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Thorax 1994;49:1179-1180

Empyema and mediastinitis complicating retropharyngeal abscess

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Abstract

A 21 year old man with a retropharyngeal abscess complained of right sided chest pain, and chest radiography and thoracocentesis revealed an empyema. A computed tomographic scan of the chest showed a posterior mediastinal abscess communicating with the right pleural cavity. Emergency thoracotomy was performed and the mediastinal abscess and empyema were drained.

(*Thorax* 1994;49:1179-1180)

Acute empyema following a retropharyngeal abscess and mediastinitis in an adult is very rare and often fatal.^{1,2} This report presents a case that was cured with surgical intervention.

Case report

A 21 year old man was admitted with a high fever to our hospital complaining of dysphagia and a four day history of a sore throat for which he was given oral antibiotics. On admission physical examination disclosed diffuse erythema and swelling of the pharynx and swelling and tenderness of the right side of the neck, but cervical lymph adenopathy was not present. There were no abnormal dental findings and the tonsils appeared normal. A chest radiograph showed widening of the upper mediastinum, and radiography of the soft tissues of the neck showed retropharyngeal gas and widening of the retropharyngeal space. A transoral retropharyngeal tap was performed and pus was obtained consistent with a retropharyngeal abscess. Cultures grew α -streptococcus, β -streptococcus and staphylococcus. His white cell count was 13 100/mm³ and the serum level of C-reactive protein (CRP), a non-specific marker for acute inflammation, was 37.8 mg/dl.

Treatment was started with intravenous cefmetazole to which these organisms proved sensitive. The following day he developed right sided chest pain and radiographs showed a right pleural effusion. Pus was obtained during thoracocentesis and a chest tube was inserted immediately. The pleural effusion grew the same microorganisms as the retropharyngeal pus and the patient's mediastinitis appeared consequent to the retropharyngeal abscess which had perforated into the pleural cavity. An oesophagogram was normal. The patient's condition rapidly improved, temperature became normal, and both the pharyngeal and cervical swelling improved, but a computed tomographic scan of the chest on the fifth hospital day showed an increasing encapsulated mediastinal abscess between the oesophagus and vertebral bodies (fig 1). Since the mediastinal abscess had not been drained adequately a right thoracotomy was performed on the seventh hospital day, and 200 ml of turbid, yellow-white fluid obtained. The upper mediastinal pleura appeared swollen between the superior vena cava and vertebral

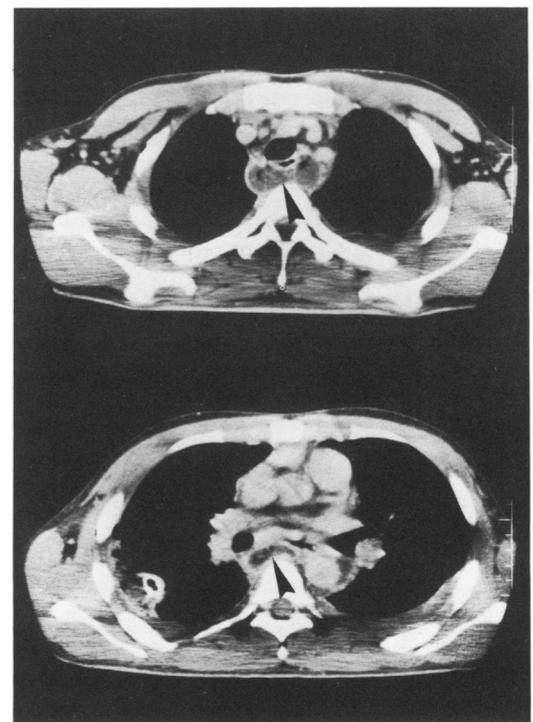


Figure 1 Computed tomographic scan of the chest. Arrow heads point to the encapsulated posterior mediastinal abscess between the oesophagus and the vertebral bodies. A chest tube was already inserted in the right pleural cavity.

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Reprint requests to:
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Received 28 May 1993
Returned to authors
26 October 1993
Revised version received
11 November 1993
Accepted for publication
15 November 1993

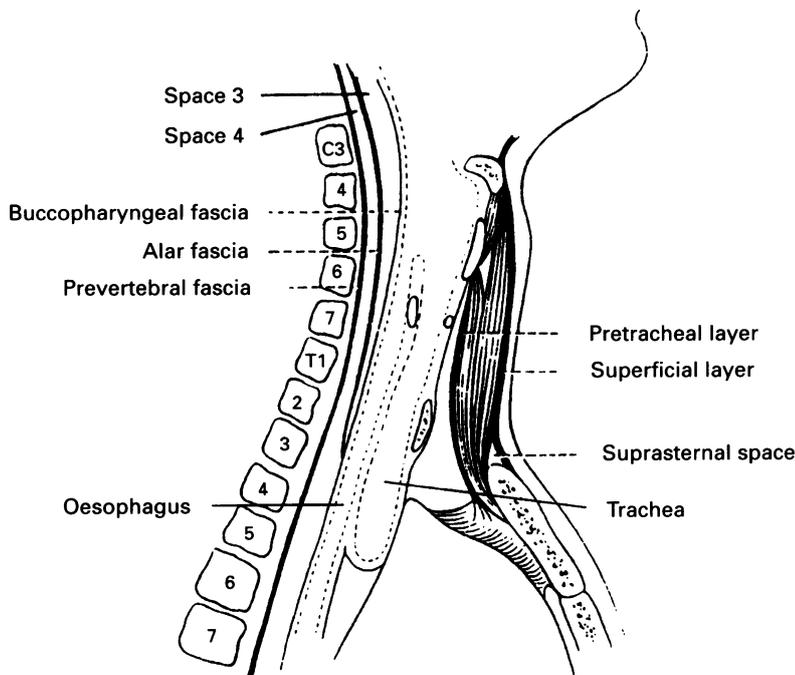


Figure 2 The fascial layers of the neck in longitudinal section. (After Hollinshead WF. *Anatomy for surgeons*. 1982:272.)

body. This abscess space had drained into the pleural space just below the carina. The entire posterior mediastinal pleura was opened for drainage and two chest tubes were inserted.

Three weeks after the operation the chest tubes were removed and the patient discharged. Postoperative evaluation failed to reveal any immunological deficiency. He remained well at follow up 11 months later.

Discussion

A major cause of suppurative mediastinitis is oesophageal perforation, either by foreign bodies or trauma. Odontic infections and retropharyngeal abscesses such as described here rarely cause mediastinitis.³⁻⁵ Reports describing acute empyema following a retropharyngeal

abscess and mediastinitis in an adult are very rare,¹ and to our knowledge only one case has been reported to have survived.²

The retropharyngeal space consists of loose connective tissue between the buccopharyngeal fascia and prevertebral fascia. It is divided into two spaces by the alar fascia (fig 2). The anterior section is known as space 3 while the posterior part is known as space 4. Space 3 extends down to the level of the second thoracic vertebra, but space 4 extends down to the diaphragm, behind the oesophagus in the posterior mediastinum.^{6,7} In our case the retropharyngeal abscess probably spread behind the alar fascia to cause a posterior mediastinal abscess which then drained into the right pleural cavity. In such cases treatment includes systemic antibiotic therapy and abscess drainage. If the abscess space is limited to the retropharyngeal space and posterior mediastinum, transcervical drainage should first be performed.⁸ We approached the abscess space via a right thoracotomy in order to drain both the posterior mediastinal abscess and the right sided empyema.

Treatment of this condition depends on an accurate and prompt diagnosis. The combination of surgery and effective antibiotic therapy is important in leading to a successful outcome.

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