Acute Abdomen

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Objectives

- Define acute abdomen
- Describe a general approach to acute abdomen
- Discuss common causes of acute abdomen through case scenarios

Color Index:
-Doctor's Notes -Surgery Recall -Doctor's Slides+Davidson -Important -Extra

Correction File

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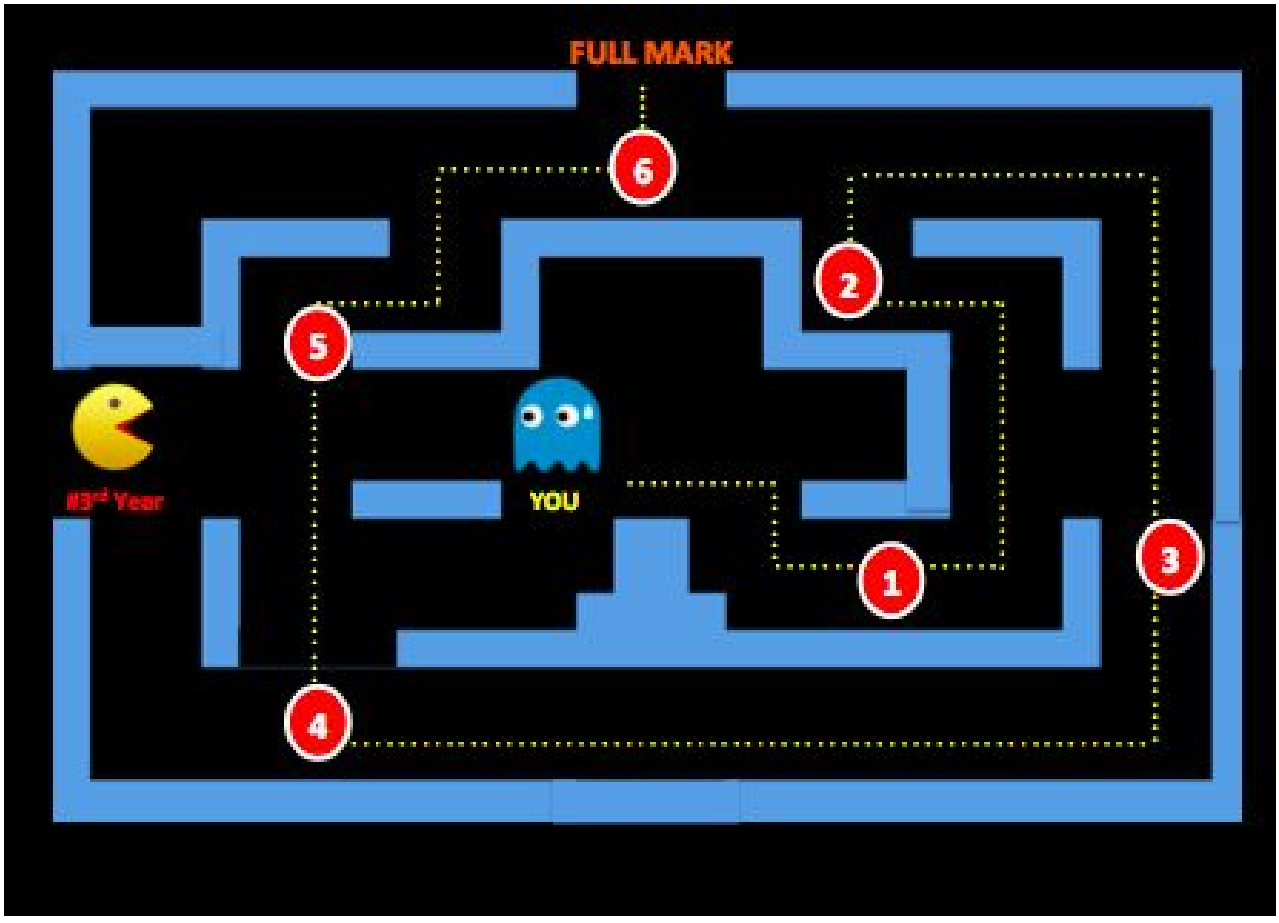
Definition:

Acute abdomen denotes any sudden, spontaneous, non-traumatic disorder in the abdominal area that requires urgent surgery in most cases. Surgical abdomen is defined by the conditions that worsening rapidly in the absence of surgical intervention and it's a part of acute abdomin which doesn't need surgical intervention in most of cases.

