Test Bank

MULTIPLE CHOICE

1. A 47-year-old woman with a longstanding history of heartburn complains of severe heartburn. You make the diagnosis of gastroesophageal reflux disease (GERD). An upper endoscopy study is positive for Barrett's esophagus. Which of the following correctly describes Barrett's esophagus?
   A. Replacement of the squamous epithelium of the esophagus with columnar epithelium
   B. Replacement of the columnar epithelium of the esophagus with squamous epithelium
   C. The presence of moderate-to-high grade dysplasia in the esophagus
   D. The presence of low-to-moderate grade dysplasia in the esophagus
   E. The presence of any stricture within the esophagus

   Answer
   A – Replacement of the squamous epithelium of the esophagus with columnar epithelium is correct. Barrett's esophagus appears when the squamous epithelium of the esophagus is replaced by brownish metaplastic columnar epithelium extending up from the stomach in a tongue-like or circumferential fashion. Barrett's esophagus is present in up to 10% of patients with chronic reflux and is associated with an increased risk of neoplasia.

   Other choices
   B – Replacement of the columnar epithelium of the esophagus with squamous epithelium is incorrect. Normal esophageal epithelium is squamous, and not columnar.
   C – The presence of moderate-to-high grade dysplasia in the esophagus is incorrect. Esophageal dysplasia is thought to be premalignant, progressing from low to moderate to high grade dysplasia to carcinoma in situ, but does not describe Barrett's esophagus.
   D – The presence of low-to-moderate grade dysplasia in the esophagus is incorrect. Low or moderate grade dysplasia is not associated with Barrett's esophagus.
   E – The presence of any stricture within the esophagus is incorrect. Barrett's esophagus is not described by esophageal stricture.

2. A 65-year-old woman with a history of congestive heart failure, osteoarthritis, and hypertension presents with pain and tenderness, which is relieved by food or antacids. Upper endoscopy reveals a gastric ulcer. Her current medications include digoxin, metoprolol, lisinopril, aspirin, and hydrochlorothiazide. Which of her medications is most likely to have contributed to her peptic ulcer disease?
   A. Digoxin
   B. Metoprolol
   C. Lisinopril
   D. Aspirin
   E. Hydrochlorothiazide

Answer
D – Aspirin is correct. This patient is probably taking aspirin for her osteoarthritis. The risk of developing gastric ulcers is increased in all chronic nonsteroidal anti-inflammatory drug (NSAID) users. NSAIDs function as cyclo-oxygenase (COX) inhibitors, blocking prostaglandin production in the gastric mucosa. Prostaglandins are cytoprotective in the gastric mucosa preventing damage to the gastric mucosal barrier. Newer NSAIDs have been designed to reduce the risk of gastric complications of NSAID therapy.

Other choices
A – Digoxin has a variety of adverse effects, but does not predispose patients to peptic ulcer disease.
B – Metoprolol is a beta-blocker and beta blocking agents do not predispose patients to peptic ulcer disease.
C – Lisinopril is an angiotensin-converting enzyme (ACE) inhibitor and has not been linked to peptic ulcer disease.
E –Hydrochlorothiazide is a thiazide diuretic, and thiazides have not been linked to peptic ulcer disease.

3. A 45-year-old woman complains of episodic epigastric pain. She denies fevers, chills, diaphoresis, flushing, chest pain or shortness of breath. An upper endoscopy reveals severe and atypical peptic ulcer disease. Biopsy results are *Helicobacter pylori* negative and she denies taking NSAIDs. Continued workup should include serum levels of which of the following?
A. Serotonin
B. Gastrin
C. Vasoactive intestinal peptide (VIP)
D. Cholecystokinin (CCK)
E. Histamine

Answer
B – Gastrin is correct. Severe peptic ulcer disease in the absence of predisposing factors such as NSAID use or *H. pylori* infection should raise a suspicion for Zollinger-Ellison syndrome (also known as gastrinoma). In this syndrome gastrin-secreting gut tumors lead to hypergastrinemia and gastric acid hypersecretion.

Other choices
A –Serotonin has not been implicated in peptic ulcer disease.
C –VIP is incorrect. VIPomas are associated with watery diarrhea, leading to dehydration, but VIP, however, is not associated with peptic ulcer disease.
D – CCK is incorrect. It is produced by I cells in the small intestine and increases secretion of digestive enzymes from the pancreas and bile from the gallbladder, and is not associated with peptic ulcer disease.
E – Histamine is incorrect. Although histamine is an important secretagogue for gastric acid secretion, histamine excess is also associated with vasodilation, often leading to potentially fatal hypotension.

