Acute Abdomen in the Elderly Patient

SUNY – Downstate
Case Conference
May 5, 2011
Consideration

• Occam’s razor
  – Diagnostic parsimony advocates that when diagnosing a given injury, ailment, illness, or disease, one should strive to look for the fewest possible causes that will account for all the symptoms.
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• Hickam’s dictum
  – Patients can have as many diseases as they damn well please.
Case

- HPI: 82 yo F w/ 1d h/o abdominal pain. Denied N/V, F/C/NS. Passing flatus/BM. In the ED, the Pt was found to be in afib.
- PMH: HTN, hyperlipidemia, dementia, SDH.
- PSH: Evac SDH, PEG, EGD, Ex lap, lumpectomy
- Meds: Atenolol, Sertraline, ASA, Aricept, Arimidex, Crestor
Case

• PE
  – VS: 97.6 138 134/89 20
  – WDWD, NAD
  – Irreg irreg
  – CTAB
  – SND, midline epigastric scar.
  – Guarding, diffuse peritoneal signs
Case

• Labs
  – CBC 20.2 / 16 / 47 / 290
  – BMP 135 / 4.5 / 101 / 20 / 15 / 1 / 163
  – Amy 52 / Lip 15
  – Lact 2.8
  – AST 23 / ALT 16 / TB 1.6
Case – CT
Case – CT
Case – OR

- Underwent exploratory laparotomy.
- Turbid fluid in the peritoneal cavity.
- Hard, mobile, intraluminal mass in the distal jejunum.
- Resected a 15 cm length of SB.
- Dense adhesions in the RUQ.
Case – OR
Case

- Hospital Course
  - Started diet on POD 7.
  - Discharged to home on POD 14.
Questions
Acute Abdominal in the Elderly

• Acute abdominal pain.
  – Symptoms lasting less than a week.
• Elderly – 65 years or older.
Demographics

• Currently, approximately 15% of US population 65 years of age or older.
• In 20 years, will exceed 20% of US population.
• Acute abdominal pain – presenting symptom of up to 10% of ED visits.
• Elderly patients account for approximately 20-23% of these visits.
• 20-33% will require immediate surgery.

Increased Mortality

• Comorbid conditions
  – 88% of elderly patients have comorbid conditions
• Physiologic fraility
• Low initial diagnostic accuracy (40-65%, dropping to less than 30% in patients over 80 years of age)
• Diagnostic delays
• Atypical and late presentation
Increased Mortality with Emergent Surgery

• In a study of 334 patients older than 70 who underwent GI surgery, mortality rates for:
  – Elective surgery – 6.7%.
  – Emergent surgery – 20%.

• Cause of death related to associated disease (cardiac, pulmonary, renal)

General Issues

- Incomplete or confusing history.
- Atypical and subtle physical findings.
- Presence of preexisting conditions complicating the diagnostic process.
- Mortality rates:
  - 15% at 50 years or older.
  - Greater than 70% at 80 years or older.
Physiologic Changes with Aging

- Changes in the nervous system affecting patient’s ability to accurately localize.
- Decreased T-cell function, increased autoantibodies, and decreased bone marrow reserve reduce the older patient’s inflammatory response to infection.
- Frequently, bacteremic elderly patients do not develop fever, but instead present with hypothermia.

Work Up

• Meticulous and systematic H&P

• History
  – Open ended questions
  – Report from family, nursing home
  – May be slow/difficult
    • Cognitive impairment
      – Dementia, CVA, psych disorders, illness, drug toxicity
    • Physical limitations
    • Slow responses or inconsistent answers
Work Up

• PMH/PSH
  – Previous episodes, previous workup, established medical care

• Medications
  – Steroids, NSAIDS

• FH/SH

• ROS
Work Up

• Physical exam
  – General appearance, stigmata of domestic abuse or neglect, stigmata of chronic disease
  – Cardiac exam for murmurs, rhythm
  – Gentle abdominal exam
  – Rectal exam

• Labs

• Studies (X-ray, CT scan, U/S, endoscopy)
Careful history:
- Chief complaint (associated symptoms of fever, pain radiation, nausea, vomiting, anorexia, melena, dysuria)
- Previous surgery
- Medications
- Coexistent disease (CAD, diabetes, hypertension)
- Tobacco/alcohol use

Physical examination:
Routine examination to include evaluation for scars, hernia, palpable mass, flank ecchymoses, femoral and peripheral pulses, upper and lower extremity pulses

Consider ECG if clinically indicated.

Laboratory evaluation for most patients should include:
Complete blood count, electrolytes, liver studies, renal studies, amylase/lipase, urinalysis, blood cultures, cardiac enzymes

If no diagnosis after laboratory evaluation, proceed to initial radiologic studies.

Chest radiography:
Evaluate for pneumonia, free air, CHF, PE

Kidney, ureter, bladder plain film radiography

Dilated loops of small bowel, air-fluid levels
SBG, incarcerated hernia, appendicitis

Dilated loops of large bowel, air-fluid levels
LBO, diverticulitis, volvulus

Dilated loops, air-fluid levels with thumbprinting, pneumatosis intestinalis

Mesenteric ischemia

No diagnosis made after initial evaluation (includes laboratory results and plain film radiography)

Consider ultrasonography if patient has:
- RUQ or epigastric pain suspicious for biliary tract disease
- Suspected possible AAA (in an unstable patient)
- RUQ pain suspicious for appendicitis

Consider CT if patient has:
- Non-specific abdominal pain
- Suspected bowel obstruction
- Suspected mesenteric ischemia
- Suspected AAA (in a stable patient)
- Suspected appendicitis
- Suspected pancreatitis with signs of sepsis to evaluate for infarction and necrosis

Angiography for evaluation of suspected mesenteric ischemia

Upper endoscopy for evaluation of suspected peptic ulcer disease

Diagnosis made: UTI, acute MI, diabetic ketoacidosis, pancreatitis, hepatitis
# Etiologies

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholecystitis</td>
<td>25%</td>
</tr>
<tr>
<td>Bowel obstruction</td>
<td>20%</td>
</tr>
<tr>
<td>Appendicitis</td>
<td>15%</td>
</tr>
<tr>
<td>Gastritis / Peptic Ulcer Disease</td>
<td>8%</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td>6%</td>
</tr>
<tr>
<td>Diverticulitis</td>
<td>6%</td>
</tr>
<tr>
<td>Vascular causes</td>
<td>2%</td>
</tr>
<tr>
<td>Urinary tract diseases</td>
<td>2%</td>
</tr>
<tr>
<td>Miscellaneous / Indeterminate</td>
<td>16%</td>
</tr>
</tbody>
</table>

Cholecystitis

• Biliary disease – most common indication for intra-abdominal surgery in the elderly.
• Instead of intermittent onset of colicky pain, older patients present with acute onset of steady epigastric or RUQ pain with radiation to upper back.
• Leukocytosis and fever frequently absent (<70% in one study).
Cholecystitis

• Study of 80 pts > 60 yo c acute cholecystitis:
  – 40% had empyema, necrosis, or perforation of gall bladder.
  – 15% had concomitant subphrenic or hepatic abscess.
  – Of these complicated patients:
    • 38% were afebrile.
    • 26% had no abdominal tenderness.
  – Mortality – 14% when emergent surgery required.

Cholecysitis

- Complications occur in more than 50% of patients.
  - Cholangitis, GB perforation, emphysematous cholecysitis, bile peritonitis, gallstone ileus.
Small Bowel Obstruction

- Most common causes are adhesions from prior surgeries and hernias.
- Initially, intermittent colicky pain which decreases over time as bowel motility diminishes.
- Vomiting may be prominent.
- Constant pain may reflect ischemia.
- Distention may be modest.
- Pts frequently restless during bouts of pain
Large Bowel Obstruction

- Associated with less pain and vomiting compared to SBO.
- Constipation or a change in bowel habits often precedes complete obstruction.
- Etiologies of LBO include:
  - Colon cancer – most common.
  - Incarcerated hernias
  - Volvulus
Appendicitis

• Presentation typically starts at McBurney’s point as opposed to the classic movement of pain over time.

• Appendicitis tends to be more advanced at presentation often with perforation.

• Given demographics, must consider the possibility of a right colon malignancy.

• In recent decades, routine CT scanning has significantly improved diagnosis and appropriate treatment.
Appendicitis

- In a study of 113 patients over 60 years of age diagnosed with an eventual diagnosis of appendicitis:
  - 26% presented with typical symptoms of N/V, anorexia, and RLQ pain.
  - Correct initial diagnosis in 50% of cases.
  - Perforation rate 51-72%.
  - Complication rate 21-32%.

Acute Pancreatitis

• Presents in a similar manner to younger patients – N/V, dehydration, mid-epigastric pain which may radiate to the back.

• Causal factors are the same – EtOH, gallstone disease, hypertriglyceridemia, hypercalcemia, etc.

• Mortality rates are higher: 20-25% vs 8-10%.
Peptic Ulcer Disease

- NSAID use and H. pylori infection are the most important risk factors.
- Approximately 30% of elderly patients with PUD have no abdominal pain.
- Onset of abrupt abdominal pain classically occurs with a perforation.
Diverticular Disease

• Incidence increases with age.
  – Affects 2/3 of patient over 90 years of age.
• Risk factors similar to younger patients.
• Leukocytosis which is prominent in younger patients may be absent or minimal.
Acute Mesenteric Ischemia

• Uncommon (1% of acute abdomen presentations), but frequently fatal (80% in elderly).
• Etiologies include embolic, thrombotic, nonocclusive, venous thrombosis.
• Risk factors include smoking, atherosclerotic disease, atrial fibrillation, shock, obstruction, portal hypertention.
• Symptoms and findings similar to younger patients:
  – Pain out of proportion to exam.
  – Radiographic evidence of ischemia.
Abdominal Aortic Aneurysms

• Typical symptoms for significant AAA include severe back pain radiating to the groin, sacrum, or flank regions.

