The Art of History and Physical Examination in a Patient with Abdominal Pain: A Cabot Approach

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Who Was Richard Cabot?

- Founder of “Case Histories of the MGH”- 1910

  **Cabot Case:** an exercise in deductive reasoning: “less important to pinpoint the correct diagnosis than to present a logical and instructive analysis of the pertinent conditions involved.”

- Championed the role of basic science in medicine
- Disease, social circumstance, and even religious beliefs cannot be easily separated
- Medical care is inadequate when it focuses primarily on disease pathophysiology
- Advocated social work, ambulatory practice and training
A Capsule View of Cabot’s Philosophy

- I want to throw open the windows and get out of this narrow medical atmosphere in which the enormous healthful influences of the outside world are so largely disregarded.
  \[i.e., \textit{plea for a complete history and physical exam}\]
- All that tends to make us build up a diagnosis at a distance from the patient is dangerous.
  \[\textit{e.g., advanced imaging (CT scan, MRI...)}\]
- Our patients shoot by us like comets, crossing for a moment our field of vision, then passing out into oblivion.
  \[\textit{e.g., PCP mean office visit time: 17 minutes}\]

Rudyard Kipling’s Horseman…and more

- Who
- What
- Where
- When
- Why
- How

\textit{Applicable for Journalism as well as Medical History-taking}
Rudyard Kipling’s Horseman for (Abdominal) Pain

Who else (in your family) has it?
What were you doing when you first got it?
are you doing when you get it?
makes it better (worse)?
exercise, position, twisting,
eating (all meals, what food classes, amounts )
Where is it?
does it radiate?
When do you get it (time of day, waking/sleeping; position)?
Why do you think you have this?
How long have you had it?
severe is it?
does it start? long does it last? does it change? does it end?
many pains do you have?
has it changed since it began?
does …influence it?

Draw the pain

Dr. Joseph Bell
35-year-old woman with anal pain

- She begins crying *before* the DRE
- She begins crying *during* the DRE
  - when finger is being introduced
  - when finger is fully inserted
- She begins crying *after* the DRE

anal fissure: acute pain, bleeding
anal abscess: building pain, constant, fever
anal spasm: sudden pain
sexual abuse: no pain, unless physical damage

I Can’t Get No….

- Can’t get finger in
  - anal fissure
  - anal abscess
- Can’t get finger out
  - anal spasm
- Can’t get finger in…for a short time
  - sexual abuse:
Abdominal Pain: Physical Examination

- **Observation**
  - distention, asymmetry, discoloration
- **Auscultation**
  - bowel sounds, bruits, hums, rubs
- **Palpation**
  - light, deep

*Don’t forget the anus*
If you do, you’ll put your foot in it rather than your finger!

Discoloration

- **Cullen’s sign**
- **Grey-Turner’s sign**

Medicallecturenotes.com
Emergencymedic.blogspot.com
Sister Joseph Nodule


Caput Medusae

Yang, Chin. NEJM 2005. e19
Auscultation

- Bowel sounds
- Vascular Bruits
  - CA, SMA
  - Splenic artery (Serebro’s sign)
  - Hepatic artery
- Venous hum
  - umbilicus
- Rubs
  - RUQ: CA breaking through Glisson’s capsule
  - “Violin strings” of gonococcal perihepatitis

Curtis-Fitzhugh syndrome

HCC

Quizlet.com  American Roentgen Ray Soc, 2012
Abdominal Pain: Pathophysiology

Visceral Pain
- transmitted by unmyelinated C fibers in muscle, peritoneum, mesentery and viscera
- dull, cramping, burning, gnawing, poorly localized, but usually sensed in midline

afferent visceral pain fibers follow ANS:
- cell bodies in DRG of sp. afferent nerves → sp. cord → dorsal horn (laminae I and V); 2nd order neuronal fibers cross sp. cord → contralateral spinothalamic tract to thalamic & reticular formation nuclei (pons, medulla)
- thalamic nuclei → somatosensory cortex (pain);
- reticular nuclei → limbic system & frontal cortex (emotion of pain)
Abdominal Pain: Pathophysiology