4. A 67-year-old man presents with mild dysphagia and throat discomfort that has slowly progressed over the past 5 years. He reports waking up at night choking and regurgitating undigested food. He has been troubled by halitosis and has noticed a small protrusion in his neck over the past year. He denies weight loss or heartburn. Which of the following is most consistent with his symptoms?
A. Achalasia
B. Zenker's diverticulum
C. Gastroesophageal reflux disease
D. Schatzki's ring
E. Esophageal cancer

Answer
B – Zenker's diverticulum is correct. Zenker's diverticulum is a protrusion of the pharyngeal mucosa resulting from a loss of elasticity of the upper esophageal sphincter. Dysphagia and regurgitation slowly progress over years in middle-aged or elderly patients. Other symptoms may include throat discomfort, coughing, halitosis, and a protrusion in the neck. Treatment consists of surgical upper esophageal myotomy, and often diverticulectomy.

Other choices
A – Achalasia is incorrect. Gradual, progressive dysphagia and regurgitation are characteristic of achalasia. No weight loss was noted in this case. Patients with achalasia experience discomfort in the substernal region, not the throat, and neck protrusions are not observed.
C – Gastroesophageal reflux disease is incorrect. Gastroesophageal reflux disease can lead to a peptic stricture within the esophagus, which could lead to dysphagia and regurgitation, but the patient's discomfort would be lower than the neck, and no neck protrusion would be seen.
D – Schatzki's ring is incorrect. Patients with Schatzki's ring, a lower esophageal ring associated with a hiatal hernia, experience dysphagia that is intermittent, not progressive.
E – Esophageal cancer is incorrect. Patients with esophageal cancer have progressive dysphagia. They also present with weight loss, which this patient did not exhibit.

5. A 56-year-old retired schoolteacher presents with progressive dysphagia, substernal pain with eating, and weight loss over the course of 1 year. He has never traveled outside the United States. Barium esophagography reveals esophageal dilation, lack of esophageal peristalsis, and a 'bird's beak' tapering of the distal esophagus. Which of the following is a likely cause of this patient's condition?
A. Achalasia
B. Zenker's diverticulum
C. Barrett's esophagus
D. Chagas disease
E. Increased pressure of the upper esophageal sphincter

Answer
A – Achalasia is correct. Achalasia is characterized by loss of peristalsis in two-thirds of the esophagus and impaired relaxation of the lower esophageal sphincter. Barium swallow studies reveal a dilated esophagus and a tapering of the distal esophagus, classically referred to as a 'bird's beak'. The diagnosis is confirmed by esophageal manometry.

Other choices
B – Formation of an esophageal diverticulum is incorrect. Esophageal diverticula, can present with symptoms similar to those of dysphagia, but a barium swallow study would not reveal the findings seen in this patient.
C – Barrett's esophagus is incorrect. Barrett's esophagus involves the migration of gastric columnar epithelium into the esophagus, but does not usually lead to dysphagia or the findings seen in this patient.
D – Chagas disease is incorrect. Chagas disease, which is caused by trypanosome infection, can lead to esophageal findings identical to those seen in achalasia, but would be unlikely in this patient, because he has never traveled to Central or South America.
E – Increased pressure of the upper esophageal sphincter is incorrect. Increased pressure of' the upper esophageal sphincter would be more likely to lead to a Zenker's diverticulum.

6. A 79-year-old woman presents to the emergency department with right lower quadrant abdominal pain of several hours' duration. She has a temperature of 101.7º C and has tenderness to palpation in the right lower quadrant of her abdomen. Abdominal computed tomography (CT) scan reveals diverticulitis of the colon. Where are diverticula most frequently found in the colon?
A. Cecum
B. Ascending colon
C. Transverse colon
D. Descending colon
E. Sigmoid colon

Answer
E – Sigmoid colon is correct. The incidence of colonic diverticular disease increases with age, with an incidence of over 50% in patients over age 80. Most patients with diverticulosis have diverticula in the sigmoid colon, where intraluminal pressures are higher than in other colonic segments.

