

Gastrointestinal tract Pathology
-midterm / esophageal diseases

- **A test bank**

A 35-year-old man complains of difficulty swallowing and a tendency to regurgitate his food. Endoscopy does not reveal any esophageal or gastric abnormalities. Manometric studies of the esophagus show a complete absence of peristalsis, failure of the lower esophageal sphincter to relax upon swallowing, and increased intraesophageal pressure. Which of the following is the most likely diagnosis?

- (A) Achalasia
- (B) Barrett esophagus
- (C) Esophageal stricture
- (D) Mallory-Weiss syndrome
- (E) Schatzki ring

The answer is A: Achalasia. Achalasia is characterized by failure of the lower esophageal sphincter to relax in response to swallowing and the absence of peristalsis in the body of the esophagus. As a result of these defects in both the outflow tract and the pumping mechanisms of the esophagus, food is retained within the esophagus, and the organ hypertrophies and dilates. Achalasia is associated with a depletion or absence of ganglion cells in the myenteric plexuses, which regulate contraction of the esophagus. In Latin America, achalasia can be a manifestation of Chagas disease, in which the ganglion cells are destroyed by *Trypanosoma cruzi*. The other choices are usually associated with visible mucosal abnormalities and do not primarily affect peristalsis.

Diagnosis: Achalasia

A 53-year-old woman complains of acute diarrhea and severe abdominal pain. She was recently treated with broad-spectrum antibiotics for community-acquired pneumonia. A CBC shows a WBC count of $24,000/\mu\text{L}$. The patient subsequently develops septic shock and dies. A portion of her colon is shown at autopsy. These findings are typical of which of the following gastrointestinal diseases?



- (A) Crohn disease
- (B) Diverticulitis
- (C) Ischemic colitis
- (D) Pseudomembranous colitis
- (E) Ulcerative colitis

The answer is D: Pseudomembranous colitis. Pseudomembranous colitis is a generic term for an inflammatory disease of the colon that is characterized by exudative plaques on the mucosa. Antibiotic therapy eliminates the normal mixed flora of the colon and facilitates the overgrowth of *Clostridium difficile*, leading to an acute infection of the colon. The exotoxins produced by *C. difficile* cause intestinal necrosis, with superficial ulcers covered by a thick fibropurulent exudate. The other choices are not related to antibiotic therapy and are not associated with the development of these exudative plaques.

A 70-year-old woman presents with difficulty swallowing and a 9-kg (20-lb) weight loss over the past several months. Endoscopy reveals irregular narrowing of the lower third of the esophagus. A biopsy shows markedly atypical cuboidal cells lining irregular gland-like structures. Which of the following is the most likely diagnosis?

- (A) Adenocarcinoma
- (B) Esophageal stricture
- (C) Leiomyosarcoma
- (D) Scleroderma
- (E) Squamous cell carcinoma

The answer is A: Adenocarcinoma. Adenocarcinoma of the esophagus is now more common (60%) in the United States than squamous carcinoma. Adenocarcinoma originates in the glandular metaplasia of Barrett esophagus. Endoscopic surveillance for adenocarcinoma is now commonly done in patients with Barrett esophagus, particularly those with dysplasia. Tumors tend to grow into the lumen of the esophagus.

A 50-year-old obese man (BMI = 32 kg/m²) comes to the physician complaining of indigestion after meals, bloating, and heartburn. Vital signs are normal. A CT scan of the abdomen reveals a hiatal hernia of the esophagus. Endoscopic biopsy shows thickening of the basal layer of the squamous epithelium, upward extension of the papillae of the lamina propria, and an increased number of neutrophils and lymphocytes. Which of the following is the most likely diagnosis?

