Acute Abdomen and Peritonitis

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Acute Abdomen: Definition

- An abdominal condition of abrupt onset associated with severe abdominal pain (resulting from inflammation, obstruction, infarction, perforation, or rupture of intra-abdominal organs).

- Acute abdomen requires urgent evaluation and diagnosis because it may indicate a condition that requires urgent surgical intervention

Physiology of Abdominal Pain

- Visceral pain
  - Comes from abdominal/pelvic viscera
  - Transmitted by **visceral afferent** nerve fibres in response to stretching or excessive contraction
  - Dull in nature and vague
  - **Poorly localised**
    - Foregut epigastrium
    - Midgut para-umbilical
    - Hindgut suprapubic
- Somatic pain
  - Comes from parietal peritoneum (which is innervated by somatic nerves)
  - Sharp in nature
  - **Well localised**
  - Made worse by movement, better by lying still
- Referred pain
  - Pain felt some distance away from its origin
  - Mechanism not clear
  - Most popular theory: nerves transmitting visceral and somatic pain (e.g. from viscera or parietal peritoneum) travel to specific spinal cord segment and can result in irriation of sensory nerves that supply the corresponding dermatomes
  - E.g. Gallbladder inflammation can irritate diaphragm which is innervated by C3,4,5. Dermatomes of these spinal cord segments supplies the shoulder, hence referred shoulder tip pain.

Causes of Acute Abdomen

- Intestinal
  - **Acute appendicitis**, mesenteric adenitis, mekel's diverticulitis, **perforated peptic ulcer**, gastroenteritis, **diverticulitis, intestinal obstruction**, **strangulated hernia**
- Hepatobiliary
  - **Biliary colic, cholecystitis, cholangitis, pancreatitis**, hepatitis
- Vascular
  - **Ruptured AAA, acute mesenteric ischaemia, ischaemic colitis**
- Urological
  - Renal colic, UTI, testicular torsion, acute urinary retention
- Gynaecological
  - Ectopic pregnancy, ovarian cyst pathology (rupture/haemorrhage into cyst/torsion), salpingitis, endometriosis, mittelschmerz (mid-cycle pain)
- Medical (can mimic an acute abdomen)
  - Pneumonia, MI, DKA, sickle cell crisis, porphyria

Acute Abdomen: Making the diagnosis

- **History**
- **Examination**
- **Simple Investigations**
- More complex investigations based on findings of the above

Most diagnosis can be made on history and examination alone, with investigations to confirm the diagnosis

Acute Abdomen: The History

- Abdominal pain – features will point you towards diagnosis

- SOCRATES
  - Site and duration
  - Onset – sudden vs gradual
  - Character – colicky, sharp, dull, burning
  - Radiation – e.g. Into back or shoulder
  - (Associated symptoms – discussed later)
  - Timing – constant, coming and going
  - Exacerbating and alleviating factors
  - Severity
  - 2 other useful questions about the pain:
    - Have you had a similar pain previously?
    - What do you think could be causing the pain?

Acute Abdomen: The History

- Associated symptoms
  - GI: bowels last opened, bowel habit (diarrhoea/constipation), PR bleeding/melaena, dyspeptic symptoms, vomiting
  - Urine: dysuria, heamaturia, urgency/frequency
  - Gynaecological: normal cycle, LMP, IMB, dysmenorrhoea/menorrhagia, PV discharge
  - Others: fever, appetite, weight loss, distention
- Any previous abdominal investigations and findings
- Other components of history
  - PMH e.g. Could patient be having a flare up/complication of a known condition e.g. Known diverticular disease, previous peptic ulcers, known gallstones
  - DH e.g. Steroids and peptic ulcer disease/acute pancreatitis
  - SH e.g. Alcoholics and acute pancreatitis

Acute Abdomen: The Examination

- Inspection: scars/asymmetry/distention
- Palaption:
  - Point of maximal tenderness
  - Features of peritonitis (localised vs generalised)
    - Guarding
    - Percussion tenderness
    - Rebound tenderness
  - Mass
  - Specific signs (Rovsing's sign, murphy's sign, cullen's sign, grey-turner's sign)
- Percussion: shifting dullness/tympanic
- Auscultation: bowel sounds
    - Absent
    - Normal
    - Hyperactive
    - tinkling
- The above will point you to potential diagnosis

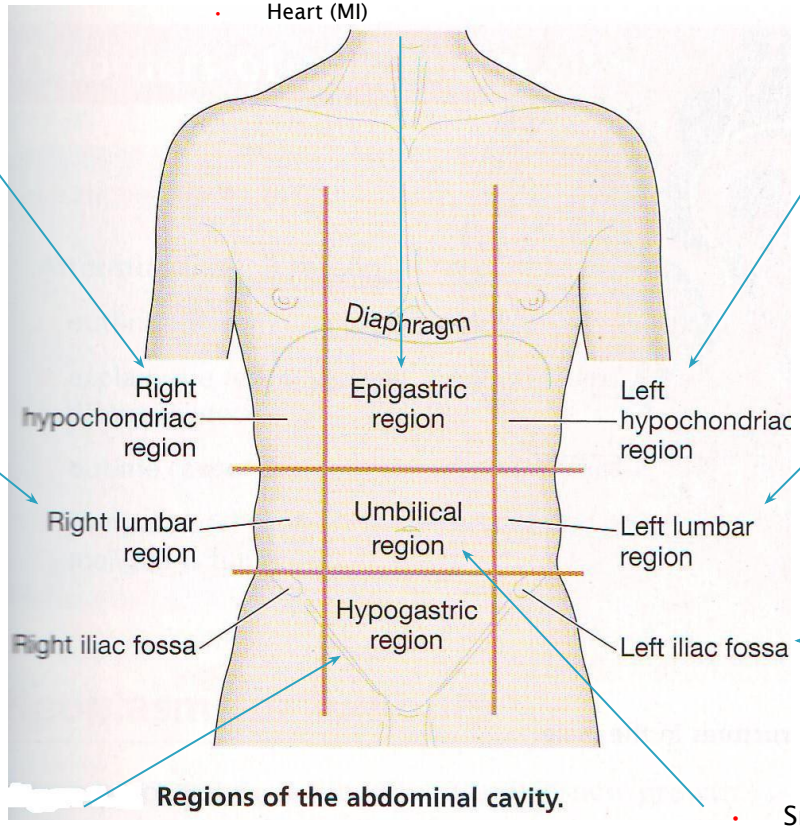
Acute Abdomen: The Examination

- Liver (hepatitis)
- Gall bladder (gallstones)
- Stomach (peptic ulcer, gastritis)
- Hepatic flexure colon (cancer)
- Lung (pneumonia)

- Liver (hepatitis)
- Gall bladder (gallstones)
- Stomach (peptic ulcer, gastritis)
- Transverse colon (cancer)
- Pancreas (pancreatitis)
- Heart (MI)

- Spleen (rupture)
- Pancreas (pancreatitis)
- Stomach (peptic ulcer)
- Splenic flexure colon (cancer)
- Lung (pneumonia)

- Ascending colon (cancer,)
- Kidney (stone, hydronephrosis, UTI)



Regions of the abdominal cavity.

- Descending colon (cancer)
- Kidney (stone, hydronephrosis, UTI)

- Appendix (Appendicitis)
- Caecum (tumour, volvulus, closed loop obstruction)
- Terminal ileum (crohns, mekels)
- Ovaries/fallopian tube (ectopic, cyst, PID)
- Ureter (renal colic)

- Sigmoid colon (diverticulitis, colitis, cancer)
- Ovaries/fallopian tube (ectopic, cyst, PID)
- Ureter (renal colic)

- Uterus (fibroid, cancer)
- Bladder (UTI, stone)
- Sigmoid colon (diverticulitis)

- Small bowel (obstruction/ischaemia)
- Aorta (leaking AAA)

Acute Abdomen: Investigations

- Simple Investigations:
  - Bloods tests (FBC, U&E, LFT, amylase, clotting, CRP, G&S, ABG)
  - Urine dipstick
  - Pregnancy test (all women of child bearing age with lower abdominal pain)
  - AXR/E-CXR
  - ECG

- More complex investigations:
  - USS
  - Contrast studies
  - Endoscopy (OGD/colonoscopy/ERCP)
  - CT
  - MRI

Acute Abdomen: Investigations

- Urgent surgery should not be delayed for time consuming tests when an indication for surgery is clear

- The following three categories of general surgical problems will require emergency surgery
  - Generalised peritonitis on examination (regardless of cause – **except acute pancreatitis**, hence all patients get amylase)
  - Perforation (air under diaphragm on E-CXR)
  - Irreducible and tender hernia (risk of strangulation)

Peritonitis

- Peritonitis – inflammation of the peritoneum which maybe localised or generalised

- Peritonism – refers to specific features found on abdominal examination in those with peritonitis
  - Characterised by tenderness with guarding, rebound/percussion tenderness on examination
  - Peritonism is eased by lying still and exacerbated by any movement
  - Maybe localised or generalised

- Generalised peritonitis is a **surgical emergency** – requires resuscitation and immediate surgery

Causes of Generalised Peritonitis

- Infective – bacteria cause peritonitis e.g. due to gangrene or perforation of a viscus (appendicitis/diverticulitis/perforated ulcer). This is the most common cause of peritonitis

- Non-infective – leakage of certain sterile body fluids into the peritoneum can cause peritonitis.
  - Gastric juice (peptic ulcer)
  - Bile (liver biopsy, post-cholecystectomy)
  - Urine (pelvic trauma)
  - Pancreatic juice (pancreatitis)
  - Blood (endometriosis, ruptured ovarian cyst, abdominal trauma)
  - Note: although sterile at first these fluids often become infected within 24-48 hrs of leakage from the affected organ resulting in a bacterial peritonitis

Clinical features of Peritonitis

- Pain
  - Constant and severe (site will give clue as to cause, or maybe generalised)
  - Worse on movement (hence shallow breathing in those with generalised peritonitis to keep the abdomen still)
  - Eased by lying still
    - If localised peritonitis – peritonism is in a single area of the abdomen
    - If generalised peritonitis – peritonism is all over abdomen with board like rigidity
- Signs of ileus (generalised peritonitis > localised peritonitis)
  - Distention
  - Vomiting
  - Tympanic abdomen with reduced bowel sounds
- Signs of systemic shock
  - Tachycardia, tachypnoea, hypotension, low urine output
  - More prominent with generalised than localised peritonitis

Investigations for Peritonitis

- Diagnosis most often made on history and examination

- If localised peritonitis
  - Investigations are those listed on “investigations for acute abdomen” slide
  - All patients get simple investigations
  - Complex investigations are requested depending on suspected diagnosis (remember that some diagnoses do not require complex investigations and are entirely based on history and examination e.g. Appendicitis)

- If generalised peritonitis
  - Surgical emergency – will require emergency operation
  - Following investigations should be performed:
    - Bloods: FBC, U&E, LFT, **Amylase!!** (acute pancreatitis can present with generalised peritonitis and does not require emergency surgery), CRP, clotting, G&S, ABG
    - AXR and Erect CXR
    - CT scan
      - Only if this can be performed urgently and patient is stable
      - If this can not be performed urgently or patient is unstable then for surgery without delay
      - Does not change management (i.e. Patients will need emergency surgery regardless) but useful as will identify cause of peritonitis therefore helping to plan surgical procedure
    - Other Time consuming complex investigations should not be performed as they will only delay definitive treatment (emergency surgery) and add very little

Resuscitation of Generalised Peritonitis

- ABC
- Oxygen
- Fluid resuscitation (large bore cannule, bloods, IVF, catheter)
- IV antibiotics (Augmentin and metronidazole)
- Analgesia
- Surgery (with or without preceeding CT depending on availability and stability of patients)

The End

Questions