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Not just another sore throat

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Case study

A man, 26 years of age, presented to a hospital emergency department complaining of a sudden onset of a sore throat 6 hours previously while consuming a carbonated drink at work. The pain commenced about lunchtime, after he had been mixing concrete powder, and since then had been intermittent and was becoming more severe. He subsequently complained of upper chest pain that radiated down his left arm and into his jaw. He denied any nausea, vomiting or shortness of breath but had severe pain on swallowing. He had no relevant past medical history, was not taking any medications and had no allergies. Observations were unremarkable with temperature 36.6°C, pulse 54 bpm and regular, pulse oximetry 99% on room air, and respirations 16 breaths/min with equal air entry on both sides. His oropharynx showed no tonsillar enlargement and only slight erythema. On palpation he had tenderness in the anterior part of his neck, but no tenderness in the supraclavicular region. There was no subcutaneous emphysema. A routine electrocardiogram showed normal sinus rhythm and no acute ischaemic changes and bloods were taken for a troponin level, which was normal. While recognising that the likely diagnosis was pharyngitis, the emergency nurse practitioner was concerned that his symptoms were more severe than expected for such minor clinical findings. For this reason, a soft tissue X-ray of his neck was taken (*Figure 1*).

Question 1

What abnormality is shown by the arrows on the X-ray in *Figure 1*?

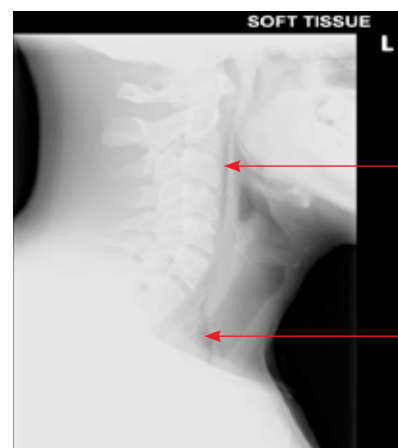


Figure 1. Soft tissue neck X-ray of patient

Question 2

What is the pathophysiology of this condition?

Question 3

What are the mortality rates from this condition?

Question 4

How would you manage this patient?

Answer 1

The X-ray in *Figure 1* shows air in the retropharyngeal space (indicated by the arrows) with a normal epiglottis, suggesting that the patient has a tear in his oesophagus.

Answer 2

In 1724, Boerhaave first described a presentation of spontaneous oesophageal rupture caused by a rapid rise in intraluminal oesophageal pressure following forceful vomiting.¹ However, Boerhaave syndrome typically involves the distal portion of the oesophagus and patients will usually present with symptoms of retrosternal

pleuritic chest pain, dyspnoea, dysphagia and odynophagia.² There have been several reports of oesophageal rupture following blunt trauma,^{3–5} but only two cases have reported ingestion of effervescent drink before perforation – Loh⁶ and Oriscello.⁷ In Loh's report it is suggested that gulping of a cold carbonated beverage resulted in spasm of the distal oesophagus followed by gaseous expansion terminating in a sudden accumulation of intra-oesophageal pressure.⁶ The pharyngo-oesophageal junction is where the wall is weakest, so this may explain why rupture occurs more commonly at this site.^{2,8}

Answer 3

As the oesophagus is surrounded by loose stromal connective tissue, the infectious and inflammatory response due to emptying of gastric contents into the tissues can easily spread to close vital organs leading to pneumonia, mediastinitis, empyema, sepsis and multi-organ failure. The mortality rate in patients with complete perforation has been acknowledged as 13–25% if treated within 24 hours of symptoms, 33–65% if treatment is initiated 24–48 hours after onset of symptoms and 89% if treatment given after 48 hours.^{6,8} Studies undertaken by Muir⁹ demonstrated that delayed diagnosis attributed to an increased rate of mortality, with the lowest mortality rate of 8% being seen in patients with perforation in the cervical region. This was attributed to the fact that the perforation in the cervical region did not necessarily result in the spilling of gastric contents into the thoracic cavity leading to widespread infection.

Answer 4

This patient should be transferred to a monitored bed, have a peripheral intravenous cannula inserted and be commenced on oxygen therapy. He should be given intravenous antibiotics to reduce the incidence of infection. He will need to be kept nil by mouth and an urgent computerised tomography (CT) scan of his throat and thorax and/or a barium swallow is needed to define the extent of the tear. If he has presented in a rural or remote setting, transfer to a tertiary centre will need to be arranged as definitive management of this condition usually requires surgical repair of the tear by a specialised ear nose and throat/ cardiothoracic team.

Discussion

Most sore throats are caused by viral pharyngitis, streptococcus tonsillitis or chronic sinusitis with postnasal drip. However, more serious diagnoses such as epiglottitis, cardiac pain, oesophageal perforation or retropharyngeal abscess or haemorrhage need to be considered if the history or examination are not typical. If epiglottitis is considered, haemophilis vaccination status needs to be clarified. In adults, the cause of epiglottitis is more varied than in children, with *Staphylococcus aureus* being more common and no specific cause found in most cases. In addition, chemical burns (such as those from cement dust) and thermal burns can cause epiglottitis that has the same clinical presentation.

This patient was initially seen by an emergency nurse practitioner. In Western Australia, emergency nurse practitioners have clinical practice guidelines that assist them in making clear clinical decisions. If patients fall outside of the standards, then consultation with an emergency doctor is required. Treating a patient that presents with a sore throat is usually routine. However, when the examination findings do not fit with the history, then a broader differential diagnosis needs to be considered.

Case follow up

The patient had a CT scan of his neck, which is shown in *Figure 2*. The scan clearly demonstrates a case of oesophageal rupture extending into the mediastinal cavity. However, fortunately, a barium swallow demonstrated no evidence of a further leak, suggesting that the site of rupture had already closed over. He remained nil by mouth for a further 24 hours and after close observation and a course of intravenous antibiotics (ticarcillin/clavulanate), he was discharged 4 days later on oral antibiotics. He was reviewed in the ENT outpatient clinic 2 weeks later and showed no signs of complications.

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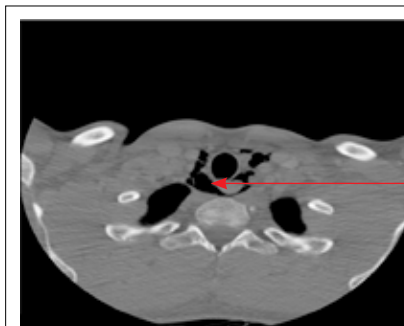


Figure 2. CT scan demonstrating air in the mediastinal space

Conflict of interest: none declared.

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