash and thrush.

Prescribers should also be aware of the risk of antibiotic resistance for the individual, as well as for the population as a whole.

GPs should explain the evidence for the benefits and the harms of antibiotics to patients within a shared decision-making framework.

Introduction

Sore throat and acute sinusitis are both common reasons for consultations in Australian primary care. However, deciding how to manage affected patients is far from straightforward.

Diagnosis

Acute respiratory infections involve the respiratory mucosa that lines the pharynx and nasal passages, including sinuses and upper airway. Accurate diagnosis is clouded by a very wide spectrum of different sources of illness, and a vast array of microorganisms that are associated with, and may cause, infection. Many of these bacteria are normally present as commensals. We probably shed different types of virus far more often than we suffer symptoms of a viral infection.

Symptoms can start at any mucosal site and go to any other – sniffles (nose), sore throat (tonsils or pharynx), acute cough (upper airway) and fever or malaise (systemic) – in any order (see Fig.).

Is the infection bacterial or viral?

Because the question of whether an infection is caused by bacteria or a virus underpins the conventional rational approach to management of infections, it has been the focus of much investigation. However, many studies of the microbiological environment of people with infection are difficult to interpret.

One of the organisms of greatest concern is group A beta-haemolytic streptococci. Historically, this infection has resulted in non-suppurative complications (acute rheumatic fever and glomerulonephritis), and secondary infections

such as acute otitis media, sinusitis and quinsy. It is notoriously hard to predict from clinical signs,¹ and culturing takes days, leaving only near-patient antigen testing as an option. Moreover, group A beta-haemolytic streptococci together with other organisms that cause respiratory infections (*Neisseria meningitidis*, *Haemophilus*, *Chlamydia* and *Legionella*) exist very commonly in people without symptoms. Before focusing too closely on diagnosis, it is worth thinking about its purpose. How will treatment be influenced by diagnosis?

Treatment

The natural course of both sore throat and sinusitis is spontaneous resolution. Three questions should be asked:

- Do antibiotics reduce the severity or duration of symptoms?
- Do they reduce any complications?
- Do other interventions relieve symptoms?

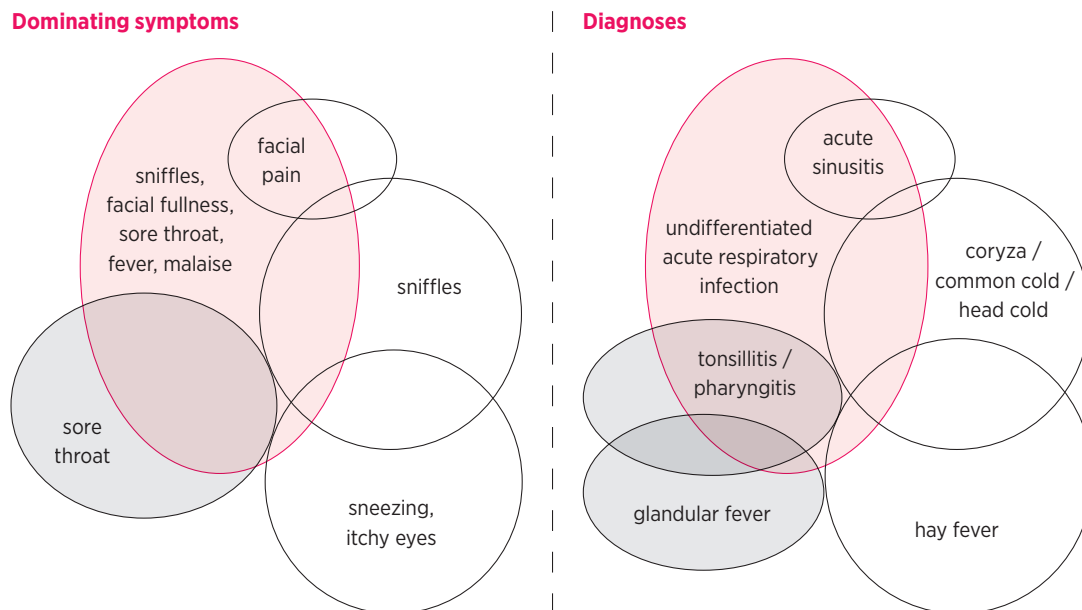
These are necessary questions because of the spectre of antibiotic resistance – something that is approaching a catastrophe.²

The evidence: antibiotics for acute sinusitis

In a Cochrane review investigating antibiotics for acute sinusitis, five studies randomised over 1000 patients to antibiotics or placebo.³ Analysis of the trials found there was a 0.66 risk ratio (95% CI* 0.47–0.94) if antibiotics were used, which

* CI confidence interval

Fig. Overlapping symptoms and diagnoses of different acute respiratory infections



means the relative risk of still having the illness at 1–2 weeks was 66% with antibiotics. Nevertheless, 86% of patients given placebo had recovered by 1–2 weeks anyway. This means that six out of every seven patients treated with antibiotics gained no benefit after 1–2 weeks, and by 16 to 60 days there was no difference in recovery and reports of complications between the antibiotic and placebo groups. The diagnostic inclusion criteria for the trials were rigorous with confirmation by X-ray or CT scan, or sinus puncture and aspiration. Clinical diagnosis was also more stringent than in normal clinical practice in Australia. The normal diagnostic spectrum of disease is much wider in general practice than in the trials, so the response to treatment would probably be less.