- Acute abdomen didn't necessarily means pain.
- **Diabetic** and **immunocompromised** patient don't present with pain. because of absent/weak innervation that will recognize by the brain.
- acute abdomen with trauma is a different category
- Example of acute abdomen not surgical : **pancreatitis**

General Approach to Acute Abdomen:

Subjective – History Taking (Can't be measured)	**O**bjective- Physical Examination (Can be measured)
Assessment – Investigations	**P**lan - Treatment



(1) History

- **Age** why? Because some diseases is related to the age.
- Newborn with AP most likely to have congenital abnormalities such as bowel atresia or bowl rotation.
- Young with AP most likely to have appendicitis
- 50> with AP most likely to have diverticulitis or colon cancer

- **Pain** (SOCRATES)

There are two types of Abdominal Pain:
1) Somatic 2)Visceral

AP: Abdominal pain

Continue.. Pain

Causes of Surgical Abdominal Pain:

1) Inflammation:

Inflammation due to parietal peritoneum cause (somatic innervation) or visceral cause (autonomic innervation) can either be infective or noninfective.
A) Peritonitis is an important entity under the inflammation category, It can be classified according to extent (generalized or localized) and etiology (primary or secondary)
B) The most common cause of generalized peritonitis is perforation of an intra-abdominal viscus. -Clinical Features: abdominal pain described as SHARP and well-localized, guarding (voluntary contraction), rigidity (non voluntary contraction), rebound tenderness and tenderness.

2) Infarction:

Infarction = histopathologic coagulative necrosis.
Clinical features: Severe abdominal pain and onset depends on nature, Emboli= sudden, Thrombi=gradual.

3) Perforation

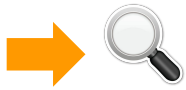
Occurs due to either weakening of the viscous wall or increase in intraluminal pressure of a viscus (ex: closed loop obstruction, peptic ulcer, acute appendicitis, acute diverticulitis)
Another cause of perforation is iatrogenic perforation caused by Veress needle at laparoscopy or endoscopic procedure.
Clinical features: sudden onset of severe abdominal pain usually well localized.

4) Obstruction

Caused by either a lesion within the lumen of the viscus or an abnormality in the wall or a lesion outside the viscous causing extrinsic compression. The smooth muscle wall of the obstructed viscus will contract reflexly, this reflex contraction produces colicky abdominal pain such as seen in ureteric colic. The only exception however is biliary colic because the gallbladder and biliary system have little smooth muscle in their inner wall so when it contracts reflexly it tends to produce continuous pain.

Continue.. Pain

(SOCRATES)

S Site 

O Onset : always Sudden in case of acute abdomen

C Character:

- Burning: peptic ulcer/pancreatitis/gastritis
- Stabbing: usually muscular pain
- Pressure like pain (Guarding) : bowel twisting / interception
- Colicky: bowel obstruction / biliary colic

R Radiation :

- Acute cholecystitis radiates to right shoulder.
- Pancreatitis to the back
- MI to jaw, neck, left arm and epigastrium

A Associated symptoms: the major 2 in acute abdomen is nausea and vomiting.

T Time/duration: Usually short because it's acute

E Precipitating and Relieving factors: Example: leaning forward will relieve the pain of acute peritonitis and pancreatitis / Fatty food increase the pain of biliary colic

S severity

- 1-3 mild
- 4-6 moderate
- 7-10 severe

MAS/Mesenteric artery syndrome: is an obstruction of the 3rd part of the duodenum due to severe mesenteric artery compression. it is sudden/ causes weight loss

- **Vomiting**
  - Projectile: pyloric stenosis and gastric outlet obstruction that is caused mostly from chronic duodenal ulcer → fibrosis + narrowing of gastric outlet]
  - Hematemesis: is a sign of upper Gi bleeding (in esophageal varices or ulcer)
  - bilious : vomits bile that occurs distal to ampulla of vater (3rd and 4th part of duodenum and upper jejunum) such as mesenteric artery syndrome
  - Fecal vomiting: distal small bowel or could be colon obstruction only if the cecal valve is incompetent.

Remember:

Pyloric stenosis occurs in newborn because of hypertrophy of muscular layer of pylorus

- **Defecation**
  - **Diarrhea** could be bloody like in: ulcerative colitis or ischemia
  - **Constipation** due to PARTIAL obstruction

Differ from obstipation which means a COMPLETE obstruction (you can differentiate between them according to the present of Gases or not

- **Fever** Indicates sepsis:(peritonitis/cholecystitis/ appendicitis.. etc)
- **Past history**
  - Drug history: important to know if patient presented with acute abdominal pain and vomiting a blood on Aspirin/NSAIDS therapy.
  - Surgical history: example: patient comes to ER complains of abdominal pain, abdominal distention and vomiting. He has past surgical history of abdominal surgery, most likely he has → obstruction due to adhesion.

(2) Physical Examination

- **General Look:**

Conscious patient? start examination

Unconscious?: do ABC!!!

- **Vital Signs:**
  - **why? to make sure that the patient is stable and can go through the examination in contrast with the unstable patient that we need to jump directly to the treatment.**
  - **Example: if the patient come with abdominal pain after trauma and he's not stable. he most likely to have hemorrhage so we have to do laboratory to know the site of the bleeding**
- **Head & Neck: check for JVP/ lymphadenopathy/ jaundice/ anemia/ cyanosis / signs of dehydration and oral ulcers**
- **Hands: clubbing/ tremor/ palmar erythema/ Leukonychia/ capillary refill /pulse: volume and synchronicity**
- **Chest: inferior MI could be presented as epigastric pain/ pneumonia especially if basal (lobar) may be presented with abdominal pain.**
- **Abdomen**
- **Rectal Examination: to rule-out rectal masses**
- **Vaginal Examination: to rule-out pelvic inflammatory disease(salpingitis/oophoritis/salpingo-oophoritis)**

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(3) Differential diagnosis

You can make your diagnosis based on the physical examination and history, but you can't confirm until you do the investigations

ABC= Airway, Breathing and Circulation

(4) Investigations

In case you have a wide DDx

Example: young female in productive age, mid cycle pain/ Typical for appendicitis
the other possibilities is : ectopic pregnancy or ruptured graafian follicle
so in that case we have to do investigations !

- **Complete Blood Count** infection/ anemia /platelets count
- **Electrolytes, BUN, Creatinine**

low Na happen in dehydration or diarrhea

low K happen in vomiting

if the dehydration is so severe it will affect the kidney function (prerenal azotemia)

then if the dehydration reach the severe stage (HIGH BUN + CREATININE)

- **LFTs**

High Transaminase AST/ALT = hepatitis → severe pain

increase alkaline phosphatase + bilirubin +direct bilirubin + gamma glutamate = obstructive jaundice = stones *cholangitis

- **Serum Amylase and lipase** for pancreatitis
- **Lactate** will be high in ischemic bowel
- **ABGs (arterial blood gases)** complement in case of respiratory or metabolic problems
- **CXR/Chest X Ray** the most important to rule out air under the diaphragm - because of perforated duodenal ulcer (usually we do erect x ray/upright not supine)

and role out cardiomegaly and pneumonia

- **AXR/Abdominal X-Ray** bowel obstruction → (air fluid level + distended bowel)
- **KUB:** to rule out renal causes (stones)
- **Abdominal Ultrasound** in case of biliary diseases
- **Abdominal CT** check for masses / air / collection of fluids

(5) Diagnosis

- Acute Abdomen + Shock – Acute Pancreatitis/ Ruptured AAA - resuscitate & immediate surgery otherwise patient may die in minutes. Category A
- Generalized Peritonitis – Ruptured Viscus category B
- Localized Peritonitis - RLQ with Rebound tenderness such as in Acute Appendicitis category C
- Bowel Obstruction - distention of the abdomen with no movement during respiration). Category D
- Medical Causes (Lobar Pneumonia, Acute Inferior MI)

If the patient have epigastric pain and you think it is "inferior MI" you can prove it by doing ECG and cardiac enzymes

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(6) Management

4 categories :

Category A immediate operation: raptures AAA/ trauma / bleeding in the abdomen

Category B Preoperative preparation and urgent operation within 6 hours perforated viscus: still have some hours to stabilize the patient

Category C urgent with 24 hr: acute appendicitis

Category D elective (conservative treatment)

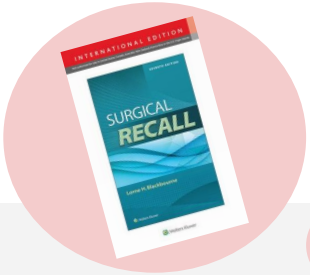
Conservation treatment: pancreatitis/ bowel obstruction

if the patient comes in acute abdominal pain and suddenly the pain relieved + examination and laboratory results are normal don't let him go home!!! do observation

Could be a temporary bowl twist or stones passed through the bladder.

Psychiatric patient: after you make sure everything is ok you can discharge

AAA: Abdominal Aortic Aneurysm



What is "acute abdomen"?

acute abdominal pain so severe that the patient seeks medical attention (NOT same as a "surgical abdomen" because most cases of acute abdominal pain do not requires surgical treatment)

What are the peritoneal signs? and the definition of each?

