

# Boerhaave's syndrome

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A 38-year-old woman became nauseous while driving in a car. She began retching before her husband could pull over, and attempted to swallow down. Severe chest pain ensued and gradually worsened overnight. Medical assistance was sought the following morning and the patient was referred to a local hospital for a barium swallow. An incarcerated para-oesophageal hernia was diagnosed. The patient was then referred to a general surgeon in our hospital. Noting the severity of her pain and shallow tachypnoea, we were approached for a second opinion.

The control chest radiograph showed subtle medial basal veiling on the left and a little pleural fluid (Fig. 1). An irregular outpouching could be seen on the left posterolateral aspect of the oesophagus, above the diaphragm on the swallow series

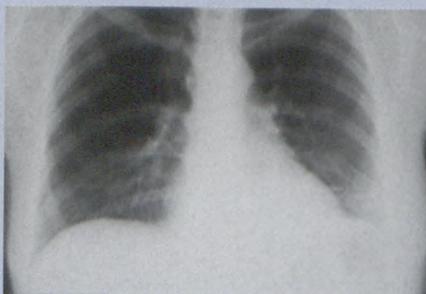


Fig. 1. Control chest before barium swallow. Note left basal infiltrate, loss of medial diaphragmatic contour and blunted costophrenic recess.

(Fig. 2). This did not appear continuous with the gastric fundus as with a para-oesophageal hernia. Repeat chest radiograph showed progression of the basal lung and pleural changes and a collection of extraluminal barium (Fig. 3). No pneumomediastinum could be seen. A presumptive diagnosis of spontaneous oesophageal rupture (Boerhaave's syndrome) was made. This was confirmed on non-contrast chest CT, which clearly showed the barium-lined cavity, peri-oesophageal inflammation, pleuropulmonary changes and also a small pneumomediastinum. A few pockets of upper retroperitoneal air were also visible below the hiatus (Fig. 4).

At thoractomy a 5 cm vertical rent was found in the left posterolateral

wall of the distal oesophagus, and repaired. Hospitalisation was uncomplicated and the patient was discharged 4 days later.

## Discussion

Hermann Boerhaave described spontaneous rupture of the oesophagus of Lord High Admiral Wassenaar of the Royal Dutch navy in 1724, now known as Boerhaave's syndrome. This is a rare cause for oesophageal perforation, usually found in males 40 - 60 years of age secondary to forceful vomiting and often related to binge eating, drinking and alcoholism. Rare instances have been caused by straining, childbirth, severe coughing, hiccuping, seizures, asthma, and forceful swallowing. Chest pain, epigastric pain and dyspnoea are common symptoms. Hematemesis occurs in about 50% of cases and is usually not profuse. In 90% of cases a vertical tear of 1 - 8 cm occurs along the left posterolateral wall of the distal third of

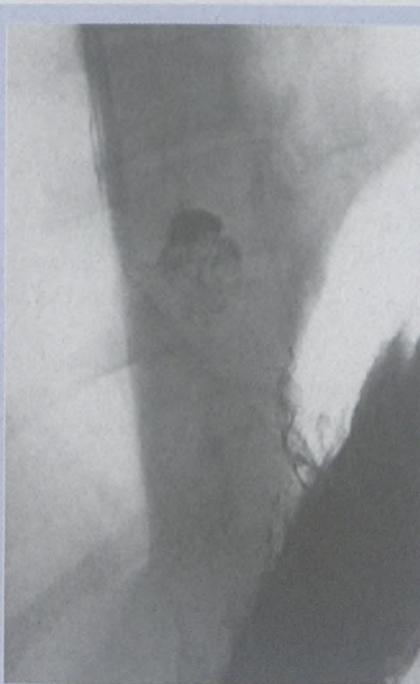


Fig. 2. Barium swallow. Extravasation of barium into a cavity located above the diaphragm, on the posterolateral aspect.



Fig. 3. Follow-up chest radiograph. Leaked barium following earlier swallow. More extensive basal veiling and pleural fluid.

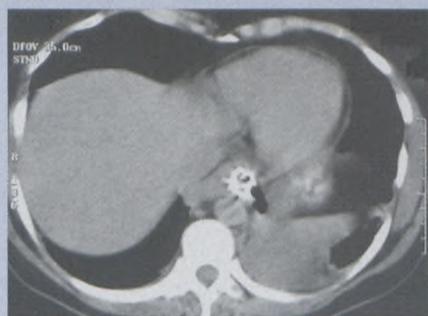
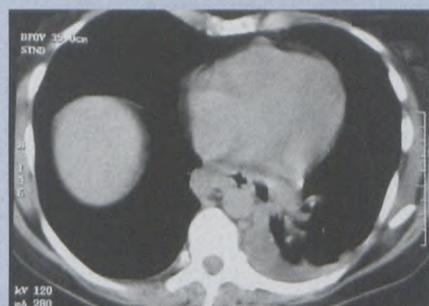


Fig. 4. CT chest. Left-sided pleural effusion and basal pulmonary infiltrate. Note mediastinal air pockets between aorta and left atrium and barium-lined leakage cavity.

the oesophagus. Other clinical considerations should include a Mallory-Weiss mucosal tear, aortic dissection and peptic-reflux disease.

Clinical signs are mostly nonspecific. Subcutaneous emphysema may be found in the neck or chest. Mackler's triad of vomiting, chest pain and subcutaneous emphysema is uncommon and therefore unreliable. Tachycardia, tachypnoea, fever, hypotension and shock can occur with late presentation. Rarity, unfam-

iliarity and a sometimes undramatic history often delay diagnosis. Up to 50% are not diagnosed at initial presentation! Prognosis is grave: 30 - 50% mortality can be expected despite prompt treatment and over 90% when delayed diagnosis leads to mediastinitis.

Chest X-ray findings may suggest perforation in Boerhaave's syndrome; however X-ray findings are normal in 10 - 15% of cases. Signs include mediastinal emphysema or frank pneumomediastinum (60%), mediastinal widening or air fluid level, pleural effusion (90%, usually left), pneumothorax, or hydropneumothorax. The 'V' sign of Naclerio describes a pocket of mediastinal air lodged between the aorta and diaphragm.

Gastrografin swallows are useful and must be performed in both left and right decubitus positions. False-negative results occur in 10 - 25% of cases, however. Some authorities suggest barium oesophagography if a high suspicion of oesophageal perforation exists and Gastrografin swallow is negative. In one study, 22% of cases with a high clinical suspicion and normal water-soluble contrast swallow were found to be positive for rupture when barium was used. Non-contrast CT scan offers a number of advantages, including evaluation of the pleurae, mediastinum, and aorta. The exact perforation site is usually not visible but extravasation may be seen if scanned after oral contrast, as in this case.

Complications of oesophageal rupture include mediastinitis, empyema and septic shock. Tension pyopneumothorax and vertebral osteomyelitis from a posterior perforation have been described. Patients who recover are predisposed to repeat

spontaneous rupture.

The best clinical outcomes occur with primary closure within 24 hours. Prompt diagnosis is therefore critical! A nonspecific clinical picture shifts additional responsibility onto the radiologist. While mediastinal emphysema will surely call to mind this diagnosis, it only occurs in some 60% of cases. Any basal pleuropulmonary changes must therefore be viewed with great suspicion when there is a history of vomiting and also in inebriated patients unable to give a history. Aspiration would probably be the first logical diagnostic consideration but oesophageal rupture must be borne in mind. Oesophageal and/or CT should be considered where even the slightest suspicion exists.

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