**Somatic-Parietal Pain**
- mediated by A-δ thinly myelinated fibers that are mainly distributed to skin and muscle
- sharp, well-localized, can be lateralized, aggravated by movement, vibration
- peripheral nerves (~dermatomes, T6-L1) → spinal nerves → CNS; also activates local reflexes (ENS) and long spinal reflexes (ANS)
- reflex responses (guarding, rigidity) mediated by spinal reflex arcs

Appendicitis: an example of Visceral Pain → Somatic-Parietal

**Early:** vague periumbilical *visceral* pain
**Later:** localized *somatic* pain (McBurney’s point)
Abdominal Pain: Pathophysiology

**Referred Pain**
- Felt in areas remote from the diseased organ
- Results when visceral afferent and somatic afferent neurons converge on 2nd order neurons in the spinal cord at the same level
  - Probably a result of innervation of initially adjacent areas that move away from each other during embryologic development

**Examples:** subphrenic abscess presents as shoulder pain because central tendon of diaphragm begins development in the neck, and moves caudad bringing phrenic nerve with it

*Aaron’s sign:* pressure over McBurney’s point causes pain in epigastrium (appendicitis)

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RUQ Abdominal Pain: Case #1

**Maneuver:** stroking of the skin
**Result:** discomfort, pain
**Dx:** neuropathy *([Herpes Zoster](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6374961/))*

**Caveat:** discomfort, pain may precede rash
RUQ Abdominal Pain: Case #2

Maneuver: squeezing the skin and subcutaneous fat
Result: discomfort, pain
Dx: adiposa dolorosa; Dercum’s disease

RUQ Abdominal Pain: Case #3

Maneuver: palpation with patient lying flat and then partially sitting; + Carnett’s sign
Result: increased discomfort and pain with patient in partially sitting position
Dx: rectus abdominus hematoma or tear
RUQ Abdominal Pain: Case # 4

Maneuver: auscultation of the RUQ
Result: rub
Dx: gonococcal perihepatitis (Curtis-Fitzhugh syndrome)

“violin strings”

RUQ Abdominal Pain: Case # 5

Maneuver: auscultation of the RUQ
Result: a bruit, a rub
Dx: hepatocellular carcinoma
RUQ Abdominal Pain: Case # 6

Maneuver: *gentle* palpation of the RUQ

Result: palpation of the gallbladder

Dx: Courvoisier gallbladder (malignant obstruction CBD)

![jaundice]

![visible (palpable) gallbladder]

www.mayoclinicproceedings.com

RUQ Abdominal Pain: Case # 7

Principle: the appendix can occupy any of the positions of the hands of a clock ... and be a RUQ organ

Dx: Appendicitis in pregnancy
**RUQ Abdominal Pain: Case # 8**

**Principle:** diverticulitis (and endometriosis) in Asians is often right-sided

**Dx:** Diverticulitis

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**RUQ Abdominal Pain: Case # 9**

**Principle:** epiploic appendagitis is seen in ~1% of patients thought to have appendicitis. It is a self-limited disease.

**Dx:** Epiploic appendagitis

*Ring-sign*
RUQ Abdominal Pain: Case # 10

Maneuver: palpation and auscultation of the rib
Result: bony crepitus and localized rib tenderness
Dx: fractured rib
Caveat: with fx of lower ribs be on guard for hepatic, splenic rupture

RUQ Abdominal Pain: Case #11

58 year-old-woman with remote history of appendectomy c/o RUQ abdominal pain. Upon questioning, she remembers multiple episodes of abdominal pain, each with vomiting and inability to pass gas.

Maneuver: auscultation and percussion of the RUQ
Result: active bowel sounds and tympany over the liver (Chilaiditi’s sign)
Dx: internal hernia
LUQ Abdominal Pain: Case #12

- A 24-year-old woman with left upper quadrant/flank pain, episodic hematuria and passage of clots
- Physical exam: vulvar varices
- Hgb 10.4 gms/L; microscopic hematuria

Diagnosis?

Nutcracker Syndrome

- Compression of the left renal vein between the aorta & SMA. Occurs in relatively young, healthy people.
- Compression leads to
  - left renal vein hypertension, rupture into the renal calyx & episodic gross or microscopic hematuria.
  - collateral veins, e.g., left ovarian vein or testicular vein with vulvar varices in women or varicocele in men
**Action:** Flexes thigh & rotates it medially  
Flexes lumbar spine & bends it laterally  

**Innervation:** Branches of L2, L3, L4 before formation of femoral nerve  

**Location:** Retroperitoneal and close to sigmoid, jejunum, ileum, appendix, ureters, aorta, renal pelvis, pancreas, iliac nodes and spine
Psoas Test

1. Place hand on ipsilateral knee and ask patient to raise thigh against hand. Contraction of psoas muscle → pain
2. Have patient lie on unaffected side and hyperextend the affected hip. Stretching of psoas → muscle pain

Psoas Muscle (P)
Psoas Abscess: 1911

- A housekeeper of 31 years with six months of feeling rundown...pallor, anemia, and weakness...several weeks of fever and “disturbed” bowels
- Abdominal soreness in the right iliac region, worsened by being jolted in a wagon or rising from a chair. Limping gait. Physical examination negative save for a hard “cake” filling the right iliac region nearly to Poupart’s ligament
- At operation: tubercles studding the peri-cecals area, psoas abscess

**Tuberculosis**

“Incredible though it seems, there are physicians in practice today who do not hesitate to treat lumbar pain without stripping the patient so that the naked back can be examined.”

*Richard C. Cabot, 1911*
Psoas Abscess: 1978

- A 25-year-old man presents with a 3-week history of right thigh and hip pain which hurts most when he climbs stairs
- As you watch the patient approach your office you notice he has a limping gait
- Long-standing history of frequent bowel movements; no urinary symptoms
- Physical exam reveals a RLQ fullness and + psoas sign

Crohn’s disease
Crohn’s with Hydronephrosis and Psoas Abscess

Crohn’s with Ureter Entrapment
Psoas Abscess: 1978  2006

- A 25-year-old man presents with a 3-week history of right thigh and hip pain which hurts most when he climbs stairs.
- As you watch the patient approach your office you notice he has a limping gait.
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**Crohn’s disease**

- Treatment with infliximab.

**Tuberculosis**

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Psoas Abscess: 1984

- A 31-year-old homosexual man has been complaining of back pain x 4 wks; weakness, cough x 2 wks; RLQ, groin and right flank pain x 72 hrs; fevers and shaking chills x 48 hrs. He notes a 21 pound weight loss but is unclear over what period of time this has occurred.
- Past medical history: IVDU.
- PE: cachexia; thrush; dullness in the upper lobes on percussion and Skoda’s resonance; vertebral tenderness; hepatosplenomegaly and RLQ tenderness.

**AIDS and Tuberculosis**
Psoas Abscess

Described by Mynter 1881 (psoitis”)

- **1° abscess**: younger
  - 86% of 1° abscess in IVDU (57% HIV+); also DM, CKD, immunosuppression

- **2° abscess**: older
  - **GI**: diverticulitis, appendicitis, Crohn’s, colorectal CA
  - **GU**: UTI, ECSWL, CA
  - **MS**: vertebral osteomyelitis, lumbar spondylodiscitis, infectious sacroileitis, septic arthritis
  - **Misc**: endocarditis, infected AAA, IUD, trauma, dialysis (hemo/peritoneal)

**Etiology**: *S. aureus* (~90%, 1° abscess); *Strep, E. coli, Serratia, Pseudomonas, Proteus, Klebsiella, Bacteroids, Salmonella, Clostridia, Mycobacteria*
Clues to Dx Psoas Muscle Disease

- Observe the way the patient walks
- Take a complete history (including travel, surgery, life-style)
- Observe the way the patient lies down: patient will favor the position of greatest comfort (supine with knee moderately flexed and hip mildly externally rotated)
- Examine abdomen, groin and back, leg veins swelling below the inguinal ligament: ddx: femoral hernia, inguinal adenopathy
- Perform psoas test
- ...then you can order a CT scan
A 54-year-old woman presents with RLQ, groin and right flank pain for 3 weeks accompanied by spiking fevers.

