**Supplementary material 3.** Post-intervention exam

1. Which of the following is true regarding acute mesenteric ischemia?
   1. Most patients have a lactic acidosis early in the course of their illness
   2. The mortality rate of acute mesenteric ischemia is roughly 50%
   3. In the absence of angiography, intravenous heparin infusion is the standard of management
   4. Tenderness on physical examination is most often less than a patient’s subjective complaint of pain
   5. The most common CT finding is gas in the portal venous system

Answer: C

1. What is the most common cause of esophageal perforation in the United States?
   1. Boerhaave syndrome
   2. Chemical ingestion
   3. Esophageal endoscopy
   4. Foreign body ingestion

Answer: C

1. Which of the following findings may be present in hypothyroidism?
   1. Nonpitting periorbital edema
   2. Delayed relaxation phase of deep tendon reflexes
   3. Median nerve neuropathy
   4. Hypothermia
   5. All of the above

Answer: E

1. A 60-year-old man with a history of cirrhosis presents with abdominal pain and tense ascites. Paracentesis is performed, and the ascitic fluid granulocyte is 275 cells/mm3. What is the appropriate next step?
   1. Discharge with prescription for pain medications
   2. Obtain surgery consultation
   3. Start ceftriaxone
   4. Wait for culture results

Answer: C

1. A 62-year old man with a history of chronic alcoholism presents with acute-onset epigastric abdominal pain. Initial labs reveal a white blood cell (WBC) count of 19,000 per mm3, a normal chemistry with glucose value of 168 mg per dL, a lactate dehydrogenase (LDH) of 400 IU per L, liver enzymes demonstrating an aspartate aminotransferase (AST) of 137 SF units, and a lipase level that is five times the lab’s upper limit of normal. You admit him with a diagnosis of acute pancreatitis. Which of the following is true?
   1. He has 0 Ranson’s criteria upon admission
   2. He has 1 Ranson’s criteria upon admission
   3. He has 2 Ranson’s criteria upon admission
   4. He has 3 Ranson’s criteria upon admission
   5. His elevated WBC count suggests an infectious etiology

Answer: D

1. A 42-year-old woman who is a self-described “seafood fanatic” presents with a chief complaint of an “allergic reaction”. Thirty minutes after eating tuna at a local restaurant she developed a severe headache, palpitations, nausea, abdominal cramping and remarkable facial flushing. She has eaten fish for her entire life without incident. Which of the following is true?
   1. She should be given subcutaneous epinephrine and parenteral corticosteroids
   2. Perioral paresthesias are typically a classic feature of this illness
   3. Upon discharge, the patient should be advised to avoid all seafood products in the future
   4. The patient should expect symptoms to resolve slowly over the course of 1 week
   5. The symptoms are due to excessive histamine levels in the fish

Answer: E

1. Which of the following helps distinguish Crohn disease from ulcerative colitis?
   1. Crohn’s disease involves the entire bowel wall, resulting in abscess and fistula formation
   2. Extraintestinal manifestations are more common in Crohn disease than ulcerative colitis
   3. Rectal involvement is rare in ulcerative colitis
   4. Toxic megacolon occurs only in ulcerative colitis

Answer: A

1. An institutionalized patient with psychiatric disease presents with abdominal pain, distension, and nausea without vomiting. What’s the diagnosis?
   1. Sigmoid volvulus
   2. Small bowel obstruction
   3. Intussesception
   4. Diabetic Gastroparesis
   5. Cecal volvulus
   6. Answer: A
2. Which is the medication of choice in the initial treatment of acute aortic dissection without shock?
   1. Diltiazem
   2. Esmolol
   3. Nitroglycerin
   4. Sodium Nitroprusside

Answer: B

1. Which of the following is indicated for treatment of a stable, wide complex regular tachycardia at a rate of 200 in a patient with Wolff-Parkinson-White (WPW) syndrome?
   1. Adenosine
   2. Diltiazem
   3. Esmolol
   4. Digoxin
   5. Amiodarone

Answer: E

1. A 48-year-old man presents with a rash. He has been taking trimethoprim-sulfamethoxazole for a prostate infection but is otherwise healthy. Vital signs are blood pressure 130/70, pulse 108, respirations 14, and temperature 38°C (100.4°F). Following fluid administration, what is the appropriate disposition?
   1. Admit to the burn ICU
   2. Discharge with an oral steroid taper and outpatient dermatology follow-up
   3. Discharge with strict return precautions
   4. Start intravenous steroids and admit to a floor bed

Answer: A

1. Which of the following therapies has the fastest onset of action in reducing serum potassium levels in cases of hyperkalemia?
   1. Calcium gluconate
   2. Calcium chloride
   3. Insulin and glucose
   4. Sodium polystyrene sulfonate (Kayexalate)
   5. Sodium bicarbonate

Answer: E

1. Which one is not a cause of widened QRS?
   1. Hyperkalemia
   2. Quinidine
   3. Pacemaker
   4. Isoniazid
   5. WPW Syndrome

Answer: D

1. Which of the following is the most sensitive indicator of high-altitude cerebral edema (HACE)?
   1. Cerebellar ataxia
   2. Vomiting
   3. Abducens nerve palsy
   4. Seizures
   5. Slurred speech