The evidence: antibiotics for acute sore throat

Another Cochrane review identified 15 trials (including 3621 participants) assessing antibiotics for acute sore throat.⁴ These trials reported on the incidence of symptoms three days after the patient had been seen by a clinician. (This is when the greatest benefit of antibiotics is evident.) In the control group, about 77% of patients were still experiencing throat soreness compared with 66% of patients given antibiotics (mostly penicillin). This represents a risk ratio of 0.68 (95% CI 0.59–0.79). The evidence is very robust (even a new well-conducted trial is unlikely to alter the summary effect substantively).⁴ The number of patients who need to be treated with antibiotics for

one of them to benefit is 3.7 for those who have a positive throat swab for streptococci, 6.5 for those with a negative swab, and 14.4 for those not swabbed. It should be noted that trials that did not swab had a less serious case mix.

So if symptom control is not a good enough reason for using antibiotics, are there other reasons? Historically, sore throat has been of greater concern for its complications than its symptoms. Of these, acute rheumatic fever dominates. It is hard for us to appreciate now, 100 years later, the fear of ‘strep throat’ that used to frighten parents. An analysis of 16 trials of 10 101 patients found that 10 days of penicillin for sore throat was highly protective against acute rheumatic fever, with a risk ratio of 0.20 (95% CI 0.18–0.44).⁴ However, the trials are now more than 50 years old, and acute rheumatic fever has been disappearing steadily since the start of the 1900s. (The discovery of antibiotics in the mid-1900s makes no discernible blip on this downward trend.) Now the risk of acute rheumatic fever is low – one case in every 10 GP-practising lifetimes – and is a weak justification for antibiotic use. In contrast, rural and remote indigenous communities of Australia experience acute rheumatic fever enough for antibiotic use for sore throat to be important.

Harms from antibiotics

Evidence is accumulating that antibiotics deliver common harms, including rashes, diarrhoea and thrush. However, data on adverse drug reactions are not comprehensive.⁵ If the infection is serious, these

common adverse reactions can be dismissed as trivial. However, if as in the case of antibiotics for sore throat and acute sinusitis, the benefits are marginal, antibiotic harms need to be factored in. GPs should discuss these harms, balanced against any benefits, with the patient before deciding on management.

Antibiotic resistance

There is also concern about antibiotic resistance. This is obvious for harm at the population level, but there is evidence that individuals carry antibiotic-resistant commensal bacteria for up to 12 months.⁶ The extent to which this compromises the effectiveness of antibiotics for subsequent potentially more serious infections has not been quantified.

Alternatives to antibiotics

Currently there are few effective alternatives to antibiotics in primary care. There is surprisingly little empirical evidence for the effectiveness of analgesics, and too little for other over-the-counter products (decongestants, several complementary and alternative medicines, caffeine) to recommend them. Steroids have been shown to be effective for acute sinusitis in four trials of 1943 patients.⁷ After 2–3 weeks, sinusitis resolved or improved in 73% of patients using intranasal steroids compared with 66% of those not using them, which means that 14 patients need to be treated for one to benefit.

REFERENCES

1. McIsaac WJ, White D, Tannenbaum D, Low DE. A clinical score to reduce unnecessary antibiotic use in patients with sore throat. *CMAJ* 1998;158:75–83.
2. Department of Health, Department of Agriculture. National Antimicrobial Resistance Strategy 2015–2019. Commonwealth of Australia; 2015. www.health.gov.au/internet/main/publishing.nsf/Content/ohp-amr.htm#tocstrategy [cited 2016 Jul 1]
3. Ahovuo-Saloranta A, Rautakorpi UM, Borisenko OV, Liira H, Williams JW Jr, Mäkelä M. WITHDRAWN: Antibiotics for acute maxillary sinusitis in adults. *Cochrane Database Syst Rev* 2015:CD000243.
4. Spinks A, Glasziou PP, Del Mar CB. Antibiotics for sore throat. *Cochrane Database Syst Rev* 2013:CD000023.
5. Gillies M, Ranakusuma A, Hoffmann T, Thorning S, McGuire T, Glasziou P, et al. Common harms from amoxicillin: a systematic review and meta-analysis of randomized placebo-controlled trials for any indication. *CMAJ* 2015;187:E21–31. <http://dx.doi.org/10.1503/cmaj.140848>.
6. Costelloe C, Metcalfe C, Lovering A, Mant D, Hay AD. Effect of antibiotic prescribing in primary care on antimicrobial resistance in individual patients: systematic review and meta-analysis. *BMJ* 2010;340:c2096. <http://dx.doi.org/10.1136/bmj.c2096>
7. Zalmanovici Trestioreanu A, Yaphe J. Intranasal steroids for acute sinusitis. *Cochrane Database Syst Rev* 2013:CD005149.
8. Hoffmann TC, Légaré F, Simmons MB, McNamara K, McCaffery K, Trevena LJ, et al. Shared decision making: what do clinicians need to know and why should they bother? *Med J Aust* 2014;201:35–9. <http://dx.doi.org/10.5694/mja14.00002>

FURTHER READING

Antibiotic. Version 15. In: eTG complete [Internet]. Melbourne: Therapeutic Guidelines Limited; 2016. www.tg.org.au [cited 2016 Jul 1]

Bringing this all together when talking to patients

The great challenge is communicating this complexity to patients, who might oversimplify the problem to the fact that there is infection, that it may be caused by bacteria and that antibiotics kill bacteria. A shared decision-making approach enables the clinician to explain the evidence to the patient clearly so they can join in when the health choices are made.⁸ When presented with evidence, patients are often surprised to find the benefits modest, with harms of the same effect size, and become less interested in pursuing antibiotics.

Conclusion

Treatment options for sore throat and acute sinusitis are few. However, the illnesses resolve without treatment and, with a few important exceptions, complications are rarely a problem. We probably do patients most good by excluding more sinister illness, and reassuring them that the illness will spontaneously resolve. ◀

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