Abdominal Pain
Differential Diagnosis

Herszényi László
2nd Dept. Internal Medicine
Semmelweis University

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Key questions

- What is the **possible diagnosis**?

- Dose the patient need an **emergency operation**?
  
  - perhaps more importantly
Anatomy, quadrants and abdominal pain

- Liver
- Gallbladder
- Kidney
- Cecum
- Appendix
- Uterus
- Spleen
- Pancreas
- Stomach
- Transpyloric line
- Colon
- Small bowel
- Urinary bladder
### Site of Pain

<table>
<thead>
<tr>
<th>Site of Pain</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Epigastric pain</strong></td>
<td>Peptic Ulcer Disease; Acute Pancreatitis; Biliary colic</td>
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<tr>
<td><strong>Lower abdominal pain</strong></td>
<td>Gynaecological problems, Acute appendicitis, Diverticulitis</td>
</tr>
<tr>
<td><strong>Right upper quadrant</strong></td>
<td>→ Acute cholecystitis</td>
</tr>
<tr>
<td><strong>Right iliac fossa</strong></td>
<td>→ Appendicitis</td>
</tr>
<tr>
<td><strong>Left iliac fossa</strong></td>
<td>→ Diverticulitis</td>
</tr>
<tr>
<td><strong>Lumbal area</strong></td>
<td>→ Renal colic</td>
</tr>
</tbody>
</table>
General Considerations

Radiation of Pain

• **Pancreatic pain:**
  - radiates „through” to the middle of the back

• **Gallbladder pain:**
  - radiates around the right side to back

• **Myocardial pain** (inferior ischaemia):
  - radiates to the epigastrium

• **Renal pain**
  - starts in the loin-lumbal area, radiates to the groin
General Considerations

Relieving and exacerbating factors

- **Peptic Ulcer Disease:**
  - pain exacerbated or relieved by food

- **Acute pancreatitis:**
  - relieved by sitting forward while holding the abdomen

- **Bowel obstruction:**
  - vomiting may relieve pain
General Considerations

Past Medical History

- History of constipation $\rightarrow$ acute obstruction
- Elderly patient with known aortic aneurysm
- Known gallstones $\rightarrow$ acute cholecystitis
- Risk factors for acute pancreatitis:
  - Gallstones
  - Alcohol
  - Recent ERCP
Acute abdomen – Most common causes

- Perforation
  - Acute Cholecystitis
  - Acute Pancreatitis
  - Nephro-ureterolithiasis
  - Appendicitis
  - Diverticulitis
  - Aortic Aneurysm-Dissection
Perforation

- Pain
- Abdominal quarding or rigidity („déffence”)
- Poor general conditions
- Collaps, Shock
  - *Local* peritonitis  →  *Diffuse* peritonitis
„Il Schiavo morente“ (Michelangelo – Louvre)
Plain radiograph

Pneumoperitoneum = Perforation
Perforation – Pneumoperitoneum

Abdominal CT
Ulcer Perforation

Differential Diagnosis

- Myocardial infarction (inferior)
- Pleuro-pneumonia
- Pulmonary Embolism
- Other organ (bowel) perforation
- Acut pancreatitis
- Acut cholecystitis
- Aortic dissection
- Schönlein-Henoch purpura
- Porphyria
Acute abdomen – Most common causes

- Perforation
- **Acute Cholecystitis**
- Acute Pancreatitis
- Nephro-ureterolithiasis
- Appendicitis
- Diverticulitis
- Aortic Aneurysm-Dissection
Biliary pain - colic

„Four $E$”
- Female
- Forty
- Fetty
- Fair

- Following heavy meal →
  - Epigastric or right upper quadrant colicative pain
  - Radiates to the back
  - Vomiting

Differential Dg.:
- Peptic Ulcer Disease (PUD)
- Nephro-ureterolithiasis
- Basal Pleuro-Pneumonia
Acut cholecystitis

- Biliary colic → Fever
- Inflammatory markers ↑

**Differential Dg:**
- Acute Pyelonephritis
- Basal Pleuro-Pneumonia
- Acute Pancreatitis

Abdominal US
Acute cholecystitis - Complications

- Acute biliary pancreatitis
- Acute cholangitis

"Charcot-triade"
- pain
- fever
- jaundice

Acute cholangitis

Gallstones

Normal gallbladder
Inflamed gallbladder

Cystic duct
Common bile duct
Pancreatic duct
Duodenum

Gallstone blocking common bile duct and pancreatic duct
Acute abdomen – Most common causes

- Perforation
- Acute Cholecystitis
- **Acute Pancreatitis**
- Nephro-ureterolithiasis
- Appendicitis
- Diverticulitis
- Aortic Aneurysm-Dissection
Acute Pancreatitis

**Diagnosis**

**Clinical picture**

- Lab (amylase, lipase)
- Radiology (US, CT)
Acute Pancreatitis – Clinical picture

