

Clinical cases about 2nd week lectures

1) A 45-year-old man describes burning epigastric pain 2 to 3 hours after eating. Foods, antacids, and over-the-counter medications provide no relief, and prescribed inhibitors of acid secretion are only moderately effective. Recently, the patient noticed that his stools were black. Physical examination reveals abdominal tenderness. The blood pressure is 120/80 mm Hg in the supine position and 90/50 mm Hg sitting up. The patient complains of lightheadedness upon returning to a standing position. CBC shows a hemoglobin of 6.3 g/dL. Endoscopy reveals multiple gastric and duodenal ulcers. Epigastric pain and anemia are most likely related to a neoplasm arising in which of the following anatomic locations?

- (A) Adrenal medulla
- (B) Ampulla of Vater
- (C) Duodenum
- (D) Esophagus
- (E) Pancreas

2) A 60-year-old man presents with an 8-week history of progressive weight loss, nausea, and upper abdominal pain that does not respond to antacids or H₂-receptor antagonists. Laboratory studies show iron-deficiency anemia. Gastroscopy reveals a crater-like, ulcerated lesion in the antrum, with raised, irregular, and indurated margins. The patient undergoes partial gastrectomy and the surgical specimen is shown in the image. Which of the following is the most likely diagnosis?

- (A) Acute erosive gastritis
- (B) Adenocarcinoma
- (C) Curling ulcer
- (D) Linitis plastica
- (E) Peptic ulcer disease



3) A 58-year-old woman presents with a 2-month history of abdominal discomfort and dark stools. Physical examination shows pallor but no evidence of jaundice. Laboratory studies disclose a microcytic, hypochromic anemia, with a hemoglobin level of 6.7 g/dL. A barium swallow radiograph reveals a “leather bottle” appearance of the stomach. Microscopic examination shows diffusely infiltrating malignant cells, many of which are “signet ring” cells, in the stomach wall. Which of the following is the most likely diagnosis?

- (A) Fungating adenocarcinoma
- (B) Gastric leiomyosarcoma
- (C) Gastric lymphoma
- (D) Linitis plastica
- (E) Ménétrier disease

Answers:

- 1) **The answer is E: Pancreas.** Zollinger-Ellison syndrome is characterized by unrelenting peptic ulceration in the stomach or duodenum (or even proximal jejunum) by the action of tumor-derived gastrin. Gastrin-producing neuroendocrine tumors (gastrinomas) usually arise in the pancreatic islets. Among islet cell tumors, pancreatic gastrinomas are second in frequency only to insulinomas. Duodenum (choice C) is incorrect because only 15% of cases of Zollinger-Ellison syndrome are due to gastrinomas outside the pancreas (e.g., duodenum). Most gastrinomas are malignant. Diagnosis: Zollinger-Ellison syndrome, peptic ulcer disease, gastric ulcer

- 2) **The answer is B: Adenocarcinoma.** Adenocarcinoma of the stomach accounts for more than 95% of all malignant gastric tumors. Most patients have metastases by the time they are seen for examination. The most frequent initial symptom of gastric cancer is weight loss, usually associated with anorexia and nausea. Most patients complain of epigastric pain—a symptom that mimics benign gastric ulcer disease, and is often relieved by antacids or H₂-receptor antagonists. On gross inspection, gastric cancer appears as a polypoid, fungating, or ulcerated mass, or diffuse infiltration of the stomach wall. This patient has an ulcerating carcinoma. Acute erosive gastritis (choice A) and peptic ulcer disease (choice E) do not typically present with rapid weight loss, and these benign ulcers usually do not have heaped-up (raised), ragged margins. Curling ulcers (choice C) occur in severely burned patients. Diagnosis: Gastric adenocarcinoma

- 3) **The answer is D: Linitis plastica.** Diffuse adenocarcinoma constitutes 10% of all stomach cancers. No true tumor mass is seen macroscopically. Instead, the wall of the stomach is conspicuously thickened and firm, accounting for the radiologic “leather bottle” appearance. When the entire stomach is involved, the term linitis plastica is applied. The invading tumor cells induce extensive fibrosis in the submucosa and muscularis of the stomach wall. Gastric carcinomas typically metastasize to regional lymph nodes and the liver. Signet ring cells are so named because intracellular mucin displaces the nuclei to the periphery of the tumor cells. Gastric carcinomas and linitis plastica, in particular, have a poor prognosis. The other choices do not show the characteristic morphologic appearance of linitis plastica and generally do not exhibit signet ring cells. Diagnosis: Gastric adenocarcinoma

4) A 60-year-old man presents with epigastric pain after meals, with some nausea and vomiting. A burning sensation in the midepigastrium is relieved by antacids and H2 antagonists. Upper endoscopy demonstrates paired ulcers on both walls of the proximal duodenum. Which of the following represents the most common complication of this patient's duodenal disease?

