A Case of Complicated Diverticulitis

Brian Clair
8/25/08
Agenda

1. Introduction to Our Patient
2. Diverticulitis
   - Review of Diverticular Disease
   - Pathogenesis of Diverticulitis
   - Radiologic Findings
   - Treatment
3. Complications of Diverticulitis
4. Wrap-up of Our Patient
Our Patient: Mr. L

• 55 y/o male with a history of fevers, chills, right lower quadrant pain, pneumaturia, and passing stool in his urine.
Differential Diagnosis of Pneumaturia
(i.e. Air in the Bladder Lumen)

- **Air from the “outside”**
  - Iatrogenic
    - S/P cystoscopy
    - Suprapubic cystostomy
    - Foley catheter
    - Post-operative
  - Penetrating trauma

- **Air from the “inside”**
  - **Enterovesical Fistula**
    - Bladder cancer
    - Bowel cancer
    - Crohn’s Disease
    - Diverticulitis
    - S/P radiation
    - TB

- **Air from gas forming organisms**
  - Emphysematous cystitis

CT is the primary imaging modality for suspected enterovesical fistulas.

Mr. L: Enterovesical Fistula on CT

Air is present in the bladder above urine fluid level.

Contrast within the bladder.

Rectal contrast material administered without IV contrast is when enterovesical fistula is suspected.

CT Pelvis. Rectal contrast without IV contrast.
Mr. L: CT Sagittal View

Communication between the sigmoid colon and the bladder

CT Sagittal Reconstruction. Rectal contrast without IV contrast.
BIDMC (PACS)
Differential Diagnosis of Enterovesical Fistula

- Bladder cancer
- Bowel cancer
- Crohn’s Disease
- Diverticulitis
- S/P radiation
- TB
Mr. L: Sigmoid Diverticulitis on CT

CT demonstrates diverticulitis of the sigmoid colon

How do we make this diagnosis?

Mr. L: CT Pelvis. Rectal contrast without IV contrast.
BIDMC (PACS)
Diverticular Disease

- **Diverticula**: colonic outpouchings consisting only of mucosa and submucosa
  - Most commonly appear in the sigmoid colon

- **Diverticulosis**: describes presence of uninflamed diverticula
  - Incidence increases with age, from less than 5% before age 40 years to greater than 65% by age 85 years

- **Diverticulitis**: inflammation of a diverticulum or diverticula, commonly accompanied by gross or microscopic perforation
  - Estimated to occur in 10-15% of people with diverticulosis

Horton KM, Corl FM, Fishman EK.
Imaging of Diverticular Disease

Companion Patient #1
Barium Enema

Companion Patient #2
CT scan with oral and IV contrast material
Air-filled outpuchings = diverticula

Diverticulitis: Pathogenesis

Obstruction at neck of colonic diverticula by stool, inflammation, or food particles

Bacterial overgrowth, vascular compromise and microperforation

Pericolic inflammation
Diverticulitis: Diagnosis

• Typical Presentation
  – Fever
  – Left lower quadrant abdominal pain
  – Leukocytosis

• Menu of Diagnostic Tests
  – **Barium enema**
    • Used in the past
  – **CT scan**
    • Most accurate and readily available imaging study in diagnosis of acute diverticulitis
Companion Patient #3: Uncomplicated Diverticulitis

CT Findings:

1. Diverticula
2. Bowel wall thickening
3. Fat stranding
Diverticulitis: Complications

- Abscess
- Hemorrhage
- Stricture
- Fistula
- Phlegmon
- Purulent peritonitis
- Fecal peritonitis
- Perforation
- Obstruction
### Complicated Diverticulitis: Staging by CT

Staging system used to classify severity of complicated diverticulitis

<table>
<thead>
<tr>
<th>Stage</th>
<th>Modified Hinchey Classification</th>
<th>CT Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Mild clinical diverticulitis</td>
<td>Diverticuli ± colonic wall thickening</td>
</tr>
<tr>
<td>Ia</td>
<td>Confined pericolic inflammation/phlegmon</td>
<td>Colonic wall thickening with pericolic soft tissue changes</td>
</tr>
<tr>
<td>Ib</td>
<td>Pericolic/mesocolic abscess</td>
<td>Ia changes + pericolic/mesocolic abscess</td>
</tr>
<tr>
<td>II</td>
<td>Pelvic, distant intraabdominal or retroperitoneal abscess</td>
<td>Ia changes + distant abscess (generally deep in the pelvis or in interloop regions)</td>
</tr>
<tr>
<td>III</td>
<td>Generalized purulent peritonitis</td>
<td>Free gas associated with localized or generalized ascites and possible peritoneal wall thickening</td>
</tr>
<tr>
<td>IV</td>
<td>Generalized fecal peritonitis</td>
<td>Same findings as III</td>
</tr>
</tbody>
</table>

CT-guided percutaneous drainage of abscesses larger than 4 cm in diameter

Emergency operative treatment

Baker ME.
Diverticulitis: Treatment

• Mild uncomplicated diverticulitis: 7-10 days oral broad-spectrum antibiotics
  – Hospitalization indicated if unable to tolerate oral intake or pain requires narcotic analgesia

• Surgical consultation indicated when:
  – There is no response to medical management
  – Repeated attacks
  – Complications such as abscess, fistula, obstruction, or free air
Companion Patient #4: Mr. D

• 38 y/o male who developed left lower quadrant pain with some mild fever the day prior to admission
Complicated Diverticulitis: Perforation

Extraluminal pocket of air

Companion Patient #4: Mr. D
C+ CT Pelvis

BIDMC (PACS)
Companion Patient #5: Ms. F

• 68 y/o female presents to the ED with malodorous vaginal discharge.
Complicated Diverticulitis: Abscess & Colovaginal Fistula

Companion Patient #5: Ms. F

C+ CT Pelvis

5.7 x 4.6 perisigmoid abscess filled with stool and air

Small pockets of air and a tiny trace of contrast suggest fistulous connection

Images from BIDMC (PACS)
What happened to Mr. L?
Complicated Diverticulitis: Colovesical Fistula

CT Pelvis. Rectal contrast without IV contrast.

Mr. L’s diagnosis: Sigmoid diverticulitis and colovesical fistula

Images from BIDMC (PACS)
Mr. L’s Initial Treatment

• Started on amoxicillin-clavulanate (Augmentin)

• Colonoscopy to rule out colon cancer

• Surgical procedure
  – Open sigmoidectomy with primary coloproctostomy
Mr. L’s Further Treatment

• Six days later, Mr. L had fecal material in his urine and was sent emergently to the operating room.
  – Colorectal anastomosis taken down and end-colostomy created
Acknowledgments

• Dr. James Kang, BI DMC Radiology
• Dr. Gillian Lieberman, BI DMC Radiology
• Maria Levantakis, BI DMC Radiology
• Lieberman, G. “Male Imaging” Lieberman’s Primary Care Radiology. http://eradiology.bidmc.harvard.edu