- (A) Esophageal varices
- (B) Mallory-Weiss syndrome
- (C) Reflux esophagitis
- (D) Schatzki mucosal ring
- (E) Squamous cell carcinoma

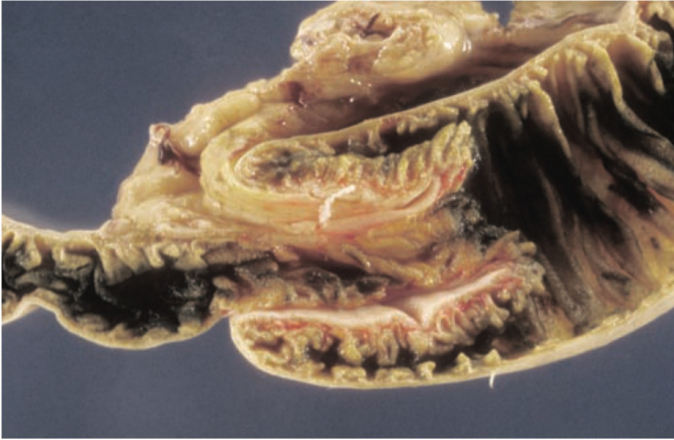
The answer is C: Reflux esophagitis. Esophagitis may be caused by infections, reflux of gastric juice, or exogenous irritants. Of these, the most common type is reflux esophagitis, which is often found in conjunction with a sliding hiatal hernia but may also arise through an incompetent lower esophageal sphincter without any demonstrable anatomical lesion. Chronic exposure to stomach juice causes reactive thickening of the squamous epithelium (leukoplakia) and the underlying stroma. Areas affected by gastric reflux are susceptible to mucosal erosions and ulcers which appear as linear vertical streaks. Neutrophils and lymphocytes accumulate in the mucosa. The other choices are not typical complications of hiatal hernia.

A 30-year-old man with AIDS complains of severe pain on swallowing. Upper GI endoscopy shows elevated, white plaques on a hyperemic and edematous esophageal mucosa. Which of the following is the most likely diagnosis?

- (A) Barrett esophagus
- (B) *Candida* esophagitis
- (C) Herpetic esophagitis
- (D) Reflux esophagitis
- (E) Squamous cell carcinoma in situ

The answer is B: *Candida* esophagitis. *Candida* esophagitis has become commonplace because of an increasing number of immunocompromised persons. Esophageal candidiasis also occurs in patients with diabetes and in those receiving antibiotic therapy. The pseudomembranes are composed of fungal mycelia, fibrin, and necrotic debris. Involvement of deeper layers of the esophageal wall can lead to disseminated candidiasis, as well as fibrosis, which is sometimes severe enough to create esophageal stricture. Symptoms include dysphagia and odynophagia (pain on swallowing). Herpetic esophagitis (choice C) features mucosal vesicles. The other choices are not characterized by the formation of elevated white plaques on the esophageal mucosa.

A 2-year-old boy is brought to the emergency room with a 48-hour history of nausea, vomiting, and abdominal discomfort. Physical examination reveals right lower quadrant guarding. Ultrasound examination of the abdomen reveals a 2-cm mass in the right iliac fossa. A segment of the small intestine is removed (shown in the image). Which of the following best describes this pathologic finding?



- (A) Intestinal infarct
- (B) Intussusception
- (C) Meckel diverticulum
- (D) Peutz-Jeghers polyps
- (E) Volvulus



The answer is B: Intussusception. Mechanical obstruction to the passage of intestinal contents can be caused by (1) a luminal mass, (2) an intrinsic lesion of the bowel wall, or (3) extrinsic compression. Obstruction in this case was caused by intussusception, in which a segment of bowel (intussusceptum) protruded distally into a surrounding outer portion (intussusciens). This condition is usually a disorder of infants or young children, in whom it occurs without a known cause. In adults, the leading point of an intussusception is usually a lesion in the bowel wall, such as Meckel diverticulum or a tumor. Once the leading point is entrapped in the intussusciens, peristalsis drives the intussusceptum forward. In addition to acute intestinal obstruction, intussusception compresses the blood supply to the intussusceptum, which may become infarcted. If the obstruction is not relieved spontaneously, treatment requires surgery. None of the other choices display “telescoping” of the small intestine. Meckle diverticulum (choice C) is an outpouching of the gut caused by persistence of the embryonic vitelline duct. It is the most common congenital anomaly of the small intestine and is usually asymptomatic. Peutz-Jeghers polyps (choice D) are hamartomas of the small intestine. Volvulus (choice E) is an example of intestinal obstruction and acute abdomen, in which a segment of the gut twists on its mesentery, kinking the bowel and usually interrupting its blood supply.