- (A) Bleeding
- (B) Malignant transformation
- (C) Obstruction
- (D) Perforation
- (E) Peritonitis

5) A 27-year-old woman presents with a 9-month history of bloody diarrhea and crampy abdominal pain. Three weeks ago, she noticed that her left knee was swollen, red, and painful. Her temperature is 38°C (101°F), respirations are 32 per minute, and blood pressure is 130/90 mm Hg. Abdominal palpation reveals tenderness over the left lower quadrant. Laboratory studies show moderate anemia, with a hemoglobin level of 9.3 g/dL. Microscopic examination of the stool reveals numerous red and white blood cells. A diffusely red, bleeding, friable colonic mucosa is visualized by colonoscopy. The colon is subsequently removed and the surgical specimen is shown in the image. Which of the following is the most likely diagnosis?

- (A) Adenocarcinoma
- (B) Carcinoid tumor
- (C) Crohn disease
- (D) Pseudomembranous colitis
- (E) Ulcerative colitis



6) The patient described in Question 5 is at increased risk of developing which of the following complications?

- (A) Adenocarcinoma
- (B) Fistula
- (C) Granulomatous lymphadenitis
- (D) Transmural inflammation
- (E) Volvulus

Answers:

4) **The answer is A: Bleeding.** Bleeding is the most common complication of peptic ulcer disease, occurring in about 20% of patients. Chronic blood loss due to occult bleeding is often a feature of peptic ulcers, whereas massive bleeding occurs less often. Perforation (choice D) is a serious complication that occurs in 5% of patients. Perforating ulcers are commonly encountered in the duodenum. Duodenal peptic ulcers do not undergo malignant transformation (choice B). The other choices are uncommon. Diseases associated with peptic ulcers include cirrhosis, chronic renal failure, hereditary endocrine syndromes (MEN-1), α_1 -antitrypsin deficiency, and chronic pulmonary disease. Diagnosis: Duodenal ulcer, peptic ulcer disease

5) **The answer is E: Ulcerative colitis.** Ulcerative colitis is an inflammatory disease of the large intestine characterized by chronic diarrhea and rectal bleeding. It is associated with a pattern of remission and exacerbations and the possibility of serious local and systemic complications. The disorder occurs principally, but not exclusively, in young adults. Ulcerative colitis is essentially a disease of the mucosa. The process extends from the rectum for a variable distance proximally and is limited to the colon and rectum. Pseudomembranous colitis (choice D) is usually a complication of antibiotic therapy, and the mucosal surface of the colon is covered by raised, irregular plaques composed of necrotic debris and an acute inflammatory exudate. Crohn disease (choice C) typically affects the colon in a patchy distribution with transmural inflammation. Diagnosis: Ulcerative colitis

6) **The answer is A: Adenocarcinoma.** Patients with longstanding ulcerative colitis have a higher risk of developing colorectal cancer (adenocarcinoma) than does the general population. This risk is related to the extent of colorectal involvement and the duration of the inflammatory process. Thus, people with involvement of the entire colon are at the greatest risk of developing colorectal cancer. Intestinal fistula (choice B) is a complication of Crohn disease. Ulcerations in ulcerative colitis are largely confined to the mucosa (not transmural, choice D). Diagnosis: Ulcerative colitis

7) A 44-year-old woman complains of having yellow eyes, dark urine, and recurrent fever for about 3 months. She has a long history of chronic diarrhea. On physical examination, the patient is thin and jaundiced. The liver edge descends 1 cm below the right costal margin and is nontender. Laboratory studies show elevated serum bilirubin of 3.8 mg/dL, normal levels of AST and ALT, and an elevated level of alkaline phosphatase (440 U/dL). Endoscopic retrograde cholangiopancreatography demonstrates a beaded appearance of the extrahepatic biliary tree. Which of the following is the most likely underlying cause of diarrhea in this patient?

- (A) Amebiasis
- (B) Amyloidosis
- (C) Carcinoma of the ampulla of Vater
- (D) Celiac sprue
- (E) Ulcerative colitis

8) A 21-year-old man is brought to the emergency room with symptoms of acute intestinal obstruction. His temperature is 38°C (101°F), respirations are 25 per minute, and blood pressure is 120/80 mm Hg. Physical examination reveals a mass in the right lower abdominal quadrant. The patient subsequently undergoes surgery, and a segmental lesion involving the terminal ileum is resected (shown in the image). Which of the following is the most likely diagnosis?

