The dangerous needles in the haystack of sore throats

The two reports of patients with sore throat published this month (p. 435, 436) highlight life-threatening aspects of that condition. Such rare but clinically highly significant entities remain buried among the far more common sore throats usually associated with the cold and wet British winter; but just because they are rare manifestations of a common disease leaves no room for complacency when assessing the patient with pharyngitis.

Despite a surfeit of publications on the subject, it is still not possible to accurately ascribe the relative importance of an individual pathogen because of the inherently stochastic nature of the condition, related to such variables as climate, epidemics, and local demographics. However, some simple rules can be drawn.

USUAL SUSPECTS

Ubiquitous viruses of several classes remain the front runners for pharyngitis, followed by *Streptococcus pyogenes*; unfortunately it is not easy to differentiate viral from bacterial causes. This subject is made all the more important by escalating antibiotic resistance caused by the widespread indiscriminate use of these agents.

The clinical uncertainty concerning the need for antibiotics in a sore throat which might harbour *S. pyogenes* has been addressed to some extent with rapid techniques which do not rely on organism growth. However, such techniques are not as sensitive as culture, and are not capable of yielding antibiotic sensitivities which are necessary in truly penicillin allergic patients (Kurtz et al, 2000).

Several other organisms also cause pharyngitis such as Group C and G streptococci, *Arcanobacterium haemolyticum*, and non-toxigenic *Corynebacterium diphtheriae*. An accompanying exanthem in a teenager may additionally suggest either virus or *Arcanobacterium haemolyticum* infection.

CLINICAL DECISION MAKING

There are several tiers of clinical decision making in assessing sore throats, namely whether to give any antibiotics at all, whether to bother looking for a causative agent (and if so what), and whether the sore throat in question might be a distinct entity in its own right by criteria of clinical severity, as these two cases demonstrate.

Leaving aside the clinically less severe cases, what clues might alert the physician that severe trouble is afoot? It is of course easy to also take a history of exposure to farm animals, their milk, or both. Many doctors probably still live in hope that such question might be answered in the affirmative, much like the sick parrot and the atypical pneumonia; a low pickup rate does not absolve one from asking.

Whether the predilection which necrobacillosis has for young adults is linked to an intriguing report suggesting that oral sex might be to blame is intriguing and to date unproven (Dellamonica and Bernard, 1999). Asking about recent travel to Russia is also important in the light of their epidemic of toxigenic *C. diphtheriae* (Markina et al, 2000). It is notable that 5 of the 10 cases of pharyngeal diphtheria seen in the UK between 1993 and 1999 were caused by *C. ulcerans* rather than *C. diphtheriae* (Efstratiou and George, 1999).

CLINICAL EXAMINATION

Clinical examination will reveal adverse features and prompt a putative organism: these features include abscess formation, quinsy, ulceration, vesicles, soft palate haemorrhage, and membrane formation. Inability to swallow saliva, trismus, swelling of the neck with or without evidence of large vein thrombosis, lymphadenopathy, and systemic toxicity are also adverse features.

In the case of pharyngitis severe enough to require hospital admission, a discussion between the physician and the microbiology laboratory at the time the swabs and blood cultures are taken would be valuable. The microbiologist at this point will doubtless remind the clinician to use transport swabs containing charcoal to increase the likelihood of isolation of anaerobes, as well as arranging for special media appropriate for diphtheria, necrobacillosis or both to be set up.

Pus (if there is any) is always preferable to swabs, and a Gram stain from a good quality specimen of pus may be all that is needed for a correct diagnosis to be rapidly made. Some laboratories may be able to offer gas liquid chromatography 'on the spot' — this technique allows the presumptive detection and identification of the presence of anaerobic organisms in pus within 30 minutes.

TREATMENT

If anaerobes are suspected, penicillin or metronidazole, both in high doses, are appropriate; in practice both would be given until the causative organisms become apparent. Any abscess should be drained as it is not reasonable to expect antibiotics to affect the natural history of large collections of foul infected necrotic tissue.

Necrobacillosis is classically a disease of young previously fit individuals, and unusually severe toxicity in

these patients should prompt not only this diagnosis but also a search for metastatic abscess (which may well also need draining), especially if bacteraemia is documented. These investigations include a chest X-ray, and a low threshold for imaging the liver and bones in the case of localizing signs.

If large neck vein thrombosis is suspected, colour Doppler imaging of the neck vessels seems to be the imaging technique of choice (Gudinchet et al, 1997). And finally, as with so many infections, a continuing fever almost invariably implies something other than incorrect or inadequate antibiotic therapy; sadly that may be the first time when undrained metastatic abscesses, usually in the lung but sometimes in liver or bone, make their presence known. HM

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KEY POINTS

- Always examine the fauces and neck of patients with pharyngitis.
- If there is systemic toxicity in a young patient, think of necrobacillosis and perform a chest X-ray to exclude metastatic abscess formation.
- If membranes are present immediately arrange for diphtheria antitoxin treatment, barrier nursing and antibiotics; afer isolation of a suspect corynebacterium all specimens should be sent to the Streptococcus/Diphtheria Reference Unit (SDRU) which operates a 24-hour reference service for this purpose (telephone 020 8200 4400).
- Always send pus rather than swabs if possible. If pus is available, ask for an urgent Gram stain and gas liquid chromatography.

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Efstratiou A, George RC (1999) Laboratory guidelines for the diagnosis of infections caused by *Corynebacterium diphtheriae* and *C. ulcerans*. *Commun Dis Public Health* **2:** 250–7

Gudinchet F, Maeder P, Neveceral P, Schnyder P (1997) Lemierre's syndrome in children: high-resolution CT and color Doppler sonography patterns. *Chest* **112**: 271–3

Kurtz B, Kurtz M, Roe M, Todd J (2000) Importance of inoculum size and sampling effect in rapid antigen detection for diagnosis of *Streptococcus pyogenes* infection. *J Clin Microbiol* **38**: 279–81

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