Other choices
A – Diverticular disease is rarely seen in the cecum.
B – Ascending colon is incorrect. Although diverticular disease can involve any segment of the colon, it is most commonly found in the descending colon especially the sigmoid.
C – The transverse colon, like the ascending colon, is not frequently involved in diverticular disease.
D – Diverticular disease in the descending colon is not uncommon, but intraluminal pressures are still higher in the sigmoid colon and diverticula are more likely to be found in the sigmoid colon than the descending colon.

7. A 30-year-old woman with severe Crohn's disease is taken to surgery for an ileal resection. What nutritional deficiency does this woman risk in the future?
A. Folate deficiency
B. Niacin deficiency
C. Thiamine deficiency
D. Iron deficiency
E. Vitamin B_{12} deficiency

Answer
E – Vitamin B_{12} deficiency is correct. The vitamin B_{12} intrinsic factor complex is absorbed in the ileum. Thus, vitamin B_{12} deficiency can result from resection of the ileum. The most common result of vitamin B_{12} deficiency is anemia, with severe deficiency leading to a complicated neurologic syndrome.

Other choices
A – Folate deficiency is often seen in alcoholics, who do not have sufficient dietary intake. Folate deficiency is not often observed in patients with Crohn's disease.
B – Niacin deficiency is incorrect. Niacin is a component of essential cofactors in oxidation–reduction reactions. Niacin deficiency leads to the triad of dermatitis, dementia, and diarrhea.
C – Thiamine deficiency is incorrect. Thiamine deficiency is most often associated with alcoholism, and symptoms include anorexia, muscle cramps, paresthesia and irritability.
D – Iron deficiency is incorrect. Iron is predominantly absorbed in the duodenum, not the ileum. Iron deficiency is often caused by blood loss and is associated with a microcytic anemia.

8. A 60-year-old man presents to your office with facial flushing and abdominal cramps and diarrhea. The workup reveals an elevated level of urinary 5-hydroxyindoleacetic acid (5-HIAA), and subsequently, elevated levels of 5-HIAA in a 24-hour urine collection. What is the most likely diagnosis?
A. Zollinger-Ellison syndrome
B. Cushing's syndrome
C. Malignant carcinoid syndrome
D. Vipoma
E. Glucagonoma

Answer
C – Malignant carcinoid syndrome is correct. Elevated levels of 5-HIAA on 24-hour urine collection are characteristic of carcinoid syndrome. Carcinoid tumors are the most common neuroendocrine tumors and are often malignant. Serotonin is the most important factor causing the symptoms associated with the carcinoid syndrome.

Other choices
A – Zollinger-Ellison syndrome is incorrect. Zollinger-Ellison syndrome results from gastrin-secreting neuroendocrine tumors, also known as gastrinomas. Symptoms include diarrhea, and severe peptic ulcer disease. It is not associated with facial flushing.
B – Cushing's syndrome is incorrect. Cushing's syndrome is seen in hypercortisolism, and includes central obesity, muscle wasting, thin skin, bruisability, hirsutism, purple striae, osteoporosis, poor wound healing, hyperglycemia, leukocytosis, and lymphocytopenia. In a patient with Cushing's syndrome, the diagnosis would be made by detecting an elevated serum cortisol and urinary free cortisol rather than serotonin or 5-HIAA.
D – Vipoma is incorrect. Vipoma is a neuroendocrine tumor that secretes vasoactive intestinal polypeptide (VIP), which causes intestinal glands to secrete a profuse watery diarrhea.
E – Glucagonoma is incorrect. Glucagonomas cause diarrhea, nausea and peptic ulcer disease. It is unlikely that this patient's symptoms are due to a glucagonoma.

9. A 58-year-old woman with type II diabetes mellitus was diagnosed approximately 1 year ago. Her labs show no improvement in blood glucose control over the ensuing months despite treatment. What test should you order to examine her average blood sugar levels over the past few months?
A. Fasting blood glucose
B. Two-hour glucose tolerance test
C. Hemoglobin
D. Hemoglobin A_{lc}
E. Hemoglobin S

Answer
D – Hemoglobin A_{lc} is correct. The best test to evaluate long past blood sugar levels are serum levels of glycosylated hemoglobin, or hemoglobin A_{lc}, which reflect the past 90 days of blood sugar levels and will allow evaluation of the patient's past compliance and adequacy of her treatment.

