Boerhaave Syndrome and Mallory-Weiss Syndrome (MWS) — Diagnosis and Complications

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Boerhaave and Mallory-Weiss syndromes are rarely seen in clinical practice. However, it is important to keep them in mind when dealing with patients in acute pain or bleeding after an episode of violent vomiting. It is also important to understand the differences between these syndromes, particularly their epidemiology and clinical symptoms.

Definition and Pathophysiology of Boerhaave and Mallory-Weiss Syndrome

In Boerhaave syndrome, a rupture of all layers of the esophagus occurs. In most cases, the lower half of the esophagus, dorsolaterally on the left side, is affected. A relatively low muscle tone is prevalent in this area, as in other areas of the esophageal muscles. The rupture is preceded by an acute pressure load, with strong, forced vomiting in most cases, typically in conjunction with excessive alcohol consumption.

Mallory-Weiss syndrome is also preceded by forced vomiting and retching. Here, the mucosa of the esophagus is already damaged, often due to high alcohol consumption, or, less commonly, because of chronic gastroesophageal reflux disease or atrophy (usually in elderly patients). During the acute pressure load, longitudinal lacerations of the mucosa
and submucosa, particularly in the area of the gastroesophageal junction, occur. The muscularis mucosae remains intact, however, so perforation does not occur.

**Epidemiology of Boerhaave and Mallory-Weiss Syndrome**

Both syndromes affect men more often than women and are most commonly observed in alcoholics. Mallory-Weiss syndrome is responsible for approximately 5-10% of cases of upper gastrointestinal bleeding.

**Symptoms of Boerhaave and Mallory-Weiss Syndrome**

**Retrosternal pain and hematemesis**

In Boerhaave syndrome, patients describe something close to retrosternal destruction pain after vomiting. This sensation may radiate to the back.

Dysphagia and dyspnea are common symptoms. A pneumothorax also often occurs with or without pleural effusion due to esophageal rupture and the nearby pleura.

Another important recent finding is the development of cutaneous emphysema. If this occurs above the jugular, it needs to be considered as an indication of mediastinal emphysema. The combination of severe vomiting, retrosternal destruction pain, and cutaneous or mediastinal emphysema is also called Mackler’s triad.

**Note:** Bleeding is not necessarily the only symptom of Boerhaave syndrome!

Mallory-Weiss syndrome is accompanied by severe pain, which patients often locate in epigastric areas. Hematemesis is a clear indicator of this syndrome.

**Differential Diagnoses**

**Esophageal varices**

Although Boerhaave and Mallory-Weiss syndromes have similar clinical manifestations, they are differential diagnoses delineated by their symptoms. Rupture of the esophageal varices must also be considered, alongside corresponding anamnesis (e.g., liver cirrhosis in alcoholics). The varices can rupture during heavy vomiting and cause hematemesis.

**Diagnosis of Boerhaave and Mallory-Weiss Syndrome**

**Medical imaging and esophagogastroscopy**

In Boerhaave syndrome, a radiograph of the chest and esophagus with water-soluble contrast medium should be performed immediately. The use of barium should be avoided in cases of suspected perforation, however, as it raises the risk of mediastinitis.

Asking the following questions can help practitioners reach a diagnosis: How is the
contour of the esophagus shaped? Is there a pneumothorax or a pleural effusion?

A computed tomography (CT) scan of the thorax will help answer questions about the extent of the rupture; as well, cutaneous emphysema, if present, can be seen with a CT scan.

If Mallory-Weiss syndrome is suspected, an esophagogastroscopy should be performed immediately, as this will help assess the necessary course of treatment.
Therapy of Boerhaave and Mallory-Weiss Syndrome

Surgery, stent or fibrin?

If Boerhaave syndrome is diagnosed, surgery should be performed within the first 24 hours, as mortality rates are about 60%. Ruptured areas are released and sutured. If this is not possible due to pronounced results, an esophagectomy with gastric pull-up or colon interposition should be performed. If the rupture is small, an endoscopic stent can be attempted. Due to the risk of mediastinitis, broad-spectrum antibiotics should be introduced.

In Mallory-Weiss syndrome, surgery is rarely necessary. An endoscopic hemostasis (fibrin glue or injection of adrenaline into the source of bleeding) is usually sufficient.

Note: The use of a balloon tamponade is not recommended for either syndrome.
Complications

Mediastinitis and blood loss

Because of the esophageal perforation seen in Boerhaave syndrome, mediastinitis can develop. Typical symptoms include fever, retrosternal pain, cutaneous emphysema, superior leverage accumulation, and shock. The upper respiratory tract may be moved. Sepsis with spread to the pleura or pericardium is possible.

Another dangerous complication of Boerhaave syndrome is thrombosis of the vena cava. If a chest X-ray reveals a widened mediastinum and cutaneous emphysema in the area of the jugular, these are considered warning signs for mediastinitis.

In Mallory-Weiss syndrome, lesions of the mucous membrane and consequent bleeding are crucial. This can lead to significant blood loss, especially in patients treated with anticoagulant drugs.

Review Questions

The solutions can be found below the references.

1. Which symptoms does a patient with Boerhaave syndrome NOT usually have?
   A. Retrosternal pain
   B. Fever
   C. Dysphagia
   D. Erythema nodosum
   E. Subcutaneous emphysema

2. In Mallory-Weiss syndrome:
   A. A rupture occurs in all layers of the esophagus.
   B. Alcohol abuse must not be preceded.
   C. Surgery should be performed within 24 hours after diagnosis.
   D. A pneumothorax often develops.
   E. Women are more often affected than men.

3. A 40-year-old man is brought to the emergency department by ambulance. After an episode of severe vomiting, he suddenly experiences stabbing pains on the left thoracic side. He then begins to complain of increasing dyspnea. The patient shows cold welding and is tachycardic. Alcohol abuse is noted in his anamnesis. Chest X-ray reveals a widened mediastinum and cutaneous emphysema on the jugular. Which diagnosis is most likely?
   A. Esophageal variceal rupture.
   B. Mediastinitis in the course of Boerhaave syndrome.
   C. Mallory-Weiss syndrome after excessive alcohol abuse.
   D. Posterior wall infarction.
   E. Rupture of an aortic aneurysm.

References


**Correct answers:** 1D, 2B, 3B

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