• Classic triad for ruptured AAA - back pain, hypotension, and a pulsatile mass – present in only 25-50% of elderly.

• Presentation may resemble acute cholecystitis, perforated ulcer, diverticulitis, or renal colic.
Urinary Tract Infections

• Most common cause of sepsis in the elderly.
• Fever, abdominal pain, and chills may be present.
• Elderly may present atypical presentation with lethargy and hypothermia.
Prognostic Factors for Outcomes

• Study of 375 Pts, ages 65-95 who presented to University ED with abdominal pain.

• Outcomes:
  – 50% admitted
  – 22% surgery
  – 5.3% death

## Factors Associated with Mortality

<table>
<thead>
<tr>
<th>Added Criterion</th>
<th>% Meeting Any of These Criteria, Who Died</th>
<th>% of All Who Died, Who Met Any of These Criteria</th>
<th>Point on Fig. 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free air—R*</td>
<td>75.0%</td>
<td>15.0%</td>
<td>A</td>
</tr>
<tr>
<td>Age &gt;84 yr</td>
<td>22.9%</td>
<td>55.0%</td>
<td>B</td>
</tr>
<tr>
<td>Other—R</td>
<td>20.9%</td>
<td>70.0%</td>
<td>C</td>
</tr>
<tr>
<td>Bandemia</td>
<td>12.4%</td>
<td>85.0%</td>
<td>D</td>
</tr>
<tr>
<td>All patients</td>
<td>5.3%</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>

*R = radiographic findings.

Factors Associated with Surgery

Marco et al. • ABDOMINAL PAIN IN GERIATRIC PATIENTS

be identified for a given number of patients. The gain from using the additional information is represented by the area between the line labeled A, B, C, etc., and the diagonal line. The larger this area, the greater the gain. At the point labeled A, one variable is being used; at B, two variables are being used, etc. For example, in Figure 1, the first variable, free air on abdominal x-ray, while strongly associated with death, is not prevalent, thus the overall gain from using this is limited. On the other hand, age > 84 years is both strongly associated with death and describes 13% of the study population. The cumulative impact is sig...
Take-aways

• The acute abdomen in the elderly patient frequently presents in a subtle manner – by history and physical exam.

• Delay in diagnosis, compounded by delayed presentation and comorbid conditions, lead to high mortality rates.
References

Gallstone Ileus

• Mechanical obstruction caused by intraluminal impaction of one or more gallstones anywhere between the stomach and the rectum.
• S/Sx frequently nonspecific.
• Elderly patient with comorbid conditions.
Epidemiology

• 1-4% of all cases of intestinal obstruction in general population.
• 25% of nonstrangulated SBO over age of 65.
• Mean age 65 to 75.
• Accurate preop diagnosis in 24 to 73% of cases.
Pathogenesis

• In a CS, 68% demonstrated cholecystoduodenal fistula; 22% had complex RUQ mass on laparotomy presumed to contain a fistula.
• Fistulas can occur between the biliary tree and stomach, small bowel, large bowel.
• Bilioenteric fistulas may be associated with surgery, gall bladder carcinoma, duodenal ulcers, and IBD.
• May result from delayed penetration into bowel of GS spilled at cholecystectomy.
Natural History

- 80% of GS entering bowel are excreted uneventfully.
Anatomy

- Stones may pass spontaneously through Ampulla of Vater.
- GS generally need to be 2 cm to impact.
- Impaction occurs in:
  - Ileum 60.5%
  - Jejunum 16.5%
  - Stomach 14.2%
  - Colon 4.1%
  - Duodenum 3.5%
Presentation

• Abdominal pain and vomiting.
• Obstruction 50-70%. Frequently, intermittent.
• Previous hx of gallstone disease did not contribute to diagnosis.
Radiographic Findings

- Air/contrast in biliary tree.
- Visualization of stone in the intestine.
- Change in position of previously identified stone.
- Partial or complete obstruction.
Other Studies

• US
  – May be useful in identifying fistula or enterolith movement during bowel peristalsis.

• Endoscopy
  – May directly identify fistula.
  – May identify Bouveret’s syndrome.
TREATMENT

• Surgery – enterolithotomy (open vs laparoscopic).
• Inspection of entire bowel (small and large).
  – Multiple stones have been reported in 3-40% of Pts.
• Mean duration between admission to surgery 2 to 5 days.
• Extracorporeal shockwave lithotripsy successfully employed.
Cholecystenteric Fistula

- Most consider enterolithotomy sufficient.
  - Pt population high risk.
- Some advocate 1- or 2- stage repair of fistula and cholecystectomy.
  - GB Ca higher in Pts with cholecystenteric fistula.
  - Up to 17% have recurrent GSI.
- Studies have shown higher mortality in Pts undergoing repair compared to enterolithotomy alone.
Fistula Repair

- No RCT.
- Pts with:
  - Longer life expectancy.
  - Fewer comorbidities.
  - Empyema development.
Conclusion

• GSI should be in the differential for SBO and acute abdomen in the elderly.
• Standard of care is enterolithotomy.
• For the typical GSI Pt, enterolithotomy is sufficient.