Other choices
A – Fasting blood glucose is incorrect. Fasting blood glucose is useful for determining a baseline blood glucose level but provides no evidence of past blood sugar control.
B – Two-hour glucose tolerance test is incorrect. The glucose tolerance test is commonly administered to pregnant women of 24–28 weeks' gestation to detect the presence of gestational diabetes, but is not appropriate in this case.
C – Hemoglobin is incorrect. Hemoglobin indicates the presence or absence of anemia, but is not related to type II diabetes.
E – Hemoglobin S is incorrect. Hemoglobin S is a form of hemoglobin present in patients with sickle cell disease and is unrelated to diabetes mellitus.

10. You see a 78-year-old man in clinic for his annual physical. He reports excellent health. During your review of systems, he admits to having difficulty initiating his urine stream, nocturia, and occasionally feels as if he does not completely empty his bladder. Routine lab tests show a normal level of prostate-specific antigen (PSA). Analysis shows no hematuria or crystalluria. What related finding might you anticipate when you move on to his physical exam?
A. Testicular atrophy
B. Urinary calculi (stones) blocking the urethra
C. Hypospadias
D. Irregular prostatic nodularity
E. Uniformly smooth prostatic enlargement

Answer
E – Uniformly smooth prostatic enlargement is correct. A normal prostate should feel firm with a smooth surface to the examiner's gloved finger. The patient clearly has a urinary outlet obstruction, probably caused by benign prostatic hypertrophy (BPH). It is not uncommon for men to develop this condition as they age, but it should not be confused with malignant processes, particularly with normal PSA levels. BPH may be treated with anti-androgens such as finasteride, herbal remedies (such as saw palmetto), or with a surgical procedure (transurethral resection of prostate [TUR]). The condition may progress to complete outlet obstruction with urinary retention and kidney failure without treatment.

Other choices
A – Testicular atrophy is incorrect. As men age there is a decrease in androgen production, sometimes resulting in some testicular atrophy. Testicular atrophy, however, would not cause any restriction of urinary flow through the urethra.
B – Urinary calculi (stones) blocking the urethra is incorrect. Renal stones can cause lower urinary obstruction and are associated with hematuria and microscopic crystals in the urine. The absence of hematuria and flank pain in this patient decrease the likelihood of this diagnosis.
C – Hypospadias is incorrect. Hypospadias is a congenital malformation of the male urinary system resulting in an abnormal opening of the urethral meatus on the ventral surface of the penis. Deficiency in 3β-hydroxysteroid dehydrogenase enzyme results in inadequate masculinization of the genitalia of genetic males.
D – Irregular prostatic nodularity is incorrect. Nodularity or irregularity of the surface of the prostate is an ominous sign, and a biopsy is usually recommended to rule out prostatic cancer. Normal PSA levels in this patient, however, reduce the suspicion of prostate cancer.

11. A 14-year-old male soccer player complains of occasional shortness of breath, particularly during practice or games. You decide to initially treat his asthma with a β_2 agonist inhaler to be used when symptoms appear. By which mechanism will this agent improve his ability to breathe?
A. Bronchodilation via smooth muscle relaxation
B. A decrease of pro-inflammatory cells
C. Prevention of histamine release
D. Inhibition of leukotriene synthesis
E. Leukotriene-l receptor antagonism

Answer
A – Bronchodilation via smooth muscle relaxation is correct. This patient's symptoms point to a diagnosis of exercise-induced asthma. Because his asthma only occurs when he is active and only some of the time, his disease can be classified as mild. The treatment of choice for such cases is an inhaled β-agonist, such as albuterol, which directly promotes the relaxation of airway smooth muscle, leading to bronchodilation and increased air flow.

Other choices
B – A decrease of pro-inflammatory cells is incorrect. Corticosteroids such as beclomethasone decrease the synthesis of pro-inflammatory cells (eosinophils, macrophages, and T lymphocytes) and eventually reduce the hyperresponsive airway smooth muscle's response to irritants. There agents are more useful in chronic asthma.
C – Prevention of histamine release is incorrect. Agents that prevent activation of mast cells, such as cromolyn sodium, are mast cell stabilizers that prevent bronchoconstriction when the airway is exposed to stimuli such as exercise or allergens. Such agents may be useful if the patient's symptoms are inadequately controlled by an inhaler.
D – Inhibition of leukotriene synthesis is incorrect. As leukotrienes are potent mediators of inflammation and bronchial constriction, inhibition of leukotrienes prevents or lessens the severity of asthmatic symptoms. These drugs are not intended for acute asthmatic attacks.