**Abdominal pain**

- Sudden onset of severe epigastric pain which radiates to the back
- Vomiting

**Pre-existing history:**

- Biliary tract disease
- Alcohol abuse
Acute Pancreatitis

Physical examination

Severe pancreatitis

- **Gray-Turner** sign: ecchymosis, bruising in the flanks:

- **Cullen** sign: periumbilical ecchymosis-suffusion
  - Retroperitoneal necrosis and haemorrhage

Differential Dg.:
- Peptic Ulcer Disease (PUD)
- Biliary stones-Cholecystitis
- Pleuro-Pneumonia
- Myocardial infarction
Acute Pancreatitis

Radiology

- Plain radiography
- Abdominal US
- Abdominal CT

- "Sentinel" loop
- Diffuse enlarged pancreas
- Acute necrotising pancreatitis
Acute abdomen – Most common causes

- Perforation
- Acute Cholecystitis
- Acute Pancreatitis
- Nephro-ureterolithiasis
- Appendicitis
- Diverticulitis
- Aortic Aneurysm-Dissection
Nephro-ureterolithiasis

- Very intensive pain
- Dysuria
- Haematuria
- Nausea, vomiting
- Reflex bowel paresis (paralytic ileus)
Acute pyelonephritis

- Back-Lumbal pain
- Dysuria
- High-grade fever
- Nausea-vomiting
- Urine examination:
  - Bacteriuria-Pyuria/; Culture
- Inflammatory markers↑

**Diff. Diagnosis:**
- Basal Pleuro-pneumonia
- Acute cholecystitis
- Acute urocystitis

Abdominal US
Acute abdomen – Most common causes

- Perforation
- Acute Cholecystitis
- Acute Pancreatitis
- Nephro-ureterolithiasis
- Appendicitis
- Diverticulitis
- Aortic Aneurysm-Dissection
• Central abdominal pain + vomiting
  → right lower quadrant pain (McBurney point)
• Rebound pain
  • Blumberg-sign
  • Psoas-sign
• Peritoneal irritation progresses
• Urinary symptoms (!)
• Loss of appetite
• Low grade fever
• Inflammatory markers↑

Acute appendicitis – Clinical picture
### Acute appendicitis - *Alvarado* score

<table>
<thead>
<tr>
<th>Feature</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migration of pain</td>
<td>1</td>
</tr>
<tr>
<td>Anorexia</td>
<td>1</td>
</tr>
<tr>
<td>Nausea</td>
<td>1</td>
</tr>
<tr>
<td>Tenderness in right lower quadrant</td>
<td>2</td>
</tr>
<tr>
<td>Rebound pain</td>
<td>1</td>
</tr>
<tr>
<td>Elevated temperature</td>
<td>1</td>
</tr>
<tr>
<td>Leucocytosis</td>
<td>2</td>
</tr>
<tr>
<td>Shift of white blood cell count to the left</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10</strong></td>
</tr>
</tbody>
</table>

- **1-4**: Discharge
- **5-6**: Observation / Admission
- **7-10**: Surgery

**Abdominal US**

**Abdominal CT-scan**

Acute appendicitis – **Right lower quadrant pain**

**Differential Diagnosis**

- Nephro-ureterolithiasis (right sided)
- Gynecological: Adnexitis, extrauterin gravidity
- Lymphadenitis mesenterialis
- Meckel diverticulitis
- M. Crohn (ileitis terminalis)
- Cecal tumor
Acute abdomen – Most common causes

- Perforation
- Acute Cholecystitis
- Acute Pancreatitis
- Nephro-ureterolithiasis
- Appendicitis
- Diverticulitis
- Aortic Aneurysm-Dissection
Diverticulitis

„Left-sided appendicitis”

**Signs**

- Abdominal pain, nausea, vomiting
- Constipation / Diarrhoea
- Fever, CRP ↑, ESR↑, Leucocytosis
- Urinary symptoms (!)

**Severe complications (20%)**
Diverticulitis – Left lower quadrant pain

Differential Diagnosis

- Nephro-ureterolithiasis - Pyelonephritis
- Gynecological: Adnexitis, extrauterin gravidity
- Colon tumor-perforation
- Sigma stenosis
- Ulcerative colitis
- Ischaemic colitis
Acute abdomen – Most common causes

- Perforation
- Acute Cholecystitis
- Acute Pancreatitis
- Nephro-ureterolithiasis
- Appendicitis
- Diverticulitis
- Aortic Aneurysm-Dissection
Abdominal Aortic Aneurysm - Dissection

- Age: > 60 yrs
- Chest-back pain →
- Abdominal pain: bilateral, generalized
- Suddenly disappeared periph. pulse
- Abdominal pulsatile mass
- Ecchymosis-Suffusion
- Acute ischaemia:
  - Lower extremities
  - Renal insufficiency