- (A) Adenocarcinoma
- (B) Carcinoid tumor
- (C) Crohn disease
- (D) Pseudomembranous colitis
- (E) Ulcerative colitis



9) A 25-year-old woman is brought to the emergency room with symptoms of acute intestinal obstruction. The patient has an 8-month history of blood-tinged diarrhea and cramping abdominal pain. Her temperature is 38°C (101°F), and respirations are 32 per minute. There is abdominal tenderness to palpation. Laboratory studies show moderate anemia, with serum hemoglobin of 9.3 g/dL. Microscopic examination of the stool reveals numerous RBCs and WBCs. A CT scan of the abdomen shows massive distention of the transverse colon. Which of the following is the most likely underlying cause of this patient's colonic disorder?

- (A) Adenocarcinoma
- (B) Carcinoid tumor
- (C) Crohn disease
- (D) Pseudomembranous colitis
- (E) Ulcerative colitis

Answers:

7) **The correct answer is E: Ulcerative colitis.** Primary sclerosing cholangitis (PSC) is characterized by inflammation and obliterative fibrosis of intrahepatic and extrahepatic bile ducts. Approximately 70% of patients with PSC have longstanding ulcerative colitis, although the prevalence of PSC in such patients is only 4%. The clinicopathologic findings are complemented by a characteristic radiographic appearance of a beaded biliary tree, representing sporadic strictures. The other choices are not associated with PSC. Diagnosis: Primary sclerosing cholangitis, ulcerative colitis

8) **The answer is C: Crohn disease.** Crohn disease is a transmural, chronic inflammatory disease that may affect any part of the digestive tract but occurs principally in the distal small intestine and occasionally the right colon. It has variously been referred to as terminal ileitis and regional ileitis when it involves the ileum and granulomatous colitis when it principally affects the colon. Skip lesions are common. The affected mucosa has a characteristic “cobblestone” appearance (shown in the image) due to the presence of linear ulcerations and edema, and inflammation of the intervening tissue. The other choices do not show the characteristic cobblestone morphology that is seen in this case. Diagnosis: Crohn disease

9) **The answer is E: Ulcerative colitis.** Local complications of ulcerative colitis include toxic megacolon, perforation, inflammatory pseudopolyps, hemorrhage, and adenocarcinoma. The other choices are not associated with the development of toxic megacolon. Diagnosis: Toxic megacolon, ulcerative colitis

10) A 24-year-old man is brought to the emergency room with symptoms of acute intestinal obstruction. His temperature is 38°C (101°F), respirations are 25 per minute, and blood pressure is 120/80 mm Hg. Physical examination reveals a mass in the right lower abdominal quadrant. At laparoscopy, there are numerous small bowel strictures and a fistula extending into a loop of small bowel. Which of the following is the most likely diagnosis?

- (A) Adenocarcinoma
- (B) Carcinoid tumor
- (C) Crohn disease
- (D) Pseudomembranous colitis
- (E) Ulcerative colitis

11) A 16-year-old girl complains of chronic abdominal distention, flatulence, and diarrhea after drinking milk. Elimination of milk and other dairy products from the patient's diet relieves these symptoms. This example of malabsorption is caused by a functional deficiency of which of the following enzymes associated with the intestinal brush border membrane?

- (A) Disaccharidase
- (B) Glycogen phosphorylase
- (C) Hyaluronidase
- (D) Mannosidase
- (E) Sphingomyelinase

12) A 2-year-old girl with a history of chronic constipation since birth is brought to the emergency room because of nausea and vomiting. Physical examination shows marked abdominal distension. Abdominal radiography reveals distended bowel loops with a paucity of air in the rectum. A rectal biopsy shows an absence of ganglion cells. Which of the following is the most likely diagnosis?

- (A) Acquired megacolon
- (B) Anorectal stenosis
- (C) Hirschsprung disease
- (D) Imperforate anus
- (E) Rectal atresia

Answers:

10) The answer is C: Crohn disease. Crohn disease is a transmural, chronic inflammatory disease that may affect any part of the digestive tract. Intestinal obstruction and fistulas are the most common intestinal complications of Crohn disease. Occasionally, free perforation of the bowel occurs. The risk of small bowel cancer is increased at least threefold in patients with Crohn disease. Pseudomembranous colitis (choice D) and ulcerative colitis (choice E) are not associated with fistula formation. Adenocarcinoma (choice A) rarely, if ever, arises in the terminal ileum. Diagnosis: Crohn disease

