

EM CASE OF THE WEEK.

BROWARD HEALTH MEDICAL CENTER
DEPARTMENT OF EMERGENCY MEDICINE



Care Warriors

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Boerhaave Syndrome

A morbidly obese 45-year-old male with a past medical history of HTN and chronic dysphagia was transferred to the ED from Grand Turk island hospital complaining of difficulty breathing beginning 2 days ago. His breathing became labored after an episode of dysphagia while eating. The patient has since developed chest pain, fever, and dry cough. His breathing is worse when lying down and better at rest. The patient was given antibiotics and IV steroids at the transferring facility. He denies hemoptysis or trauma. Patient is febrile, tachycardic, tachypnic and hypoxic while on NC 2L. On physical exam, he has diminished lung sounds in the left lower base. His x-ray shows b/l pleural effusions, left > right, and free air in the chest strongly suspicious for esophageal perforation. Which part of the esophagus ruptures most frequently?

- A. Cervical esophagus
- B. Intra-abdominal esophagus
- C. Distal intrathoracic esophagus
- D. Proximal intrathoracic esophagus



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Image courtesy of Dr. Krista Kaups

PA Chest Radiograph showing b/l effusions and mediastinal air

Boerhaave syndrome is a spontaneous perforation of the distal esophagus that results from a sudden increase in intraesophageal pressure combined with negative intrathoracic pressure (e.g. severe straining or vomiting).

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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Warriors

The correct answer is C; most commonly in the left lateral position of the distal third of the esophagus.

Esophageal perforations are rare. The incidence rate is approximately 3.1 per 1,000,000 per year. Boerhaave syndrome pertains specifically to distal esophageal ruptures. This syndrome constitutes approximately 15% of all esophageal rupture cases. Boerhaave syndrome is associated with high morbidity and mortality. The most common cause of perforation is iatrogenic, commonly occurring during endoscopy. Other common causes of perforation are foreign body ingestion, trauma, ingestion of caustic agents, or malignancy. Boerhaave syndrome classically presents with chest pain, dyspnea, and possible crepitus. Patients with distal perforations may present with peritoneal signs or Kehr's sign if there is significant leakage into the abdominal cavity. Be aware of patients with signs of systemic infection like fever, tachycardia, or hypotension.

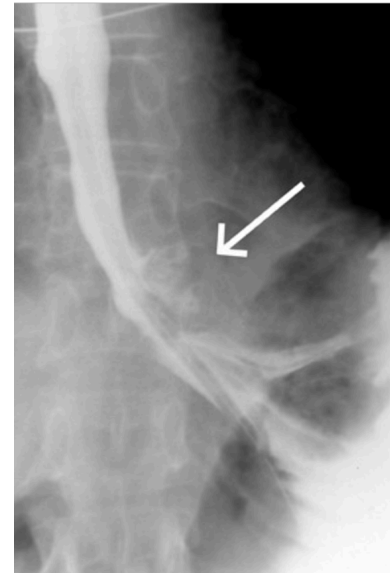
Discussion

Pathophysiology.

Boerhaave syndrome results from a sudden increase in intraesophageal pressure combined with negative intrathoracic pressure (e.g. severe straining or vomiting). This pressure gradient will cause the weakest portions of the esophagus to out pouch distally into the thoracic cavity until the outward pressures overcome the tissue's tensile strength and eventually shear apart. Of note, in a study measuring the pressures generated by the Mueller maneuver (forced inspiratory pressure with a closed glottis), on average an individual can generate up to -70 mmHg of intrathoracic pressure. Being that the most distal portion of the esophagus is most narrow and most frequently involved in disease processes, this makes the distal portion most vulnerable to perforation.

Certain disease processes have been associated with esophageal rupture including:

- Esophageal malignancy
- Gastroesophageal reflux disease



(Via <http://appliedradiology.com>)

- Achalasia
- Esophageal stricture
- Hiatal hernia
- Scleroderma

Mortality.

Reported mortality from esophageal perforation is 10%-40%.

By location:

- Cervical - 6%
- Abdominal - 21%
- Thoracic - 27%

By treatment timing:

- Treatment within 24 hours - 14%
- Delayed treatment \geq 24 hours - 27%

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!

The most worrisome and problematic ruptures are found in the most distal portion of the esophagus, usually in regions of narrowing or stenosis. The prognosis of the patient relies significantly on the location of the rupture as well as the promptness of their treatment. Considering the percent mortality increases 13% between early and delayed intervention, healthcare providers should exercise appropriate speed of care when caring for these patients.

Testing.

Once a suspicion for esophageal perforation has been established, a meglumine diatrizoate (Gastrografin) esophagram should be used to confirm the diagnoses.

Treatment.

Patients who are hemodynamically stable and have no sign of systemic infection or sepsis are good candidates for a non-operative approach to management. The non-operative approach entails nothing by mouth for ≥ 7 days and antibiotics. Confirm resolution of the perforations with follow up esophagram. Patients who are hemodynamically unstable, have signs of septic shock, or have an abdominal esophageal perforation should be considered for surgical repair or endoscopic repair. The surgical approach includes: stent placement, approximation of the mucosa, esophageal diversion and delayed repair, and esophagectomy.

Complications.

The mortality and morbidity of Boerhaave syndrome is greatly attributed to the severe complications of bacteria entering the pleural and mediastinal spaces. These complications include septic shock, pneumoperitoneum, hemothorax, and mediastinitis.

Take Home Points

- Boerhaave syndrome is a rare condition with a high morbidity and mortality.
- Esophageal perforations present broadly with chest pain and dyspnea. Clues to this diagnosis can be subtle in the HPI and PMHx.
- The location of an esophageal perforation and the presence or absence of comorbidities is a good indicator of management.
- This disease process carries significant complications including septic shock, pneumothorax, pneumoperitoneum, hemothorax, and mediastinitis.



ABOUT THE AUTHOR

This month's case was written by Ash Zomorodi. Ash is a 4th year medical student from NSU-COM. He did his emergency medicine rotation at BHMC in Nov. 2016. Ash plans on pursuing a career in Emergency Medicine after graduation.

REFERENCES

de Schipper JP, Spontaneous rupture of the oesophagus: Boerhaave's syndrome, *Dig Surg*. 2009;26(1):1-6. (Accessed November 10th 2016)

DynaMed: Perforated esophagus; Etiology and Pathogenesis, Prognosis and Treatment (Accessed November 10th 2016).

Lileswar Kaman, Management of Esophageal Perforation, *Gastroenterology Research* 2010 Dec;3(6):235 (Accessed November 10th 2016).