Esophageal Perforation in a young woman – Investigation with CT esophagography
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Patient: 28 years, female

Clinical History:
A 28-year-old female was transported to the emergency room with pain in the lower anterior chest and vomiting. She reported esophagogastroduodenoscopy 4 hours ago for diagnosis of peptic ulcer. Her medical history was free. The patient underwent a CT before and after oral administration of contrast medium.

Imaging Findings:
The patient was referred to the emergency department 4 hours after esophagogastroduodenoscopy with a recent history of chest pain and vomiting. She had no symptoms of nausea, was not on any medication and had no allergies. Plain radiography of the chest revealed a right pneumothorax and a chest tube was placed in the right pleural cavity for drainage (Fig 1). A CT scan was performed and demonstrated a small right pleural effusion and thickening of the lower esophagus (Fig 2). Because of the background of the esophagogastroduodenoscopy there was a strong suspicion of esophageal rupture. A CT scan after oral admission of contrast medium (Gastrografin) followed and revealed communication of the esophagus with the right pleural cavity (Fig 3). There was no evidence of pneumomediastinum and the CT scan of the neck was normal. The patient was treated with conservative therapy.

Discussion:
Esophageal perforation is a life-threatening condition usually occurring due to penetrating trauma, blunt trauma, iatrogenic causes, foreign body ingestion and spontaneous rupture. Morbidity and mortality depend on prompt recognition and proper clinical management. As clinical signs of esophageal perforation are unreliable, diagnosis requires imaging or endoscopic evaluation. Iatrogenic esophageal perforation usually results from endoscopy or intubation and the most common sites for perforations are hypopharynx and cervical esophagus. It occurs in around 0.1% of patients undergoing endoscopy with modern fibre-optic instruments. There are other causes of esophageal perforation due to instrumentation, such as endotracheal and nasogastric intubation, especially in neonates. Transesophageal echo is associated with a perforation rate of 0.1% to 0.3%. In the standard plain radiography of the chest the first signs to be seen are widening of the mediastinum and pneumomediastinum. It was also observed that the chest radiograph may be negative when the perforation is intraluminal and contained within the esophageal wall. Fluoroscopic esophagography performed with water-soluble contrast agents is the study of choice for suspected esophageal perforation. Sometimes the first gastrographin swallow study may not clearly show the contrast leakage which can instead be detected in the subsequent barium studies. However, fluoroscopic esophagography can be difficult to perform in seriously ill patients, requires patient transport to the fluoroscopy suite and false-negative results may occur. Because esophageal perforation is one of several diagnostic considerations for patients with chest pain, many patients with esophageal perforation may first undergo thoracic CT, requiring fluoroscopic esophagography to be performed as a separate examination. A method for evaluating patients with chest pain that
provides evaluation of both esophageal perforation and more common causes of acute chest pain is desirable. This can be done with a CT technique with the use of oral contrast agent, expanding the evaluation of patients presenting with chest pain. CT is able to identify even minimal collections of air or contrast in the mediastinal spaces, as well as any complications (acute mediastinitis, intrathoracic abscess). Other CT findings are periaortic air, mediastinal fluid, esophageal wall thickening, esophago-pleural fistulae, hydropneumothorax and pneumopericardium. Helical CT offers several advantages over fluoroscopic esophagography examinations: it can be performed after the initial thoracic CT scan is obtained to exclude other causes of chest pain; it can readily detect the small periesophageal air collections; finally, it is easy to perform and CT technicians and nurses can readily be trained in its use. Controversy exists regarding indications for surgery for esophageal rupture. However, operative therapy depends on a number of factors, including etiology, location of the perforation, and the time interval between injury and diagnosis. Other considerations include the extension of the perforation into an adjacent body cavity and the general medical condition of the patient.

**Differential Diagnosis List:** Iatrogenic esophageal perforation.

**Final Diagnosis:** Iatrogenic esophageal perforation.

**References:**


Figure 1

Description: Right pneumothorax and chest tube in the right pleural cavity

Origin:
Figure 2

Description: Esophageal wall thickening and right pleural effusion

Origin:

Description: Right pneumothorax

Origin:
Figure 3

Description: Extraluminal extravasation of oral contrast material in the right pleural cavity

Origin:
Description: Esophageal rupture with extravasation of oral contrast material

Origin: