ACUTE ABDOMEN

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Definition

- The term acute abdomen refers to a sudden, severe abdominal pain of unclear etiology that is less than 24 hours in duration.
- It is in many cases a medical / surgical (non trauma) emergency, requiring urgent and specific diagnosis.
- Several causes need surgical treatment.

Epidemiology

- Can be trivial or life threatening
- About 10-15% of Casualty visit
- Almost 40% of them need surgical intervention
- The challenge we face here : - Misdiagnosis, Atypical presentation, and mortality if given wrong treatment

The Physiology Of Abdominal Pain

- There are three types of Abdominal pain :
  Visceral Pain, Somatic (Parietal) Pain and Referred Pain
- Several factors modify the expression of pain
- Extremes of age, pain tolerance
- Vascular compromise (pain out of proportion)
- Pregnancy / CNS pathology / Neutropenia

Visceral pain

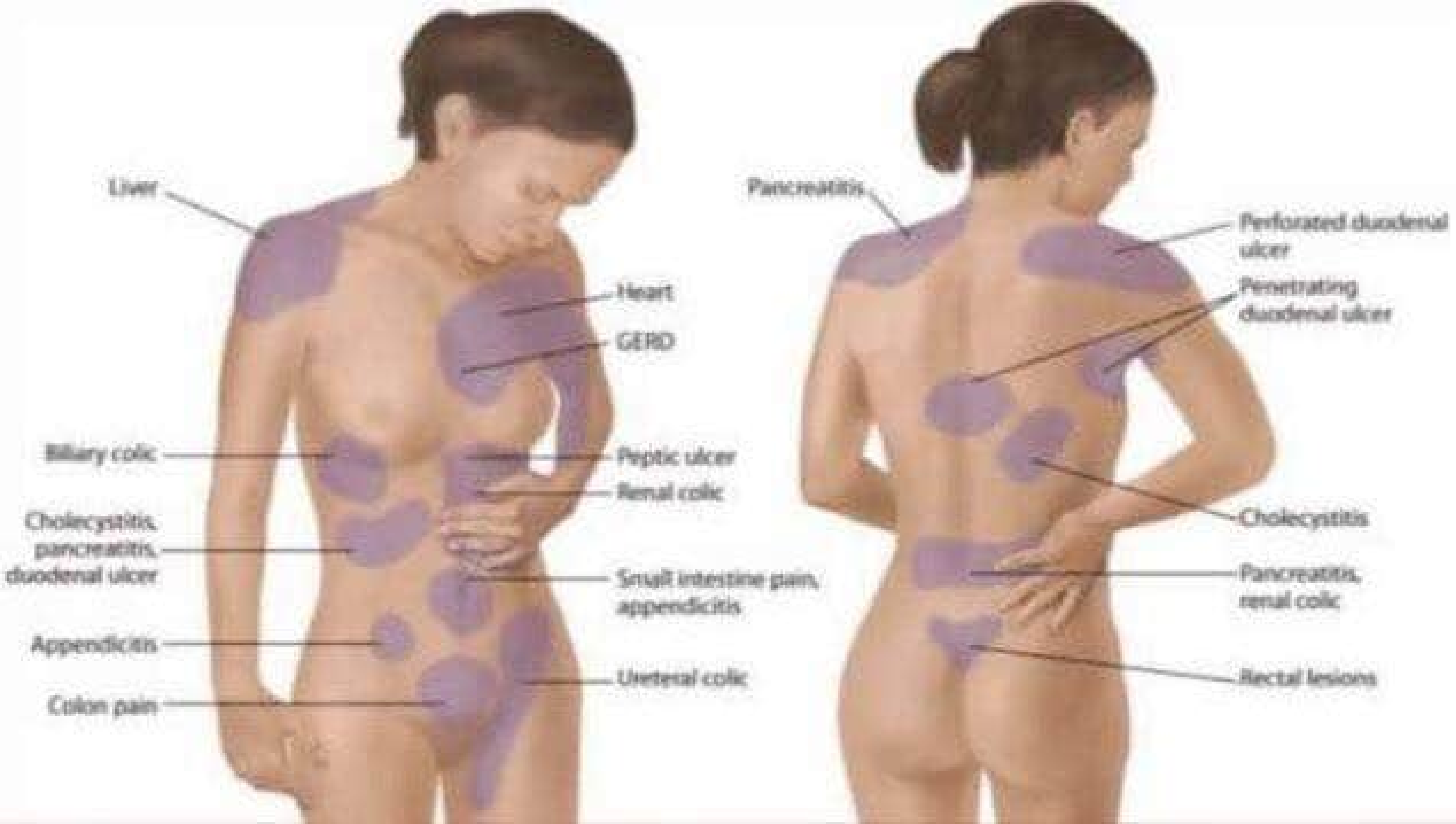
- Deep, Dull, Aching or Cramping and poorly localised
- Stimulated by Stretching, Distension or Contractions of the gut or other hollow abdominal organ
- Traction on the bowel mesentry
- Inflammation or Ischemia
- Usually felt in the midline, unaccompanied by tenderness

Parietal (Somatic) Pain

- Sharper and better localised and easily described
- Aggravated by Stimulation or Irritation of the parietal peritoneum with movement, coughing or walking
- Cardinal signs : Pain, Guarding, Rebound and Absent bowel sounds
- A true parietal pain is the **Surgical** cause of abdominal pain

Referred Pain

- Pain felt over the site other than that of the primary noxious stimulus
- Occurs in an area supplied by the same neurosegment as the involved organ
- Most visceral pain is of this type
- Its usually intense and most often secondary to an inflammatory lesion
- Eg: Subdiaphragm – shoulder pain / Biliary tract – right shoulder pain / Small bowel – back pain / Appendicitis – Umbilical region



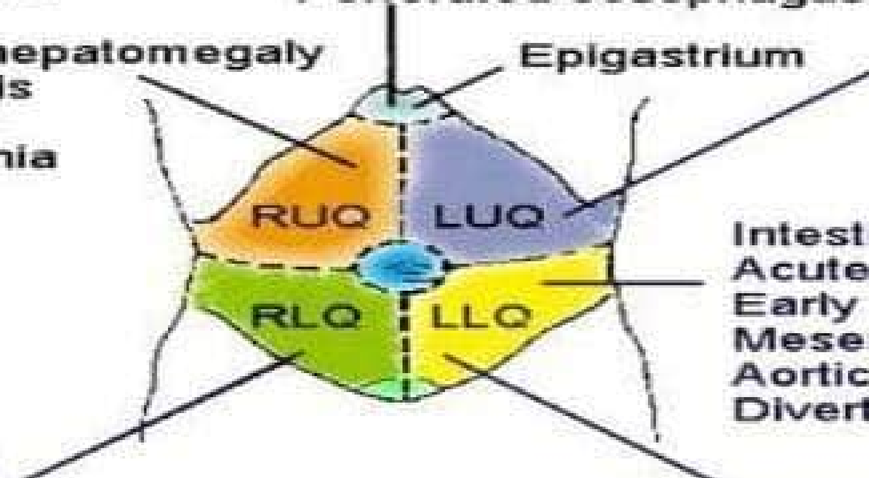
Liver
Heart
GERD
Biliary colic
Peptic ulcer
Renal colic
Cholecystitis,
pancreatitis,
duodenal ulcer
Small intestine pain,
appendicitis
Appendicitis
Ureteral colic
Colon pain
Pancreatitis
Perforated duodenal
ulcer
Penetrating
duodenal ulcer
Cholecystitis
Pancreatitis,
renal colic
Rectal lesions

Differential Diagnosis By Location

Myocardial infarct
Peptic ulcer
Acute cholecystitis
Perforated oesophagus

Acute cholecystitis
Duodenal ulcer
Hepatitis
Congestive hepatomegaly
Pyelonephritis
Appendicitis
(R) Pneumonia

Ruptured spleen
Gastric ulcer
Aortic aneurysm
Perforated colon
Pyelonephritis
(L) Pneumonia



Intestinal obstruction
Acute pancreatitis
Early appendicitis
Mesenteric thrombosis
Aortic aneurysm
Diverticulitis

Appendicitis
Salpingitis
Tubo-ovarian abscess
Ruptured ectopic pregnancy
Renal/ureteric stone
Incarcerated hernia
Mesenteric adenitis
Meckel's diverticulitis
Crohn's disease
Perforated caecum
Psoas abscess

Sigmoid diverticulitis
Salpingitis
Tubo-ovarian abscess
Ruptured ectopic pregnancy
Incarcerated hernia
Perforated colon
Crohn's disease
Ulcerative colitis
Renal/ureteral stone

Epigastrium

- Acid / Peptic Disease (Ulcer, GERD, Gastritis)
- Angina / Myocardial Infarction
- Aortic Aneurism   Cholelithiasis, Choledocholithiasis
- Diaphragmatic Defect (Acquired / Congenital) & Hernias
- Paraesophageal Hernia, Gastric Volvulus, Perforated Oesophagus
- Gastroenteritis, Pancreatitis
- Carcinoma (Gastric / Pancreatic / etc…)

Right Upper Quadrant

- Cholelithiasis, Choledocholithiasis
- Liver Related (Hepatitis / Hepatomegaly / Abcess / Malignancy)
- Renal Related (Pyelonephritis / Nephrolithiasis / Ureterolithiasis)
- Sub-diaphragmatic Abscess
- Appendicitis (Reterocecal / Malrotated)
- Right side Pneumonia

Left Upper Quadrant

- Pancreas Related (Pancreatitis / Malignancy)
- Gastric Ulcer / Intestinal Obstruction / Mesentric Thrombosis
- Colonic Ischemia / Perforation
- Spleen Related (Infarct/ Rupture/ Abcess)
- Renal Related (Pyelonephritis/ Nephrolithiasis/ Ureterolithiasis)
- Subdiaphragmatic Abscess
- Left side Pneumonia

Peri-Umbilical / Mid-Abdomen

- Aortic Aneurysm
- Appendicitis
- Small Bowel Obstruction
- Ischemia (Interstinal Angina)
- Gangrene

Right / Left Lower Quadrant

- Appendicitis (only for right lower quadrant)
- Colon Related - Colitis (Ulcerative / Pseudo Membranous) / Diverticulitis (Meckel's) / Carcinoma / Perforated Caecum / Colonic Ischemia
- Sigmoid Volvulus / Diverticulitis (only for left lower quadrant)
- Crohn's Disease
- Hernia (Inguinal / Femoral / Incarcerated)
- Psoas Abscess
- Mesentric Adenitis

(Ctd..)

RLQ & LLQ Continued…

- Renal Related - Pyelonephritis / Nephrolithiasis / Ureterolithiasis
- Gynaecological :

  Ruptured Ectopic (Tubal) Pregnancy / Ovarian Tortion / Cyst / PID / Tubo ovarian pathologies / Infections / Abcess / Endometriosis / Salpingitis / Malignancies / etc…
- Typhilitis
- Rectus / Retroperitoneal Hematomas

Supra – Pubic Region

- Urinary Tract Infection
- Diverticulitis
- Gynecological - Endometriosis, Endometritis, Pelvic Inflammatory Disease
- Prostitis

Important Extra Abdominal Causes Of Abdominal Pain

- **Systemic** Causes:
  - Diabetic Ketoacidosis
  - Alcoholic Ketoacidosis
  - Uremia
  - Sickle cell disease
  - Porphyria (Acute Intermittent)
  - SLE
  - Vasculitis
  - Acute Leukemia
  - Hyperthyroidism
  - Addisonian crisis
- **Abdominal Wall** :
  - Muscle Spasm
  - Muscle Hematoma
  - Herpes Zoster
- **Thoracic** :
  - Myocardial Infarction
  - Unstable Angina
  - Pneumonia
  - Pulmonary Embolism
  - Herniated Thoracic Disc (Neuralgia)

Continued….

- **Genito – Urinary** :
  - Testicular Tortion
  - Renal Colic
- **Infectious / parasitic** :
  - Tuberculosis
  - Streptococcal infections
  - Infectious Mononucleosis
  - Malaria / Dengue / Chikungunya
  - Hydatid cysts, Worm infestations
- **Toxic:**
  - Methanol Poisoning
  - Narcotic Withdrawal
  - Volatile drugs / substance abuse
  - Scorpion Bite
  - Black widow spider bite
  - Other poisons

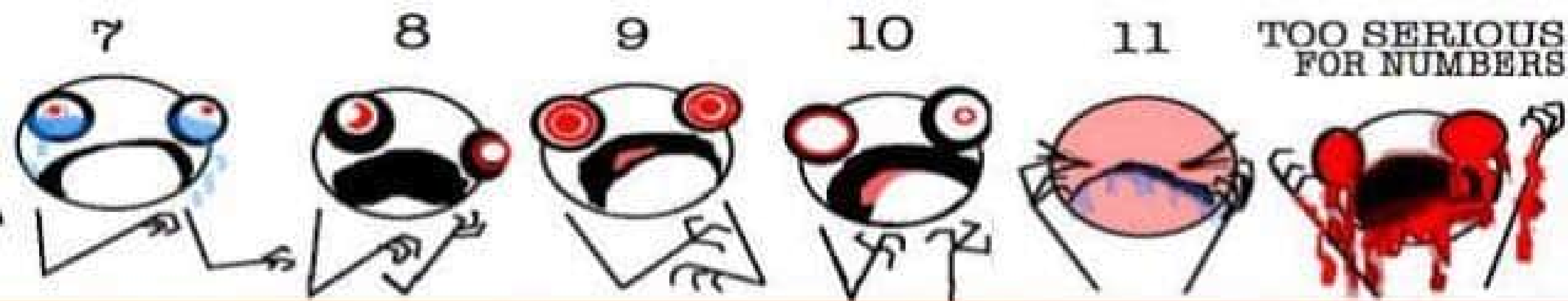
History Of Presenting Illness

- Pain : When? Where? How?
- Onset : Abrupt / Gradual / How often / How Long?
- Character : Dull / Sharp / Burning / Steady / Intermmitant
- Radiation / Quality / Severity / Timing
- Previous Occurrence
- Accompanied by: Vomiting, Nausea, Anorexia
- Aggravating and Relieving factors

Gnawing
tearing
Frightening
Cruel
Smarting
Intense
Quivering
Sore
Cold
Tender
Pulsing
Hot
Heavy
Pain
Blinding
Jumping
Burning
Aching
drilling
Sickening
freezing
Cramping
Suffocating
Electric
Stabbing
Pinching
Splitting
Radiating
Spreading
Punishing

High Yield Questions

- What is your **Age**? : Advanced age means more risk
- Describe the **position, character and migration** of the pain :
  - Sudden coupled with weakness or fainting / Less acute but still abrupt onset / began gradually and maximised slowly
  - Is the pain **constant or intermittent**? (constant pain is worse)
  - Have you had it **before**? (no prior episodes is worse)
  - Did the pain start centrally and migrate to the right lower side? (Appendicitis)



- Have you noticed specific **aggravating or relieving** factors? (eating/ defecation/ flatus/ movement/ exercise/ coughing….)
- Have you ever had abdominal **surgery before**? (consider obstruction / adhesions / rupture / volvulus / destention/ perforation in patients who report prior surgery)
- Do you have **nausea, vomiting, diarrhoea,** change in colour or blood in **stool**, any disturbed **bowel** movement? Any sleep disturbances? Poor appetite?
- Do you have **HIV**? (consider occult or unusual infection)

More questions….

- How much **alcohol** do you drink per day? (consider pancreatitis, hepatitis or cirrhosis) when was your last meal?
- Are you **pregnant**? (test for pregnancy – consider ectopic pregnancy) **menstrual** history, sexual exposure (history for STD)
- Are you taking any **antibiotics** or **steroids**? (may mask infections)
- Do you have any history of **vascular or heart disease**, hypertension or atrial fibrillation? (consider mesenteric ischemia/ myocardial ischemia/ aortic aneurysm)

Physical Examination

- Overall **appearance** : Facial expression, diaphoresis, pallor, mental status and degree of agitation
- **Position**: Sitting, recumbent or constantly moving around
- **Vitals** : Temperature (< 97F or >101F – consider abdominal sepsis), Tachycardia, Hypotension
- **Inspection** : Scars, hernias, distention, discolouration or visible masses
- **Auscultation**: Hyper active or hypo active bowel sounds, silent BS or pulsatile bruit, borborygmi (stomach rumble)
- **Percussion**: Dull (fluid filled) / shifting dullness / liver or spleen dullness

Continued….

- **Palpation**:
  - Tenderness
    - ❖ Rigidity and guarding
    - ❖ Board like abdomen
    - ❖ Rebounding pain
  - Rectal digital examination
  - Per vaginal examination
- Careful examination of **Heart, Lung** and **Skin**

Lab Investigations

- **Complete blood count** (including differentials, ESR, CRP, platelet count, peripheral smear) & Blood Culture
- BUN, Creatinine, Serum **electrolytes** (sodium, potassium, bicarbonate)
- Complete **urinalysis** (with culture)
- Beta **HCG** – woman of child bearing age
- **LFT** – Bilirubin, ALP, ALT, AST, GGT – for RUQ pain & jaundice
- Amylase, Lipase – for epigastralgia
- PT, APTT, bleeding time, clotting time
- ECG, CK – epigastralgia with aged patient

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Diagnostic Imaging

- **X-Ray** – Standing **CXR**, upright and supine **Abdominal X-ray** (helpful for obstruction – free air visible)
- **X-ray KUB** – for Calcifications, air fluid levels, reactive bowel patterns. Foreign bodies
- **Ultrasound** : rapid, safe & low cost, shows fluid, inflammation, air in walls, masses, better for specific injuries(appendix, spleen, liver, gall bladder, CBD, pancreas, kidney, aneurysm, prostate, ovaries, uterus and other pathologies)
- **CT Scan**: useful for diagnosis of bowel obstruction, diverticulitis, colitis, sepsis, abscess, free air, vessels, malignancies and ischemic bowel (gold standard for acute pancreatitis/ appendicitis) and other fishing expeditions as its better for a more generalised abdominal survey …

Other specialised testing….

- **Radiographic**: Nuclear medicine (for malignancies), Angiography (for ischemic bowel/aneurysms), etc…
- **Endoscopy** : used judiciously
- **Laparoscopy :** Diagnostic and Treatment
- Exploratory **Laparotomy**

Identifying High Risk Patients

- Elderly > 65years
- S/S of Shock, clammy patient, pallor, fainting
- Peritoneal signs
- Silent bowel sound
- Pulsatile mass
- Refractory pain post Rx
- Immunocompromised
- Women of child bearing age
- Elevation of Band WBC
- High grade fever
- Hypothermia
- Hypotension, Tachycardia – Spleen, aortic rupture, ectopic pregnancy, ruptured ovarian cyst
- Acute Renal Failure
- Non post surgical obstruction

WE RAN BLOOD TESTS, DID M.R.I. SCANS, TOOK STOOL SAMPLES AND PERFORMED A COLONOSCOPY...AND WE'VE DETERMINED THAT THE "BLOATING SENSATION" YOU'RE EXPERIENCING IS "FAT."

Peritonitis

- **Primary** : caused by spontaneous bacterial seeding from states such as cirrhosis. No GI leak.
- **Secondary**: caused by GI / GU leak (PID, ulcer rupture, etc..)
- **Tertiary**: Secondary turning into chronic infection after closure of the leak.

Immediate Management

- Immediate insertion of a **large bore IV** and start with rather Saline or Ringer Lactate solution (for fluid and electrolyte correction)
- IV / IM pain medication / **Analgesics** (Pro: can get more accurate history and do examination / Con: Surgeons don't suggest it and prefer consultation immediately)
- **Nasogastric tube** if vomiting or concerned about obstruction
- **Foley's catheter** to follow hydration status and to obtain urinalysis
- **Antibiotic** administration if suspicious of inflammation or perforation
- Definitive **treatment** or **procedure** (varies with diagnosis)
- **Reassess** patient on a regular basis and **Refer** to concerned surgeon when indicted.

When to Operate – Surgical consult

- Peritonitis : Excluding primary peritonitis
- Abdominal pain + Tenderness + Sepsis + Shock
- Acute Intestinal Ischemia
- Pneumoperitoneum / Hemoperitoneum
- Exclude Pancreatitis
- Operable Tumour / Malignancies

When not to operate….

- Cholangitis
- Appendicial abscess
- Acute diverticulitis + abscess
- Acute pancreatitis / hepatitis
- Ruptured ovarian cyst
- Long standing perforated ulcer
- Diabetic ketoacidosis
- Myocardial infarction, acute pericarditis
- Pulmonary infarction, pneumonia
- GE reflux, adrenal insufficiency
- Acute porphyria
- Rectus muscle hematoma
- Pyelonephritis, sickle cell crisis

THANK YOU....!!!