

Boerhaave syndrome – spontaneous oesophageal perforation

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Section: Chest imaging

Area of Interest: Mediastinum

Procedure: Diagnostic procedure

Imaging Technique: CT

Special Focus: Abscess Case Type: Anatomy and
Functional Imaging

Authors: Buntzen A., Nielsen YW.

Patient: 70 years, male

Clinical History:

Sudden clinical deterioration in intensive care unit patient with longstanding pneumonia. The patient had severe chest pain. Lab tests showed signs of infection. Normal ECG. No abdominal pain or vomiting.

Imaging Findings:

A contrast-enhanced CT of the chest, abdomen, and pelvis was performed (Fig. 1-2).

The scan showed an oesophageal lesion with large pneumomediastinum. A large fluid collection with air fluid level was seen in the mediastinum (Fig. 1). Bilateral pleural fluid collections with slight enhancement (empyema) were also present. The pleural fluid collections were communicating with the mediastinal fluid, suggestive of mediastinal abscess and bilateral empyemas. Air in the pleural cavity (Fig. 2) confirmed communication with the free air in the mediastinum. The abdomen was unremarkable.

Discussion:

Spontaneous oesophageal perforation is a rare, but very serious condition. Predisposing factors include gastroesophageal reflux disease, candidiasis, asthma, and cancer. The Boerhaave syndrome refers to oesophageal perforation following vomiting [1]. Spontaneous ruptures are most commonly located in distal third of the oesophagus. This is probably related to relative thin muscle layer in this area combined with little support from adjacent connective tissue.

Signs and symptoms of oesophageal rupture include the Mackler triad with vomiting, severe chest pain and subcutaneous emphysema [2]. Other signs and symptoms are abdominal tenderness and epigastric pain. If left untreated the mortality following oesophageal ruptures exceeds 90%. Treatment should be surgical intervention with either closure of the defect or oesophageal resection [3]. Furthermore, fluid collections in the pleura or mediastinum should be drained and antibiotics should be given to the patient.

CT is the method of choice for imaging of oesophageal ruptures [4]. In some cases the defect in the oesophageal wall may be detected. Otherwise the main imaging findings are free air in the mediastinum (pneumomediastinum) and fluid collections in the mediastinum and pleural cavities. Oral water soluble contrast media administered before scanning improve detection of oesophageal ruptures. Chest radiography may show pneumomediastinum and pleural fluid. Oesophagus fluoroscopy can also be used to detect ruptures. However, this procedure is not easy to perform in acutely ill patients.

In the present case no oesophageal opacification with contrast media was needed to establish the diagnosis as

large amounts of free air were seen in the mediastinum surrounding the distal oesophagus. The patient had poor outcome as he died 3 weeks after the perforation occurred. No surgery was performed. The patient had severe comorbidity with chronic obstructive lung disease.

Looking beyond spontaneous ruptures, iatrogenic rupture following endoscopy is another important cause of oesophageal rupture [5].

In conclusion, spontaneous oesophageal rupture is a rare condition that can be diagnosed with CT.

Differential Diagnosis List: Spontaneous oesophageal rupture, Iatrogenic oesophageal perforation, Empyema

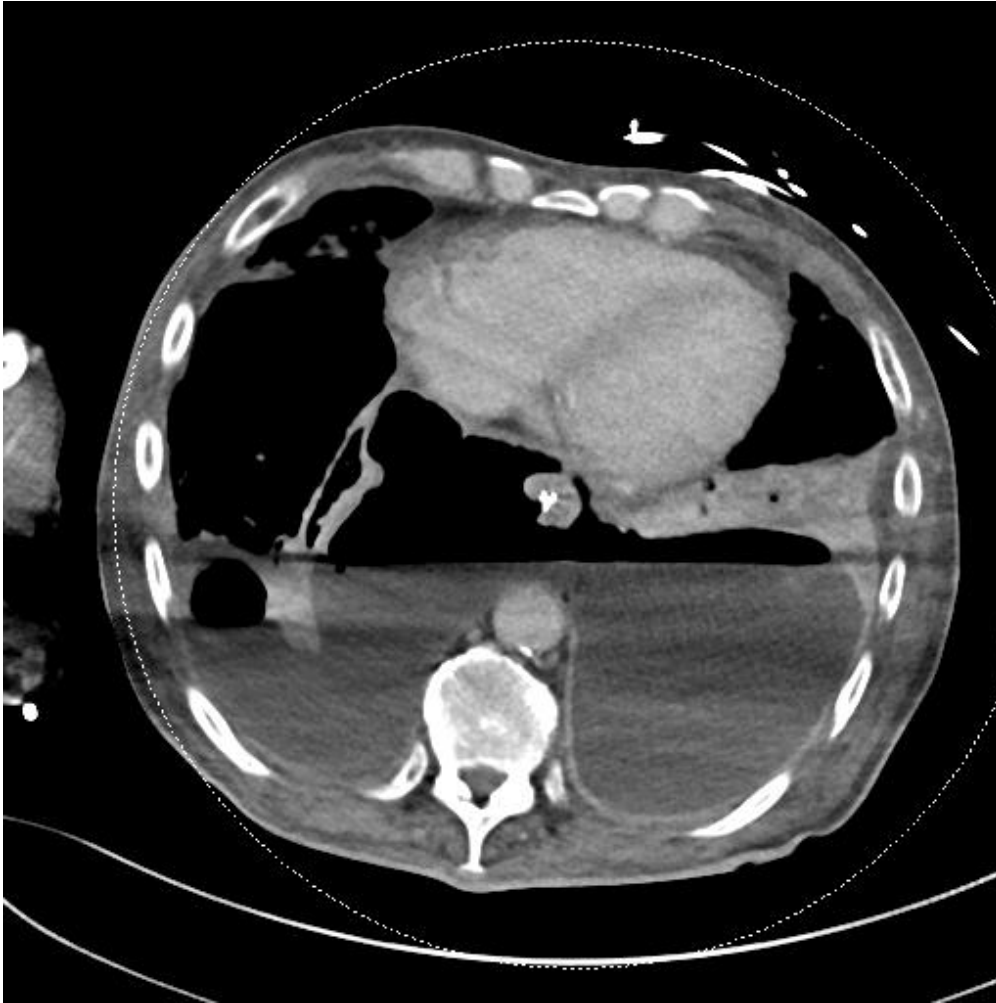
Final Diagnosis: Spontaneous oesophageal rupture

References:

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Figure 1

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Description: Contrast-enhanced CT of the chest showing pneumomediastinum around the oesophagus. A large fluid collection with air fluid level is seen transversing the mediastinum. The fluid collection communicates with both pleural cavities. **Origin:** Buntzen A. Dept. of Radiology, Copenhagen University Hospital Herlev Gentofte. Copenhagen, Denmark.

Figure 2

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Description: Contrast-enhanced CT of the chest showing large fluid collections in the pleural cavities. Air is noted in the pleural cavities. **Origin:** Buntzen A. Dept. of Radiology, Copenhagen University Hospital Herlev Gentofte. Copenhagen, Denmark.