Background

• The following are cases designed to test your clinical decision making based, in part, on radiological interpretation

• Imagine you are on service receiving the following pages without an available senior or attending. How would you work through each scenario?
• 52F POD3 from elective right hemicolecctomy for recurrent diverticulitis with SOB
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- What are the common causes of SOB for hospitalized and post-operative patients?
• 52F POD3 from elective right hemicolecotomy for recurrent diverticulitis with SOB
  – What are common causes of SOB for post-operative pts?
    • Atelectasis/splinting
    • Pneumonia
    • Pulmonary embolism
    • Heart failure
    • Exacerbation of underlying lung disease (e.g. COPD, asthma)
    • Sedatives/narcotics
52F POD3 from elective right hemicolecction for recurrent diverticulitis with SOB

- What additional information do you want?
• 52F POD3 from elective right hemicolecotomy for recurrent diverticulitis with SOB
  – What additional information do you want?
    • Vitals!
      – HR: 154 bpm
      – RR: 28 respirations/minute
      – BP: 140/90 mmHg
    • EKG ➔
    • Chest x-ray (next slide)
• 52F POD3 from elective right hemicolecotomy for recurrent diverticulitis with SOB
  – Put it all together – what do you think happened?
  – Next steps?
• 52F POD3 from elective right hemicolecctomy for recurrent diverticulitis with SOB
  – Put it all together – what do you think happened?
    • New-onset atrial fibrillation causing heart failure
  – Next steps?
    • Diuretics, beta blocker, consider anticoagulation, cardioversion if needed
• 27M in the PACU after right first rib resection for neurogenic thoracic outlet syndrome, now with SOB
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  – What is thoracic outlet syndrome? What anatomic structures are in and around the thoracic outlet?
• 27M in the PACU after right first rib resection for neurogenic thoracic outlet syndrome, now with SOB
  – Vitals are normal, but it looks like he is working very hard to breathe
  – What imaging study do you want?
• 27M in the PACU after right first rib resection for neurogenic thoracic outlet syndrome, now with SOB
  – What does the CXR show? Why is he short of breath?
27M in the PACU after right first rib resection for neurogenic thoracic outlet syndrome, now with SOB

- What does the CXR show? Why is he short of breath?
  - Elevation of the right hemidiaphragm
  - Phrenic nerve injury
• 45M POD0 from right partial nephrectomy for incidentally discovered right upper pole renal mass. Surgery uncomplicated, apart from small pressor requirement in OR. Now in ICU with increasing pressor requirement
• 45M POD0 from right partial nephrectomy, now with increasing pressor requirement
  – What are pressors? What are the most common pressors used and how do they work?
• Vasopressors: drugs that cause vasoconstriction and elevate mean arterial pressure

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<tr>
<th>Drug</th>
<th>Receptor activity</th>
<th>Predominant clinical effects</th>
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<tr>
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<td>Alpha-1</td>
<td>Beta-1</td>
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<tr>
<td>Phenylephrine</td>
<td>+++</td>
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<td>Norepinephrine</td>
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<tr>
<td>Epinephrine</td>
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<tr>
<th>Dopamine (mcg/kg/min)*</th>
<th>0.5 to 2.</th>
<th>5. to 10.</th>
<th>10. to 20.</th>
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• 45M POD0 from right partial nephrectomy, now with increasing pressor requirement
  – What are the most likely causes of hypotension for this postoperative patient?
45M POD0 from right partial nephrectomy, now with increasing pressor requirement

