

Quick Quiz Knowledge Challenge

Answer Key (QQ Issue: 20140701)

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Question 1: Small Bowel Surgery

A 56-year-old female complains of abdominal cramping, vomiting, and loss of appetite, all of which became more severe and persistent about four days ago. Past medical history is significant for hypertension, chronic low back pain, diabetes mellitus, and endometrial cancer, treated with radiation therapy approximately 5 months ago. She is a nonsmoker and also denies drinking alcohol. She is not aware of any sick contacts.

On examination, she is a thin female in moderate distress. Vital signs are P: 88; BP: 130/90; RR: 18; T: 99.5°F; and oxygen saturation: 99%. Hemoglobin and hematocrit are 12 and 35.

A plain abdominal x-ray reveals dilated loops of bowel and air-fluid levels. A CT scan reveals complete bowel obstruction with extensive strictures and fixed loops of bowel.

Which of the following statements concerning intestinal bypass surgery for this patient are correct?

-  Creating short-bypass segments of intestines increases the risk of blind intestinal loops.
-  Incidence of postoperative complications is decreased in patients with a short interval (<1 year) between radiation and a need for surgical intervention for radiation-related complications.
-  **As many as 50% of patients who survive laparotomy for radiation-related bowel injury will require an additional abdominal surgery.**
-  Attempts should be made to lyse the adhesions.

Remediation:

There is higher risk associated with surgery for irradiated intestine (mortality rates of 2-13%) versus non-irradiated intestine. If the cancer patient survives the initial laparotomy, there is a 50% chance of needing future surgery for persistent intestinal radiation damage .

Lysis of adhesions in patients with fixed loops of irradiated bowel with post-radiation dense adhesions, appears lead to high complication rates (e.g., short gut syndrome, inadvertent small bowel perforation) and is therefore not generally recommended.

The incidence of postoperative adverse events is increased in patients who require surgical intervention for radiation enteritis complications less than 1-year after radiation therapy. Longer (no shorter) bypassed intestinal segments increase the risk of creating blind loops.

References:

Pal N. Radiation Enteritis and Proctitis. 2013. <http://emedicine.medscape.com>

Kate V. Intestinal Anastomosis. 2014. <http://emedicine.medscape.com>

Waxman B, Coventry BJ, Ko CY. Small Bowel Surgery. In Upper Abdominal Surgery: Complications, Risks and Consequences. 2014. Springer-Verlag London.

Question 2: Pediatric Emergencies

You are evaluating a 4-month-old male who presents with cough and rhinorrhea for 4 days. His mom reports that today he seemed to have trouble breathing. On exam, he is well appearing with the following vital signs: T 37.8°C, HR 150, RR 40, BP 90/45, and pO₂ 95% RA. He has mild intercostal retractions with scattered crackles and rhonchi throughout both lung fields. The remainder of this exam is normal. You decide to order a chest x-ray, which is shown here:



The patient improves with nebulized albuterol treatments and you are about to discharge the patient home with a diagnosis of bronchiolitis, when the radiologist calls you about something concerning on the chest x-ray. As a result of this call, you again review the x-ray and decide to:



Discharge the infant on oral antibiotics



Order a skeletal survey



Order a chest CT scan



Place a PPD

Remediation:

The significant abnormalities on this CXR are the healing right-sided anterior rib fractures. They are most noticeable just above and just below the diaphragm along the right heart border. Rib fractures, spiral fractures of the femur or tibia (in a non-ambulatory child), metaphyseal chip (corner) fractures, multiple fractures particularly in different stages of healing, and complex skull fractures, are all very concerning for child abuse. In the setting of child abuse, rib fractures typically occur with anterior-posterior compression of the infant's chest by the abuser. These fractures can be occult and picked up incidentally, as with the child presented in this case. Rib fractures tend to be easier to date than other fractures and are not the result of CPR.

Reference:

Textbook of Pediatric Emergency Medicine, 6th ed. Fleisher GR, Ludwig S, Eds. LWW 2010. pp 1341-2

Question 3: Sports Medicine

A 25-year-old man presents to you with left testicular pain. He also says that for the last 2 months he has had perineal numbness. The patient is a healthy, avid bicyclist, and he reports that he rides about 120 miles every week. He reports that these are symptoms he has never experienced before.

Upon questioning, he states that he has recently increased his duration or intensity of exercise, but his equipment has undergone no changes..

On a pain scale of 0 to 10, his reports his pain as a 6 and sometimes an 8. When he stands or walks, the pain is less. To relieve his symptoms, his cycling teammates have recommended that he should switch to a split bicycle seat.

What is the most likely cause of this patient's symptoms?



pudendal nerve compression



adductor tendinopathy



ischial periostitis



scrotal ischemia



testicular torsion

Remediation:

Pudendal nerve entrapment, reduced perineal blood flow, and soft tissue compression can cause extreme perineal pain in avid bicyclists. More narrow saddles exacerbate this syndrome..

The syndrome presents with numbness of the genitalia and other perineal symptoms and occurs in up to 91% of all cyclists. Perineal symptoms occurring in cyclists are most commonly associated with the relationship of the bicycle saddle (the seat) and the perineum. For example, the cyclist's weight, the tilt of the saddle, the vertical (downward) and shear (backward) force of the perineum on the saddle, the shape of the saddle, and the angle and height between the handlebars and the saddle can all have an effect.

Some cyclists with pudendal nerve pressure neuropathy have had symptom relief by changing behavior (eg, saddle position, riding techniques) or – in a worst-case scenario - through medical interventions (eg, fluoroscopic-guided injections).

Reference:

Ramsden CE, McDaniel MC, Harmon RL, Renny KM, Faure A. Pudendal nerve entrapment as a source of intractable perineal pain. Am J Phys Med Rehab. 2003;82(6):479-484.

Question 4: Pesticide Toxicity

A 25-year-old farm worker presents with a core body temperature of 105°F, tachypnea (respiratory rate: 25 breaths/minute), and tachycardia (heart rate: 125 beats/minute). Laboratory evaluation reveals a serum creatinine of 2, creatine kinase (CK) of 25,000, and elevated aspartate transaminase (110) and alanine transaminase (95). His skin has a faint yellow color. Which of the following therapies is the most appropriate for this patient?

Normal Lab Values



atropine



paralysis and intubation



acetaminophen



intravenous fluid alone

Remediation:

This patient is manifesting clinical symptoms of substituted phenol toxicity. Substituted phenols include dinitrophenol, pentachlorophenol, and dinitrocresol. These pesticides work by uncoupling oxidative phosphorylation, which results in the inefficient use of oxygen in the electron transport chain and the generation of heat. Elevated temperature, tachypnea, and tachycardia are reflective of the patient's hypermetabolic state. This patient is showing a mismatch between heat generation and heat dissipation, and is showing adverse clinical effects from this exaggerated heat generation (rhabdomyolysis and renal impairment). Management of the hyperthermia is a primary treatment goal; paralysis and intubation are indicated as a body temperature control measure. Paralysis will prevent muscle activity, which contributes to elevated body temperatures.

Atropine is used in the treatment of organophosphate pesticide exposure to dry up pulmonary secretions, but this does not occur with substituted phenols. Atropine is also not indicated in a patient who is tachycardic.

Acetaminophen would not effectively lower the body temperature because it does not counteract the phenol's heat generating mechanisms. Intravenous fluids alone similarly would not be recommended because such fluid would have little effect on body temperature.

Reference:

Aaron C, et al. Pesticides. Chapter 163. In Marx J, et al. Rosen's Emergency Medicine: Concepts and Clinical Practice. 8th ed., 2014