- **Extreme tenderness.**
- **Percussion tenderness.**
- **Rebound tenderness.**
- **Voluntary guarding: abdominal muscle contraction with palpation of the abdomen,**
- **Motion pain: abdominal pain upon moving, pelvic rocking, moving stretcher or heel strike.**
- **Involuntary guarding/rigidity (late): rigid abdomen as the muscles "guard involuntary.**

What conditions can mask abdominal pain?

steroids, diabetes, paraplegia

❗ Scenarios of acute abdomen (Team 432)

A 35-year-old male presented to the ER with 2 days history of abdominal pain.He took antacids but did not help him at all!

Subjective– History Taking:
35 year old, male, 2 days history of abdominal pain. He took antacids but there is no effect on him

Objective - Physical Examination:
When you examine the patient try to avoid the painful area in the beginning of the examination.

Assessment – Investigations: CBC , Electrolytes, Chest x-ray.

DDx:
Acute appendicitis PUD
Bowel obstruction.

Case 1

Plan - Treatment:
IV antibiotics and Appendectomy

A 55 year-old businessman presented to the ER with severe abdominal pain since 6 hours when he felt something like a burst in his abdomen. He is known with PUD and H-pylori but he was not taking his medications regularly!!

Subjective– History Taking:
55 year old, male, known case PUD (Peptic Ulcer Disease) and H-pylori. Presented to the ER with severe abdominal pain for 6 hours.

Objective - Physical Examination:
The patient is uncomfortable and in pain.

Assessment – Investigations:
CBC, Electrolytes, Chest x-ray

Case 2

DDx:
Peptic ulcer perforation peritonitis

Plan – Treatment :
1. Aggressive fluid resuscitation
2. Antibiotics to eradicate Helicobacter pylori (H. pylori) 3. Surgery

A 54 year-old lady presented to the ER complaining of generalized abdominal pain associated with vomiting, constipation for 2 days, and abdominal distention. She had an emergency cesarean section for her 5th baby 5 years back.

Case 3

Subjective– History Taking:

54 year old, Female, C.C. of generalized abdominal pain with vomiting, constipation and abdominal distention for 2 days, came through ER, had an emergency cesarean Section for her 5th baby 5 years back.

Objective - Physical Examination:

Abdominal distention is present. Hyperactive bowel sounds occur early as GI contents attempt to overcome the obstruction; hypoactive bowel sounds occur late. Exclude incarcerated hernias of the groin, femoral triangle, and obturator foramina. Proper genitourinary and pelvic examinations are essential. Check for symptoms commonly believed to be more diagnostic of intestinal ischemia, including the following: 1.Fever(temperature >100°F)2.Tachycardia (>100 beats/min)3.Peritoneal signs

Assessment – Investigations:

The most common cause is postsurgical adhesions. And since the patient had an operation 5 years ago she might have a chronic obstruction.
Serum chemistries,Blood urea nitrogen (BUN) level, Creatinine Complete blood count (CBC), Lactate dehydrogenase tests , Urinalysis, Type and crossmatch, Phosphate level, Creatine kinase level , Abdominal X-ray: Dilated small-bowel loops with (more than six) air-fluid levels in supine and erect abdominal radiographs. CT,US

DDx:

1. Incarcerated groin hernia
2. Malignant Tumor
3. Small bowel obstruction
4. Hernia

Plan – Treatment :

Aggressive fluid resuscitation
Bowel decompression, Administration of analgesia and antiemetic
Early surgical consultation,Administration of antibiotics. (Antibiotics are used to cover against gram- negative and anaerobic organisms.)
Blood pressure and cardiac monitoring.

A 73 year-old male developed atrial fibrillation while recovering from an acute MI in the medical ward. The surgery team was consulted to evaluate a new onset of severe mid- abdominal pain.

Case 4

Subjective– History Taking:

73 year old, Male, History of an acute MI complicated by Afib, complaining of new onset severe mid abdominal pain.

Objective - Physical Examination:

pain with subjective symptoms disproportionate to their objective findings.

Assessment – Investigations:

Any patient with an arrhythmia such as atrial fibrillation who complains of abdominal pain is highly suspected of having embolization to the superior mesenteric artery until proved otherwise, As soon as AMI is suspected:

1. Surgical consultation

2. CT angiography

DDx:

1. Cholangitis

2. Cholecystitis

3. Acute mesenteric ischemia

4. Ileus

5. Gastric Volvulus

Plan - Treatment:

Surgical revascularization, vascular interventional radiological thrombolytic medical treatment

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Summary

- **Acute abdomen is a sudden abdominal disorder that requires an urgent operative intervention in some cases**
- **Almost all acute abdominal events have a common general surgical approach based on the mnemonic**
- **SOAP**
- **We have applied this general approach to some case scenarios such as acute appendicitis, perforated DU, acute mesenteric ischemia, and small bowel obstruction**