Answer: A

1. Which of the following physiologic changes is expected in hypothermic patients?
   1. Hemoconcentration
   2. Hypoglycemia
   3. Metabolic acidosis
   4. Oliguria
   5. Seizures

Answer: A

1. The latent phase of acute radiation syndrome caused by whole-body irradiation is characterized by:
   1. A symptom-free interval followed by the manifest illness phase
   2. Early decline in the lymphocyte count followed by declines in granulocytes and platelets and resultant pancytopenia
   3. Self-limiting symptoms that usually include autonomic nervous system response with anorexia, nausea and vomiting
   4. Severe nausea, vomiting, diarrhea, and abdominal pain with denuding of the gastrointestinal mucosa and fulminant enterocolitis

Answer: A

1. A 25-year-old man is punched in the face at a bar and presents to you with dental pain. On examination, his right lower first premolar has a fracture exposing yellowish surface. No blood is seen on the tooth. Which of the following is the correct type of fracture and what is the proper management?
   1. Ellis I; follow up in dental clinic in 1 week
   2. Ellis I; follow up in dental clinic next day
   3. Ellis II; follow up in dental clinic in 1 week
   4. Ellis II; follow up in dental clinic next day
   5. Ellis III; immediate dental consult

Answer: D

1. A 65-year-old man presents with sudden, painful loss of vision in his right eye. His visual acuity is markedly decreased in the affected eye. Which of the following is the most likely cause of his symptoms?
   1. Acute angle closure glaucoma
   2. Central retinal artery occlusion
   3. Central retinal vein occlusion
   4. Retinal detachment
   5. Vitreous hemorrhage
   6. Answer: A
2. Patients with botulism most classically present with which of the following?
   1. Ascending symmetric anesthesia
   2. Nausea, vomiting, and lower extremity weakness within 1 to 2 hours of toxin exposure
   3. Descending symmetric paralysis
   4. Anticholingeric symptoms of constipation, dry skin, dry eyes and urinary retention
   5. Altered mental status

Answer: C

1. Which drug is not matched to its correct side effect?
   1. Cyclosporine- nephrotoxicty
   2. Steroids- adrenal suppression
   3. Tacrolimus- ototoxicity
   4. Isoniazid- hepatotoxity

Answer: C

1. Which of the following is the least reliable sign of Beck’s triad in a patient with pericardial tamponade?

a. Distended neck veins

b. Tracheal deviation

c. Tachycardia

d. Hypotension

e. Muffled heart tones

Answer: E

1. A 13-year-old boy presents with progressively worsening left knee pain of 2 weeks duration after he fell down. The family’s primary care physician diagnosed growing pains, but the mother is concerned because he has also started to limp. Examination reveals no swelling or instability of the knee but pain with internal rotation, abduction, and flexion of the affected lower extremity. The patient is obese, but his vital signs are normal for age. What is the most likely injury?
   1. Anterior cruciate ligament rupture
   2. Slipped capital femoral epiphysis
   3. Legg Calve Perthes
2. Osgood-Schlatter
   1. Toxic synovitis

Answer: B

1. A 24-year-old woman presents with persistent cough for 4 weeks. She had upper respiratory infection-like symptoms 2 weeks before and then developed a persistent cough for the next month. She states she has had coughing fits many times during the day and “couldn’t stop coughing” for almost a minute when she started. Which of the following is true regarding this patient?
   1. The disease is caused by a gram-negative coccobacillus
   2. Antibiotic therapy should be eliminate the symptoms within a few days
   3. Bacterial culture is indicated to confirm the diagnosis
   4. The disease is not contagious
   5. Mortality is close to 30%

Answer: A

1. Which of the following is true regarding Bordetella pertussis infections?
   1. Prophylaxis with erythromycin is recommended for adults who come into contact with pertussis-infected individuals
   2. Almost all cases of pertussis in adolescents and adults occur in previously unvaccinated patients
   3. Immunization against B. pertussis confers lifelong immunity
   4. Older children infected with B. pertussis have the most severe disease
   5. The clinical course in symptomatic adults is characterized by a mild cough that resolves within 3 to days

Answer: A

1. Patients with renal stones should be admitted in all of the following cases except:
   1. Associated urinary tract infection
   2. Single kidney with obstruction
   3. Uncontrolled pain
   4. Stone >5mm
   5. All of the above

Answer: E

1. A 45-year-old man presents with acute onset of left flank pain. He is extremely uncomfortable and writhing around in pain. After appropriate pain control, he is sent for a CT scan of the abdomen and pelvis, which demonstrates a 2-mm kidney stone in his mid-right ureter. Which of the following is true regarding this patient?
   1. He is likely to pass the stone without further medical intervention
   2. Urinalysis is likely to be completely normal
   3. The stone has already traversed the narrowest portion of the ureter
   4. Strict fluid restriction is the management of choice
   5. The stone is most likely composed of cystine

