Case 1767

Computerised tomography diagnosis of oesophageal rupture caused by an ingested chicken bone

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Patient: 57 years, male

Clinical History:

The patient was admitted with acute chest pain, which began just after dinner.

Imaging Findings:

A 57 year old man was admitted to our general hospital for an acute chest pain, just after dinner. On clinical examination he had shortness of breath. There was no history of vomiting, fever or dyspnea. Chest x-ray was not specific, ECG was negative and laboratory studies were normal. Computerized Tomography was performed in emergency, since the chest pain was still strong. It showed perforation of the thoracic esophagus by ingested foreign body, in our case a chicken bone. There was no pneumothorax. Right-sided pneumomediastinum was the critical sign on CT. CT showed esophageal wall thickening next to the perforation site, the exact point of rupture and even demonstrated the bone itself, which was situated in esophagus underneath the level of carina. A small right pleural effusion was present. All these findings were strongly suggestive of esophageal perforation. The patient was transferred to surgery immediately. Surgical aid included primary sutured dosage, drainage and long-term antibiotic treatment. Postoperative recovery was uneventful.

Discussion:

The perforation of thoracic esophagus by ingested foreign body is a potentially life-threatening event because periesophageal mediastinum communicates with extraluminal air and fluids that can lead to a septic shock. The extraluminal leakage will promptly contaminate and incite a necrotizing inflammation in mediastinum and pleural spaces. There are multiple etiology factors that cause esophageal perforation, like iatrogenic (55% of cases), foreign body (14%) and trauma (10%). Spontaneous esophageal perforation (Boerhaave’s syndrome) is a rare condition (15%). Underlying esophageal disease, like strictures, achalasia or cancer, is present commonly. Perforation by ingested foreign bodies stop at the sites of narrowing or angulation of the gastrointestinal tract. Approximately 80% of accidentally shallowed foreign bodies are entrapped in the pharyngoesophageal region. The clinical symptoms include dysphagia or odynophagia, fever, chest pain, tachycardia, cyanosis, hypotension and respiratory distress. The situation may be confused with myocardial infarction, rupture of dissending thoracic aorta’s aneurysm or even with a perforated peptic ulcer. Early diagnosis is critical for survival. Chest x-ray is the initial investigation tool. The
earliest sign is the presence of linear air collections in the mediastinum, fascial planes of the neck and supraclavicular regions. Further leakage combined with inflammation and edema cause mediastinal widening. If perforation extends to the adjacent pleura, effusion, with or without pneumothorax, will develop. Mediastinal air and subcutaneous emphysema are present in about 90% of cases. Contrast esophagram is the diagnostic procedure of choice in patients with history or clinical symptoms suggestive of esophageal perforation. Sometimes the initial evaluation does not show the extravasation clearly and it’s possible only with additional radiography. False negative rates up to 25% have been reported. The performance of CT is essential when the usual clinical symptoms are unrecognized and when the diagnosis is obscure. The findings of mediastinal fluid and more importantly, mediastinal air on CT, are highly suggestive of perforation of the esophagus. Other CT findings are esophageal wall thickening and extraluminal contrast. When foreign body is the cause, CT shows it correctly. Atypical CT findings are pneumopericardium, uncommunicating mediastinal effusion and pleural effusion. The CT findings of acute mediastinitis include esophageal thickening, extraluminal gas, pleural effusion, single or multiple abscesses and extraluminal contrast medium. Sometimes CT findings are not pathognomonic for diagnosis. Pleural fluid can be seen in a wide variety of diseases. The presence of mediastinal air can be due to esophageal perforation, but also to tracheobronchial tree rupture, penetrating trauma and even to perforated duodenal ulcer. CT scans obtained after per os contrast administration, provide more useful information than plain CT scans. Even small amounts of contrast material leakage can easily be detected on CT.

**Differential Diagnosis List:** Oesophageal rupture by ingested bone

**Final Diagnosis:** Oesophageal rupture by ingested bone

**References:**


**Figure 1**

*Description*: CT shows normal oesophagus before the perforation site. *Origin:*

*Description*: CT shows esophageal wall thickening (arrow). *Origin:*
Description: CT shows gradual thickening of the wall of the oesophagus. Origin:
Description: A linear radiopaque foreign body is present in the oesophagus (arrow). Origin:
**Figure 3 a**

**Description:** The oesophagus is normal at a lower level. Mediastinal air and a small area of bronchopneumonia are present (arrows). **Origin:**
Figure 4

Description: Air is present in the mediastinum at pulmonary window (arrow). Origin: