EM CASE OF THE WEEK.

BROWARD HEALTH MEDICAL CENTER
DEPARTMENT OF EMERGENCY MEDICINE

BROWARD HEALTH
Care Warriors

Author: Ariel Lee | Editor: Andrea Sarchi, DO ; Jason Mansour, MD

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Boerhaave Syndrome

A 57-year-old male presents to the ED with chest pain for the last 4 hours. It is constant, 10/10, and achy in nature. There are no relieving or exacerbating factors. Associated symptoms include shortness of breath, nausea, vomiting prior to arrival, and cough. On physical exam, lungs are clear to auscultation and abdomen is non-tender and non-distended. The patient is tachycardic and tachypneic at 118bpm and 24 breaths per minute. BP is normal. O2 sat is 96% on 2L nasal cannula. Chest X-ray shows a small 10% left sided pneumothorax. A CT angiogram taken an hour later shows significant change with a large pneumothorax, left lower lobe consolidation and left effusion with pneumomediastinum. A chest tube is placed, and a piece of broccoli and carrot are identified in the material that is drained. Which two diagnostic tests are the best choices to evaluate a patient suspected of having Boerhaave syndrome?

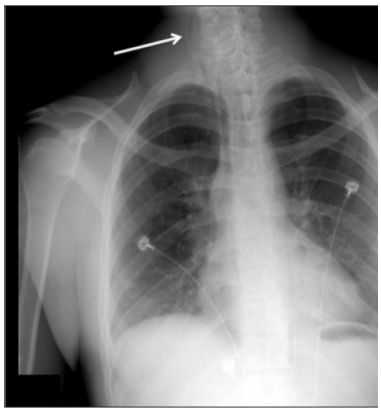
A. Chest X-Ray & Swallow Study

B. Esophagogastroduodenoscopy & cervical spine X-Ray

C. Esophogram with gastrograffin & CT chest

D. ERCP & Ultrasound

E. CT Chest & Esophagogastroduodenoscopy



Boerhaave Syndrome is a spontaneous full-thickness rupture of the esophagus that occurs due to a decreased intrathoracic pressure combined with an increased esophageal pressure.

The image above shows a radiographic chest image with the white arrow pointing to an area of subcutaneous emphysema in the region of the neck. This was caused by air escaping the esophageal rupture into the soft tissue.

EM Case of the Week is a weekly "pop quiz" for ED staff.

The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

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Department of Emergency Medicine
1625 SE 3rd Avenue
Fort Lauderdale, FL 33316

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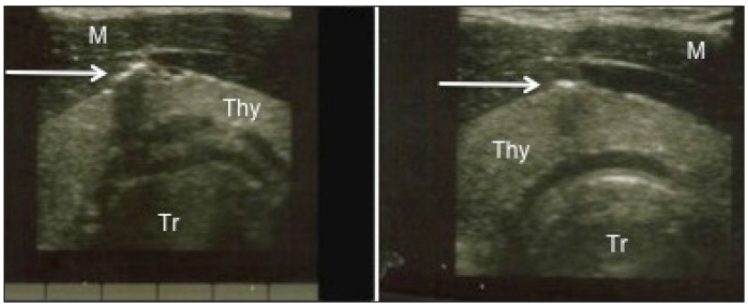
The correct answer is C. An esophagram with water-soluble contrast should be performed in patients suspected of Boerhaave's syndrome. This will detect up to 90% of intrathoracic tears.[1] CT also has a role in this diagnosis, as it can detect air and fluid in the pleural space, mediastinal widening and esophageal edema with greater sensitivity than an X-ray. Upper endoscopy is not recommended, as it may further widen the perforation. There is at least one case report of ultrasound being used to positively diagnose an esophageal perforation, but this is not currently the standard of care. There is no role for a swallow study or ERCP in diagnosing Boerhaave syndrome.



In one documented case, ultrasound was used to find an esophageal perforation. Ultrasound image is seen above.
Perm J. 2015 Summer; 19(3): e122–e124.

Discussion

Boerhaave syndrome is a rare condition with a high mortality rate, which often has nonspecific symptoms and is therefore difficult to diagnose. The syndrome may be preceded by episodes of intense vomiting, retching, or straining. However, these do not occur in all cases, and some remain idiopathic.

