AMSER Case of the Month
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54-year-old woman with nausea, diarrhea & abdominal pain

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HPI: 54-year-old woman with metastatic breast cancer admitted for hyponatremia. 2 days later, patient develops nausea, diarrhea & abdominal pain

PMHx: Metastatic breast cancer with spinal involvement

Medications: Recent administration of azithromycin & ceftriaxone

PSHx: Laminectomy due to spinal metastases complicated by cord compression (1/2 year prior)

FHx: Non-contributory

PE: Febrile, diaphoretic, & lethargic; diffuse abdominal pain, most significant (w/o rebound or guarding) on palpation of LLQ
Pertinent Labs

• $K^+ = 2.8$
• $Na^+ = 129$
• $Cl^- = 92$
• WBC wnl with granulocytosis (82.1%)
Given the onset of fever, nausea, diarrhea, and abdominal pain in a critically ill patient, what imaging should we order at this time?
### Applicable ACR Appropriateness Criteria

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Procedure</th>
<th>Adult RRL</th>
<th>Peds RRL [ped]</th>
<th>Appropriateness Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abd pain, acute, nonlocalized, fever, initial exam</td>
<td>CT abdomen and pelvis with IV contrast</td>
<td>1-10 mSv</td>
<td>3-10 mSv [ped]</td>
<td>Usually appropriate</td>
</tr>
<tr>
<td></td>
<td>US abdomen</td>
<td>0 mSv</td>
<td>0 mSv [ped]</td>
<td>May be appropriate</td>
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<tr>
<td></td>
<td>MRI abdomen and pelvis without and with IV contrast</td>
<td>0 mSv</td>
<td>0 mSv [ped]</td>
<td>May be appropriate</td>
</tr>
<tr>
<td></td>
<td>MRI abdomen and pelvis without IV contrast</td>
<td>0 mSv</td>
<td>0 mSv [ped]</td>
<td>May be appropriate</td>
</tr>
<tr>
<td></td>
<td>CT abdomen and pelvis without IV contrast</td>
<td>1-10 mSv</td>
<td>3-10 mSv [ped]</td>
<td>May be appropriate</td>
</tr>
<tr>
<td></td>
<td>Radiography abdomen</td>
<td>0.1-1 mSv</td>
<td>0.03-0.3 mSv [ped]</td>
<td>May be appropriate</td>
</tr>
<tr>
<td></td>
<td>CT abdomen and pelvis without and with IV contrast</td>
<td>10-30 mSv</td>
<td>10-30 mSv [ped]</td>
<td>May be appropriate</td>
</tr>
<tr>
<td></td>
<td>Nuclear medicine scan gallbladder</td>
<td>0.1-1 mSv</td>
<td>Null</td>
<td>Usually not appropriate</td>
</tr>
<tr>
<td></td>
<td>FDG-PET/CT skull base to mid-thigh</td>
<td>10-30 mSv</td>
<td>3-10 mSv [ped]</td>
<td>Usually not appropriate</td>
</tr>
<tr>
<td></td>
<td>WBC scan abdomen and pelvis</td>
<td>10-30 mSv</td>
<td>Null</td>
<td>Usually not appropriate</td>
</tr>
<tr>
<td></td>
<td>Fluoroscopy contrast enema</td>
<td>1-10 mSv</td>
<td>3-10 mSv [ped]</td>
<td>Usually not appropriate</td>
</tr>
</tbody>
</table>

This imaging modality was ordered by the IM physician.
Findings (unlabeled)
Findings: (labeled)

Arrows demonstrate diffuse (ascending, transverse, & descending colon) bowel wall thickening & target sign due to wall edema and mucosal hyperenhancement.
Final Dx: Pseudomembranous colitis
Pseudomembranous Colitis

• Definition
  • Pseudomembranous colitis is a condition characterized by severe inflammation of the mucosal layer of the large intestine, often manifesting as an antibiotic-associated colonic inflammatory complication

• Etiology
  • Most commonly results from a serious Clostridium difficile infection, a common nosocomial issue

• Epidemiology
  • 500,000 episodes & 29,000 associated deaths reported annually in the United States
Evaluation and Management

• Labs
  • Diagnosis is established via either positive nucleic acid amplification test (NAAT) for *C. difficile* toxin B gene, or a positive stool test for *C. difficile* toxins

• Imaging
  • Pancolitis (diffuse bowel wall thickening) & target sign with water density (pictured at side)
    • Target sign is caused by enhancing mucosa and muscularis propria with the edematous submucosa in between
  • DDx: Infection, portal hypertension, IBD, typhlitis, AIDS, ischemia

• Treatment / Management
  • Oral fidaxomicin & vancomycin
  • Metronidazole has remained a first-line agent for decades despite lack of FDA approval
References:

