APPROACHES TO ACUTE ABDOMEN

Prof. Salman Yousuf Guraya FRCS
Consultant Minimally Invasive Surgeon
College of Medicine, Taibah University
Al Madina Al Munawara
What is acute abdomen?
Pain and its analysis
Different types of pain in surgical patient
Causes of acute abdomen
Examination findings of acute abdomen
Laboratory investigations
Imaging of acute abdomen
Acute abdomen is a recent or sudden onset of unexpected non traumatic abdominal pain

Most common general surgical problem encountered in ER
Pathophysiology

**Visceral Peritoneum**

* supplied by afferent C fibers of ANS bilaterally
* midline, dull, vague, slow onset, poorly localized pain
* caused by visceral inflammation, ischemia, distention and traction
**Parietal Peritoneum**

* supplied by A & C delta fibers of spinal somatic nerves unilaterally
* sharp, sudden, severe, and well localized pain
* originates due to peritoneal irritation by blood, bile, urine, feces, pus, or GIT contents
**Referred Pain**

- severe cutaneous sensation perceived at a site distant from its source; arising from a deep viscera and felt superficially

- subdiaphragmatic (blood, bile, air) or supradiaphragmatic (pleurisy, pneumonia) irritation leading to pain in shoulder via C4

DIFFERENT REGIONS, DIFFERENT CHARACTERS, SAME TIME
Shifting Pain

- pain location and character differs from onset to presentation

- peri umbilical dull, vague visceral pain of appendicitis shifts to sharp, severe, well localized somatic pain in RIF
Radiation of Pain

- Extension of pain to another site while the initial pain persists
- The extended pain has the same character as the initial pain
- Pain due to perforated posterior peptic ulcer starts in the epigastrium and radiates to the back

SAME TIME, SAME REGION, SAME CHARACTERS
WHAT IS REFERRED PAIN?

WHAT IS THE CAUSE OF REFERRED PAIN?
Common Causes of Acute Abdomen

- Inflammatory Lesions
- Obstructive Lesions
- Non Surgical Lesions
Inflammatory Lesions

- Biliary Colic
- Perforated Gastric Ulcer
- Perforated Duodenal Ulcer
- Acute Pancreatitis
- Meckel’s Diverticulum
- Acute Intestinal Obstruction
- Acute Perforative Appendicitis
- Acute Diverticulitis
- Ruptured Ovarian Cyst
- Torsion of Ovary
- Acute Salpingitis
- Ectopic Pregnancy
Obstructive Lesions

**Jejunum**
- Malignancy
- Volvulus
- Adhesions
- Intussusception

**Ileum**
- Malignancy
- Volvulus
- Adhesions

**Colon**
- Malignancy
- Diverticulitis
- Adhesions
Non Surgical Lesions

Cardiac
Myocardial infarction
Acute pericarditis

Pulmonary
Pneumonia
Pleurisy

Endocrine
Diabetic ketoacidosis
Acute adrenal insufficiency

Hematological
Sickle cell crisis
Evaluation
A. History

Pain
* character
* onset
* duration
* location
* severity
* radiation
* shifting
* worsening / alleviating factors
...pain contd

Associated Symptoms

* vomiting
  - due to pain or primary GIT problem
  - amount, color, after taste, frequency, relation with pain—occurs before pain in GE but follows pain in appendicitis
  - clear vomitus—pyloric obstruction
  - bilious vomitus—bowel/colon obstruction

* anorexia/ weight loss
...history contd

* regurgitation
* hematemesis/hemoptysis
* bowels
  - constipation, recent change in bowel habits
  - obstipation---absent flatus and feces
  - diarrhea
    ! Blood stained in IBD, ischemic colitis, dysentery
    ! Watery, copious in GE
...history contd

* hematochezia, malena, hematuria
* jaundice
* menstruation

**OVARY**

Ruptured graafian follicle

**FALLOPIAN TUBE**

Ectopic pregnancy

Acute salpingitis
...history contd

**Past Illness**

- previous operations; open, laparoscopy, endovascular
- H/O IHD, aortic aneurysm, peripheral vascular disease
- H/O GIT cancer
- Family H/O GIT cancers or metabolic illnesses
...history contd

**Medical History**

- NSAIDS: peptic ulcer, perforation, bleeding
- Corticosteroids: mask inflammation, induce pancreatitis
- Antibiotics: pseudomembranous colitis, decrease pain in peritonitis
- Immunosuppressants
Physical Examination

**General Appearance**
- acutely ill, pale, sweaty, sunken eyes, dry skin, weak, motionless, hips/knees flexed

**Vital Signs**
- fever, tachycardia, hypotension hypothermia
Abdominal Examination

**Inspection**
- abdominal distension
- surgical scars
- bulges
- respiratory rate
- visible bowel movements
- visible peristalsis
...exam contd

- **Auscultation**
  - high pitch tinkling sounds in bowel obstruction
  - absent bowel sounds in ileus

- **Coughing Test**
  - elicits area of maximum pain in the abdomen

- **Percussion**
  - tympanitic sounds
  - fluid thrill
  - shifting dullness
...exam contd

**Palpation**

- Tenderness;
- Murphy’s sign
- Iliopsoas sign
- Obturator sign
- Rovsing’s sign
- Rebound tenderness
- Guarding;
  - voluntary Vs involuntary
- Hernias
- Masses
...exam contd

Rectal Examination

*Rt sided tenderness-pelvic appendicitis
*Blood tinged stools
*Palpable mass

Pelvic Examination

useful in females of child bearing age for pelvic inflammatory disease, dysmenorrhea
Initial workup for acute abdomen

Blood
- CBC
- Electrolytes
- Urea/Creatinine
- Serum Amylase
- Blood glucose
- LFT

Urine
- Microscopy
- Culture
- Pregnancy

Imaging
- Erect Chest X-ray
- Erect/Supine abdominal X-ray
Laboratory Tests

Blood Works

CBC—white cell count, hematocrit
Serum electrolytes
Liver function tests
Serum amylase, lipase
Group & cross match
Clotting profile; platelets, PT, APTT
ABG: hypotension, pancreatitis, ischemic bowel, septicemia
Antibody titer: amebic, typhoid, viral diseases
...labs contd

**Urine**

*Bacteuria, pyuria, positive leukocyte esterase for UTI*

*b-HCG in females; high in intrauterine pregnancy (≥4000 mIU), low in ectopic pregnancy (≤4000 mIU)*
...labs contd

**Stool**

*occult blood for GIT malignancy, diverticulitis, peptic ulcer disease*

*warm stool smears for ova, bacteria, parasites*

*culture*
Imaging

Plain Films
- erect
- supine
- lateral decubitis
- erect CXR

- free intraperitoneal air upto 1 ml
- small bowel, colonic obstruction
- sentinel loop
- urinary tract stones
- pancreatic calcifications
- faecoliths in appendix

- obliterated psoas shadow
- gas in biliary tree
- air in portal, mesenteric veins
- gall stones
- calcifications in aortic wall
...imaging contd

**Ultrasonography**
- acute cholecystitis
- CBD dilatation
- ascites
- sonographic Murphy's sign
- transvaginal US for adnexal lesions
...imaging contd

**Computed Tomography**
- with double or triple contrast
- gold standard for acute abdominal pain assessment
**Contrast Studies**
- gastrograffin (water soluble)
- barium swallow, follow through or enema
- EU
...imaging contd

Radionuclide Scans

- HIDA scan
- Tc$^{99m}$ pertechnetate—Meckel’s diverticulum
- Radiolabelled RBC scan (bleeding) and WBC scans (abscess, inflammation)
...imaging contd

- **Angiography**
  
  - Invasive, not suitable for unstable patient
  - Mesenteric vascular ischemia
  - Ongoing hemorrhage
  - Diagnosis & treatment of acute GIT bleeding
Endoscopy
- proctosigmoidoscopy
- colonoscopy
- gastroscopy

Paracentesis
- blood
- bile
- feces
- pus
- cytology of aspirate

Laparoscopy
Indications of Urgent Surgery for Acute Abdomen

1. Physical Findings
   * tense, tender and distended abdomen with absent bowel sounds
   * suspected ischemia (acidosis, fever, tachycardia)
   * rectal bleeding with shock or acidosis
   * failure of conservative management
   * septicemia of abdominal origin
2. Radiologic Findings

* pneumoperitoneum
* contrast extravasations
* mesenteric vascular occlusion
* advanced or progressive bowel distension
3. **Endoscopy**
   * uncontrolled hemorrhage
   * perforation

4. **Paracentesis**
   * blood
   * bile
   * pus
   * bowel contents
   * urine
THANK YOU