Rupture and leakage of the esophageal contents into the chest cavity often leads to chemical mediastinitis. Frequent complications include secondary bacterial infection and necrosis of tissue due to injury by gastric acid. Rupture into the pleural cavity leads to pleural effusion.

The patient may initially present with chest pain or epigastric pain radiating to the shoulder, or with acute abdomen. Physical evaluation may reveal subcutaneous emphysema which may be palpable as crepitus on chest exam. One may also be able to auscultate Hamman's sign, which is a rasping noise heard over the precordium with every heartbeat.

The patient may also present with fever. A patient with distress out of proportion to the history of illness who deteriorates quickly should be suspected for Boerhaave's, as sepsis can set in quickly and move fast in the course of disease. It is also important to note that while most cases occur in a normal esophagus, pre-existing esophageal pathology such as eosinophilic esophagitis and Barrett's esophagus may be complicating factors.

Patients are often tachypneic, and leukocytosis is a common finding. Examination of the pleural fluid may reveal gastric contents and it may have a pH <6. It may also have a high serum amylase level. If the patient is given methylene blue, a discoloration of pleural fluid may occur, indicating there is a full thickness tear present. Although a chest x-ray may show abnormal findings, it is often non-specific and a CT chest or esophagram should be ordered to confirm the diagnosis.

For a list of educational lectures, grand rounds, workshops, and didactics please visit ***BrowardER.com*** and **click** on the ***"Conference"*** **link**.

All are welcome to attend!

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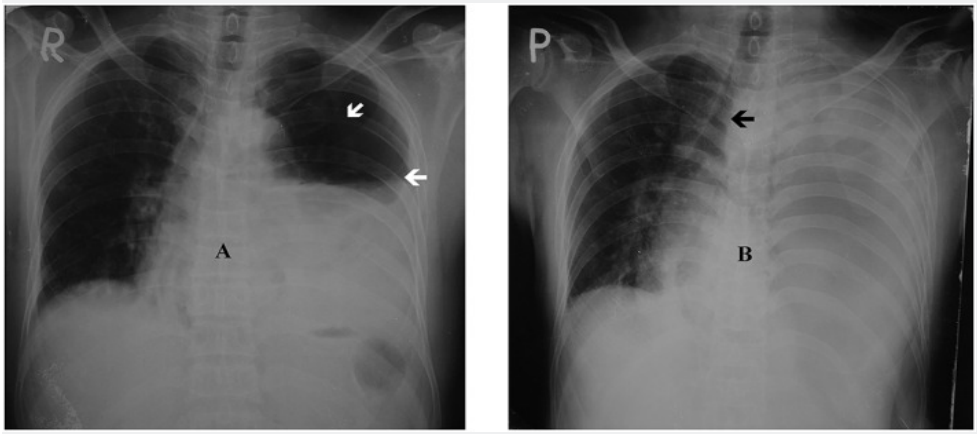

The image above shows two chest radiographs illustrating tension hydropneumothorax that occurred due to Boerhaave Syndrome. The image on the right was taken 22 hours after the image of the left. Notice the worsened condition in a relatively short amount of time.

Booerhave's is often a surgical emergency, and if the perforation is severe enough, immediate esophageal repair is warranted. Smaller tears may be medically managed. In all cases, a chest tube and central line should be placed. The patient should be placed NPO and parenteral nutrition should be initiated. Patients should receive broad-spectrum antibiotics as well as an IV proton pump inhibitor. Draining and debridement of involved tissue is required. When presenting in the ER, this is a true emergency and the patient will be admitted upon diagnosis.

Take Home Points

- Boerhaave syndrome is an easily missed diagnosis, but extremely important to rule out early in the disease progression as mortality rates are high.
- The best current imaging guidelines suggest that CT chest and esophagram with gastrograffin be administered to any patient suspicious for Boerhaave syndrome.
- A history of recent vomiting or retching followed by severe intractable pain should always put Boerhaave syndrome onto the differential.
- Although surgical management is often required, patients should immediately be placed NPO and be started on broad-spectrum antibiotics.
- However, it is also important to keep in mind that it may present atypically; findings of hydropneumothorax or subcutaneous crepitus on imaging should lead to immediate further testing.

AUTHOR:

This month's case was written by Ariel Lee, a 4th year medical student at Nova Southeastern University College of Osteopathic Medicine. She has enjoyed her time in the ER a great deal. She is currently applying to pediatric residencies with an interest in specializing in pediatric genetics.

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