- What are the most likely causes of hypotension for this postoperative patient?
  - Shock (hypovolemic, cardiogenic, obstructive, distributive)
  - Dissection
  - Drugs
  - Hypocalcemia
  - Adrenal insufficiency
  - CHF exacerbation
• 45M POD0 from right partial nephrectomy, now with increasing pressor requirement
  – What information do you want?
• 45M POD0 from right partial nephrectomy, now with increasing pressor requirement
  – What information do you want?
    • Vitals: stable, but now requiring two pressors
    • Labs: CBC, CMP, troponin, lactate all unremarkable except for 3-point drop in hemoglobin
    • Exam: no blood in Foley catheter, no blood in surgical drains, mild abdominal pain (expected post-op)
    • What imaging do you want?
• 45M POD0 from right partial nephrectomy, now with increasing pressor requirement
  – What is the cause of this patient’s hypotension?
  – What are next steps?
• 45M POD0 from right partial nephrectomy, now with increasing pressor requirement
  – What is the cause of this patient’s hypotension?
    • Adrenal hemorrhage
  – What are next steps?
    • Transfuse
    • Can test for adrenal insufficiency (unlikely when unilateral): AM cortisol
    • Surgical intervention rarely needed. Will involute spontaneously
• 22M with Crohn’s disease POD2 from uncomplicated small bowel resection, now with 2 episodes of emesis with worsening abdominal pain and distension
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  – What are common causes of post-operative nausea, vomiting, and abdominal pain/distension?
• 22M with Crohn’s disease POD2 from uncomplicated small bowel resection, now with 2 episodes of emesis with worsening abdominal pain and distension
  – What are common causes of post-operative nausea, vomiting, and abdominal pain/distension?
    • Ileus
    • Obstruction
    • Drugs (opioids)
    • Ischemia
    • Surgical complications (abscess, perforation, dehiscence)
• 22M with Crohn’s disease POD2 from uncomplicated small bowel resection, now with 2 episodes of emesis with worsening abdominal pain and distension
  – What information do you want?
    • Physical exam: abdomen distended but appropriately tender
    • Labs: all within normal limits except chronically low hemoglobin, potassium of 2.1
    • What imaging do you want?
• 22M with Crohn’s disease POD2 from uncomplicated small bowel resection, now with 2 episodes of emesis with worsening abdominal pain and distension
  – What is happening with this patient? What is the treatment?
• 22M with Crohn’s disease POD2 from uncomplicated small bowel resection, now with 2 episodes of emesis with worsening abdominal pain and distension
  – What is happening with this patient?
    • Postoperative ileus
  – Treatment?
    • Correct underlying cause: replete electrolytes
    • Minimize opioids
    • IV fluids
    • Bowel rest. Can decompress with NG tube if severe
• 22M with Crohn’s disease POD2 from uncomplicated small bowel resection, now with 2 episodes of emesis with worsening abdominal pain and distension
  – How can you differentiate obstruction from ileus on imaging?
• 22M with Crohn’s disease POD2 from uncomplicated small bowel resection, now with 2 episodes of emesis with worsening abdominal pain and distension
  – How can you differentiate obstruction from ileus on imaging?
    • Transition point with bowel dilation proximally, decompressed bowel distally
      – If SBO: dilated small bowel, decompressed large bowel/rectum
      – If LBO: dilated large bowel (may have dilated small bowel if incompetent ileocecal valve), decompressed rectum
• How can we tell this is obstruction rather than ileus?
• Can you identify a cause from this image?
• How can we tell this is obstruction rather than ileus?
  – Dilated small bowel, no visible large bowel

• Can you identify a cause from this image?
  – Inguinal hernia
• 70M with no significant history presents to ED with nausea/vomiting for two days, malaise, weight loss
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  – What is the differential diagnosis?
• 70M with no significant history presents to ED with nausea/vomiting for two days, malaise, weight loss
  – What is the differential diagnosis?
    • Gastroenteritis/infection
    • Pancreatitis
    • Cholecystitis
    • Appendicitis
    • Obstruction
    • Ileus
    • Ischemia
• 70M with no significant history presents to ED with nausea/vomiting for two days, malaise, weight loss
  – What additional information do you want?
• 70M with no significant history presents to ED with nausea/vomiting for two days, malaise, weight loss
  – What additional information do you want?
    • Vitals: HR 110 bpm, otherwise unremarkable
    • Labs: Hgb 7.4, otherwise unremarkable CBC, CMP, lactate
    • Physical exam: abdominal distention without palpable umbilical or inguinal hernia
    • What imaging do you want?
• 70M with no significant history presents to ED with nausea/vomiting for two days, malaise, weight loss
  – What is your diagnosis?
  – What are the three most common causes?
70M with no significant history presents to ED with nausea/vomiting for two days, malaise, weight loss

- What is your diagnosis?
  - Large bowel obstruction

- What are the three most common causes?
  - Colon cancer
  - Acute diverticulitis
  - Volvulus
• 22M without significant history POD1 from uncomplicated appendectomy. Feels well, but febrile to 38.5 degrees
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  – What are the common causes and timelines for post-operative fever?
22M without significant history POD1 from uncomplicated appendectomy. Feels well, but febrile to 38.5 degrees

- What are the common causes and timelines for post-operative fever?
• 22M without significant history POD1 from uncomplicated appendectomy. Feels well, but febrile to 38.5 degrees
  – What imaging do you want?
• 22M without significant history POD1 from uncomplicated appendectomy. Feels well, but febrile to 38.5 degrees
  – What is the cause of this patient’s fever?
  – What is your management?
22M without significant history POD1 from uncomplicated appendectomy. Feels well, but febrile to 38.5 degrees