Past medical history is only remarkable for a laparoscopic cholecystectomy performed 3 years prior. Details are lacking.

Dropped Stones: Background

- >700,000 laparoscopic cholecystectomies (LC) done each year in U.S.
- Laparoscopy **pro:** smaller incisions, less pain, shorter recovery time
- Laparoscopy **con:** technically difficult, limited visualization and, therefore, more frequent bile duct injury and dropped stones
- Dropped stones: 5-40% of LC
- Unretrieved stones: 16-50%
Potential Complications of Dropped Stones

- Infectious/Septic
  - General: fever, sepsis
  - Thoracic:
    - pneumonia
    - empyema
    - pleural effusion, pleuritis
    - broncholithiasis
  - Abdominal wall
    - port-site, umbilicus
  - Intra-abdominal
    - hepatobiliary
    - subhepatic, subphrenic
    - retrohepatic, pelvic
    - paracolic, peritoneal
    - retroperitoneal
  - Other
    - gluteal, flank
- Intestinal
  - ileus
  - obstruction
  - incarcerated hernia
- Fistulae to
  - umbilicus
  - urinary bladder
  - skin
  - colovesical
  - colocutaneous
  - gluteolumbar
- Rare (Stone) Locations
  - pelvis
  - ovary
  - hernia sac
  - urinary bladder


My favorites

- Abdominal wall/port-site abscess/stones
- Broncholithiasis with stone expectoration
- Dyspareunia
- Erosion through the back
- Gluteal abscess
- Granulomatous peritonitis
- Implantation malignancy
- Recurrent bacteremia, sepsis
- Retroperitoneal actinomycosis
- Tubo-ovarian lithiasis
Case 1:
- 67 y.o. man with 3 months of RUQ abd pain on deep inspiration
- Cholecystectomy 3 months ago “no hepatic lesion …but surgery was technically difficult and stones dropped during GB retraction; could not be retrieved…”
- CT aspirate: sterile pus
- Patient responded to antibiotics with resolution of symptoms


Case 2:
- 90 y.o. man
- Night sweats, dyspnea and leukocytosis
- LC 4 months previously
- Stones in a thickened diaphragm; pleural effusion

Case 3:
- 50 y.o. woman in excellent health
- RUQ and flank pain initially attributed to a MVA
- LC 2 yrs ago
- Collection in posterior abdominal wall from intra-abdominal abscess

Case 4:
- 66 y.o. woman with persisting subdiaphragmatic abscess
  2 years after LC
Case 5:
- 72 y.o. woman s/p LC 11 years ago with 3 wks of fever, nausea, anorexia and RUQ pain
- Subhepatic fluid collection monitored x 5 years w/o intervention
- PC drainage on culture: *Actinomyces israeli*
- Resolved with drainage and IV clindamycin

Potential Symptoms of Dropped Stones (a partial list)

- **Systemic:** fever, signs of sepsis
- **Abdominal:** pain, distention, bloating, a mass, vomiting, icterus
- **Pelvic:** pain, dyspareunia, hematuria, dysuria
- **Pulmonary:** hemoptysis, cough, chest pain
- **Cutaneous:** discharge, tenderness

Dropped Stones: Take-home Points

- Dropped stones occur in up to 40% of LC
- Presentations are varied, may be non-biliary and may occur late (up to 20 years)
- Think of a dropped stone in *every* patient with a history of LC in whom new symptoms develop--especially when accompanied by fever or abdominal pain
- If dropped stone(s) occur and cannot be removed, inform patient
Unresolved Issues

- What to do after spillage?
  - retrieve stone?
  - how to retrieve stone?
- Convert to an open procedure?

Palabra y piedra suelta no tienen vuelta

Spanish Proverb

A word and a stone once let go cannot be recalled