A 40-year-old man presents with chest pain, particularly after meals, and difficulty swallowing solid foods. He reports a history of acid reflux. Upper endoscopy reveals erosive esophagitis with ulcerations and stricture formation in the distal esophagus. What is the probable diagnosis?

Answer: The probable diagnosis is gastroesophageal reflux disease (GERD) complicated by peptic stricture, characterized by erosive esophagitis, ulcerations, and narrowing of the esophagus due to chronic acid reflux.

A 50-year-old female presents with dysphagia to both solids and liquids. She reports a sensation of food getting stuck in her chest and experiences frequent episodes of coughing and choking. What is the most likely diagnosis?

Answer: Achalasia.

Which of the following medications is commonly used to treat GERD?

- a) Antibiotics
- b) Antihistamines
- c) Proton pump inhibitors (PPIs)
- d) Antidepressants

Answer: c) Proton pump inhibitors (PPIs)

What is the primary cause of GERD?

- a) Bacterial infection
- b) Excessive acid production
- c) Weak lower esophageal sphincter (LES)
- d) Overconsumption of water

Answer: c) Weak lower esophageal sphincter (LES)

What is the main diagnostic test for GERD?

- a) MRI
- b) Blood test
- c) Endoscopy
- d) Electrocardiogram (ECG)

Answer: c) Endoscopy

Which of the following is the most common cause of fungal esophagitis?

- a) *Candida albicans*
- b) *Aspergillus fumigatus*
- c) *Cryptococcus neoformans*
- d) *Histoplasma capsulatum*

Answer: a) *Candida albicans*

What role does the lower esophageal sphincter (LES) play in GERD?

- a) It regulates airflow into the lungs
- b) It controls the movement of food from the esophagus to the stomach
- c) It prevents acid reflux from the stomach into the esophagus
- d) It aids in digestion by secreting enzymes

Answer: c) It prevents acid reflux from the stomach into the esophagus

Which of the following is a risk factor for developing GERD?

- a) Being underweight
- b) Pregnancy
- c) Regular exercise
- d) Avoiding spicy foods

Answer: b) Pregnancy

What is the sensation of regurgitation in GERD?

- a) Feeling of food stuck in the throat
- b) Excessive salivation
- c) Sour or bitter taste in the mouth
- d) Difficulty swallowing

Answer: c) Sour or bitter taste in the mouth

Which of the following diagnostic tests is typically used to diagnose achalasia?

- a) Electrocardiogram (ECG)
- b) Colonoscopy
- c) Barium swallow study
- d) MRI of the brain

Correct answer: c) Barium swallow study

The primary risk factor for developing fungal esophagitis is:

- a) Smoking
- b) Age over 65
- c) Immunodeficiency
- d) Obesity

Answer: c) Immunodeficiency

The gold standard for diagnosing fungal esophagitis is:

- a) Endoscopy with biopsy
- b) Blood culture
- c) Chest X-ray
- d) CT scan

Answer: a) Endoscopy with biopsy

Barrett's esophagus is a complication of GERD that increases the risk of which type of cancer?

- a) Esophageal adenocarcinoma
- b) Esophageal squamous cell carcinoma
- c) Gastric cancer
- d) Pancreatic cancer

Answer: a) Esophageal adenocarcinoma

Achalasia is characterized by:

- a) Increased peristalsis of the esophagus
- b) Inability of the lower esophageal sphincter to relax
- c) Excessive production of stomach acid
- d) Thickening of the esophageal mucosa

Answer: b) Inability of the lower esophageal sphincter to relax