- What is the cause of this patient’s fever?
  - Atelectasis
- What is your management?
  - Incentive spirometry
• 22M without significant history POD1 from uncomplicated appendectomy. Feels well, but febrile to 38.5 degrees
  – What additional labs/studies would you like if it were POD3? POD5?
• 22M without significant history POD1 from uncomplicated appendectomy. Feels well, but febrile to 38.5 degrees
  – What additional labs/studies would you like if it were POD3? POD5?
    • POD3: UA/Cx, BCx, sputum Cx, CXR, CBC, consider venous duplex
    • POD5: venous duplex, above infectious workup
• 45F with extensive smoking history POD1 from elective laparoscopic cholecystectomy. Pain has been hard to control. Now hypertensive to 200/140
  – What are the common causes of post-operative HTN?
45F with extensive smoking history POD1 from elective laparoscopic cholecystectomy. Pain has been hard to control. Now hypertensive to 200/140

- What are the common causes of post-operative HTN?
  - Pain
  - Fluid overload
  - Hypercarbia
  - Essential HTN
• 45F with extensive smoking history POD1 from elective laparoscopic cholecystectomy. Pain has been hard to control. Now hypertensive to 200/140
  – What is hypertensive urgency?
    • BP > 180/110
  – What is hypertensive emergency?
    • End-organ damage (headache, vision changes, AMS, oliguria)
• 45F with extensive smoking history POD1 from elective laparoscopic cholecystectomy. Pain has been hard to control. Now hypertensive to 200/140
  – Vitals are otherwise unremarkable. On exam, the patient is sleepy but complains of headache
  – What imaging do you want?
• 45F with extensive smoking history POD1 from elective laparoscopic cholecystectomy. Pain has been hard to control. Now hypertensive to 200/140
  – What is your diagnosis?
  – What are the next steps?
• 45F with extensive smoking history POD1 from elective laparoscopic cholecystectomy. Pain has been hard to control. Now hypertensive to 200/140
  – What is your diagnosis?
    • COPD, hypercarbia (narcosis)
  – What are the next steps?
    • ABG, decrease narcotics, intubate if severe
• 64M with history of IVDU, 5 hours s/p I&D of L thigh. Now febrile to 41 degrees with rigors, hypotension
  – Physical exam: crepitus
  – Labs: WBC 24 (increased from 15 just 5 hours ago)
  – What imaging do you want?
• 64M with history of IVDU, 5 hours s/p I&D of L thigh. Now febrile to 41 degrees with rigors, hypotension
  – What is the diagnosis?
  – What is the management?
• 64M with history of IVDU, 5 hours s/p I&D of L thigh. Now febrile to 41 degrees with rigors, hypotension
  – What is the diagnosis?
    • Necrotizing fasciitis
  – What is the management?
    • Emergency surgery
    • Broad-spectrum antibiotics (including anaerobic coverage)
• 52M with diabetic foot infection is POD3 from below-knee amputation, now with chest pain
• 52M with diabetic foot infection is POD3 from below-knee amputation, now with chest pain
  – What are the common causes of acute chest pain?
• 52M with diabetic foot infection is POD3 from below-knee amputation, now with chest pain
  – What are the common causes of acute chest pain?
    • MI
    • Angina
    • PE
    • Pneumothorax
    • Pneumonia
    • Aortic dissection
    • GERD/PUD/esophagitis
• 52M with diabetic foot infection is POD3 from below-knee amputation, now with chest pain
  – What additional information do you want?
• 52M with diabetic foot infection is POD3 from below-knee amputation, now with chest pain
  – What additional information do you want?
    • History: acute onset
    • Vitals: HR 120, RR 18, otherwise unremarkable
    • Physical exam: clutching fist over his sternum
    • Labs: you ordered a CBC, CMP, and troponins…but he isn’t looking so good and you probably shouldn’t wait around for the results
    • EKG: next slide
• 52M with diabetic foot infection is POD3 from below-knee amputation, now with chest pain
• 52M with diabetic foot infection is POD3 from below-knee amputation, now with chest pain
  – What imaging do you want?
• 52M with diabetic foot infection is POD3 from below-knee amputation, now with chest pain
  – What is the diagnosis?
  – What is the management?
• 52M with diabetic foot infection is POD3 from below-knee amputation, now with chest pain
  – What is the diagnosis?
    • Pneumoperitoneum
  – What is the management?
    • NPO, broad-spectrum antibiotics, surgical consult
Thank you!

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