11) The answer is A: Disaccharidase. Acquired lactase deficiency is a widespread disorder of carbohydrate absorption. The symptoms of this disease typically begin in adolescence, when patients complain of flatulence and diarrhea after the ingestion of dairy products. Lactose is one of the most common disaccharides in dairy products. The intestinal brush border contains disaccharidases that are important for cleavage of lactose to free glucose and galactose for absorption. Congenital lactase deficiency is rare but may be lethal if not recognized. The other choices do not hydrolyze lactose. Diagnosis: Lactose intolerance

12) The answer is C: Hirschsprung disease. Hirschsprung disease, also referred to as congenital megacolon, results from a congenital defect in the innervation of the large intestine, usually in the rectum. Severe chronic constipation is typical. Marked dilation of the colon occurs proximal to the stenotic rectum, with clinical signs of intestinal obstruction. The other choices are not associated with loss of ganglion cells. Diagnosis: Hirschsprung disease

13) A 25-year-old woman presents with persistent bloody diarrhea of 4 weeks' duration. She has experienced severe abdominal cramping for the past 3 days. Her temperature is 38°C (101°F), respirations are 22 per minute, and blood pressure is 120/70 mm Hg. Physical examination reveals abdominal tenderness and mild abdominal distension. Bowel sounds are diminished. Laboratory studies show mild hypochromic, normocytic anemia. Stool cultures are negative for pathogens, and no ova or parasites are detected. A blood test for *Clostridium difficile* toxin is negative. Recto-sigmoidoscopy shows hemorrhagic mucosal lesions in the distal colorectal region. A biopsy of the colon reveals crypt abscesses, basal lymphoplasmacytosis and crypt distortion. Which of the following represents the most common extraintestinal manifestation of the colonic disorder in this patient?

- (A) Arthritis
- (B) Cystitis
- (C) Gastritis
- (D) Pancreatitis
- (E) Sepsis

14) A 74-year-old woman presents with 3 weeks of left lower quadrant abdominal pain, changes in bowel habits, and intermittent fever. Her temperature is 38°C (101°F), respirations are 19 per minute, and blood pressure is 130/80 mm Hg. Physical examination shows left lower quadrant tenderness. A CBC reveals neutrophilia. An abdominal-pelvic ultrasound examination is normal. Which of the following is the most likely diagnosis?

- (A) Appendicitis
- (B) Diverticulitis
- (C) Ovarian carcinoma
- (D) Renal colic
- (E) Uterine leiomyoma

15) A 4-year-old girl is brought to the physician because her parents noticed that she has been having pale, fatty, foul-smelling stools. The patient is at the 50th percentile for height and 10th percentile for weight. Her symptoms respond dramatically to a gluten-free diet. Which of the following is the most likely diagnosis?

- (A) Celiac sprue
- (B) Cystic fibrosis of the pancreas
- (C) Ménétrier disease
- (D) Tropical sprue
- (E) Whipple disease

16) 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



Answers:

13) The answer is A: Arthritis. The case history is indicative of ulcerative colitis. Arthritis is seen in 25% of patients with ulcerative colitis. Uveitis and skin lesions develop in approximately 10% of patients. The most common cutaneous lesions are erythema nodosum and pyoderma gangrenosum. Liver disease occurs in about 4% of patients, the most common pathologic findings being pericholangitis and fatty liver. *The other choices do not represent extraintestinal manifestations of ulcerative colitis.* Diagnosis: Ulcerative colitis, arthritis

14) The answer is B: Diverticulitis. Diverticular disease refers to two entities: a condition termed diverticulosis and an inflammatory complication called diverticulitis. Diverticulosis is generally asymptomatic. Diverticulitis results from the irritation caused by retained fecal material that obstructs the lumen of a diverticulum. Clinically, the most common symptoms of diverticulitis usually follow microscopic or gross perforation of the diverticulum. Diverticula are most common in the sigmoid colon, which is affected in 95% of cases. Peritonitis and sepsis are serious complications. Appendicitis (choice A) usually presents with right lower quadrant pain. None of the other choices presents with gastrointestinal symptoms and fever. Diagnosis: Diverticulitis

15) The answer is A: Celiac sprue. Celiac sprue, which is also referred to as gluten-sensitive enteropathy, is characterized by (1) generalized malabsorption, (2) small intestinal mucosal lesions, and (3) prompt clinical and histopathologic response to the withdrawal of gluten-containing food. Critical factors in the development of celiac sprue include genetic predisposition and gliadin exposure. The hallmark of celiac disease is a flat mucosa, with blunting of villi, damaged epithelial cells, intraepithelial T cells, and increased plasma cells in the lamina propria. The other choices do not respond to a gluten-free diet. Diagnosis: Celiac sprue

16) 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. Meckel 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. Diagnosis: Intussusception