Answer: A

1. A 61-year-old male smoker recently performed some repairs on several air conditioning units during the late summer. He is now brought in by his family confused, with high fevers, chills, a dry cough, and diarrhea. The test that will best determine the likely specific cause of his illness in which of the following?
   1. Urine antigen testing
   2. Blood culture
   3. Sputum culture
   4. Chest x-ray
   5. Serology testing

Answer: A

1. All of the following are true of HELLP syndrome except:
   1. The majority of women complain of right upper quadrant or epigastric pain with nausea and vomiting
   2. Platelet count is < 100,000/mL
   3. Urinalysis is positive for protein
   4. 10% calcium gluconate should be administered
   5. Hypertension is key to the diagnosis

Answer: D

1. Which of the following patients require admission to a burn-care facility?
   1. A 35-year-old man with extensive partial-thickness burns on the back, shoulders and buttocks
   2. A 60-year-old diabetic with a full-thickness burn of the entire forearm
   3. A 25-year-old woman with full-thickness burns of both hands and lower arms
   4. A 40-year-old house-fire victim with multiple, small partial-thickness burns and wheezing
   5. All of the above

Answer: E

1. A 23-year-old man with a history of human immunodeficiency virus (HIV) presents with shortness of breath, fever, malaise. Arterial blood gas shows a PaO2 of 60 mm Hg. Which of the following, in addition to antibiotics, is the most appropriate therapy?
   1. Albuterol
   2. Prednisone
   3. Aspirin
   4. Vasopressin
   5. Hyperbaric oxygen

Answer: B

1. A 22-year-old woman presents to the ED after a domestic dispute with a boyfriend in which she was stabbed in the neck just lateral to her thyroid cartilage. Which of the following is an indication for her mandatory operative exploration?
   1. Palpable thrill
   2. Subcutaneous emphysema
   3. Violation of the platysma
   4. Bruit upon auscultation
   5. All of the above

Answer: C

1. A 32-year-old man presents to the ED with headache and fever for 2 days. He also reports a stiff neck and photophobia. Past medical history is unremarkable. Physical examination reveals a febrile patient with nuchal rigidity, no papilledema, and no focal neurologic deficits. Which of the following is the most appropriate next step in management?
   1. Antibiotic therapy
   2. Antibiotic therapy with corticosteroids
   3. CT brain with IV contrast
   4. MRI brain with gadolinium contrast
   5. Discharge home with diagnosis of viral meningitis

Answer: B

1. A 62-year-old man with a history of controlled hypertension presents to the ED with a fever, headache, and vomiting. He is mildly somnolent on examination and has evidence of mild neck stiffness. Suspecting meningitis as the cause of his symptoms which of the following empiric regimens should you start?
   1. Ceftriaxone, vancomycin
   2. Ceftriaxone, ampicillin
   3. Ceftriaxone, ampicillin, dexamethasone
   4. Ceftriaxone, vancomycin, ampicillin, dexamethasone
   5. Ceftriaxone, amphotericin, vancomycin, dexamethasone

Answer: D

1. In a perilunate dislocation, which bone is dorsally dislocated?
   1. Lunate
   2. Scaphoid
   3. Capitate
   4. Hamate
   5. Pisiform

Answer: C

1. A mother brings in her 4-month-old son because he hurt his arm after rolling off a bed. He is awake and alert and appears uncomfortable when the arm is moved. Physical examination is otherwise normal; there are no other signs of injury. A radiograph obtained shows a humeral fracture. Appropriate management includes immobilization of the arm, referral to a pediatric orthopedist and:
   1. Admission for fracture care
   2. Further questioning of the mother to determine the cause of injury
   3. Head CT
   4. Reporting of suspected abuse

Answer: D

1. Which of the following poisoning-antidote therapeutic pairings is correct?
   1. Anticholinergic – atropine
   2. Opioid – flumazenil
   3. Calcium-channel blocker – insulin
   4. Cyanide – pralidoxime
   5. Beta-blocker – octreotide

Answer: C

1. Which of the following cardinal signs is most likely to be present in early flexor tenosynovitis?
   1. Flexed position of the finger at rest
   2. Pain on passive extension of the finger
   3. Symmetric swelling of the finger
   4. Tenderness over the course of the flexor sheath

Answer: B

1. In a patient with a new pleural effusion, which of the following laboratory findings suggests that it is an exudate?
   1. pH level <7.1
   2. Pleural fluid LDH level <200 units/L
   3. Pleural fluid LDH level-to-serum LDH level ratio <0.6
   4. Pleural fluid protein level-to-serum protein level ratio >0.5

Answer: D

1. A 22-year-old man presents with spasms in his neck and tongue. When his head is turned to the right, his tongue is noted to be deviated to the right. He is able to voluntarily move his tongue and neck to midline, but the contortions recur. He appears anxious. Which of the following medications is most likely to cause this side effect?
   1. Clozapine
   2. Ephedrine
   3. Sumatriptan
   4. Tramadol

Answer: A

1. In the evaluation of a patient with back pain, which of the following features of the pain is reassuring for the absence of serious underlying pathology?
   1. Gradual onset
   2. Nocturnal pain
   3. Onset with heavy lifting
   4. Unrelieved by rest

Answer: C