ACUTE ABDOMEN

- **Important.**
- **New points mentioned by doctor.**

431 SURGERY TEAM

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This work is from surgery manual (the doctor mentioned the same points).

DEFINITION:

Acute abdomen denotes any sudden onset, spontaneous non-traumatic disorder in the abdominal area that requires urgent surgery in most of the cases.
* Pain is not necessary i.e.in immunocompromised patients or diabetic patients they will not feel the pain.

GENERAL APPROACH TO ACUTE ABDOMEN:

- The standardized approach for all acute abdominal disorders is the (SOAP) approach:
  - **S**ubject – History Taking
  - **O**bjective - Physical Examination
  - **A**ssessment – Investigations
  - **P**lan – Treatment (based on the final diagnosis)

} Account for 70% of the

- The approach is not that different from an elective case, except in patients who are hemodynamically unstable and will go into shock, resuscitation should be initiated first.
- Analgesia or painkillers are not preferable to be given until a diagnosis is made.

HISTORY

AGE:

- Newborn child presents with acute abdominal pain; most likely, it is a digestive disease (bowel atresia - congenital anomaly in which there is incomplete development of the intestinal tract, typically with closures and “dead ends” that block flow through the intestines or meconium ileus - obstruction of the intestine (ileus) due to overly thick meconium).
- Child who present with an acute abdominal pain, mesenteric adenitis is suspected.
- 12-year-old boy who present with an acute abdominal pain, appendicitis is suspected.
- Elderly patient with acute abdominal pain in the left lower quadrant & tenderness, obstruction due to cancer or acute diverticulitis is highly suspected.

PAIN (SOCRATES)

- **Site**
  - Site will give an idea about what is the organ involved:
  - Right upper quadrant → think about gall bladder or liver.
  - Right lower quadrant most likely it is appendicitis.
  - Left lower quadrant think about diverticulitis.
- **Onset**: Sudden or gradual.
- **Character**
  - Dull “mild pain”
  - Trooping “in wounds”
  - Stabbing “ something in closed space like gallbladder and renal colic”
  - Compression “MI”
  - Burning “gastritis”
  - Colicky in nature “bowel obstruction”
- **Radiation**
  - Cholecystitis to the tip of the right shoulder.
  - Pancreatitis to the back.

- **Associated symptoms**: Nausea and vomiting with severe pain.
- **Timing** important to decide management
  - Examples:
    - Patient with pain in the right lower quadrant, most likely it is appendicitis, if the patient reported that the pain started last night, surgery is the likely choice of management
    - If the same patient reported that he/she had this pain 4-5 days ago and the pain is getting worse then you diagnose him/her with appendicular mass, the approach will be conservative rather than surgical.

- **Exacerbating** and **Relieving** factors
  - Fatty food elicits biliary colic.
  - Antacid for burning pain in the epigastrium, milk will temporarily relieve the pain but after an hour, pain will become worse (milk contain protein --> protein increase gastric acid secretions). Milk is a temporal buffer.
- **Severity**
  - Pain scale from 1 to 10, 0 no pain \ 10 worst pain.
  - Mild pain (0-4), moderate (5-7), severe (8-10).
  - Acute abdomen is in the severe category.
- **Progression**.

VOMITING:

- Hematemesis
- Volume: small or large amount
- Projectile "force because of ↑ intra abdominal pressure" In children usually due to pyloric stenosis In newborn due to congenital hypertrophy of pylorus. In adults, gastric outlet obstruction.
  - Causes of gastric outlet obstruction :
    - Scarring due to chronic peptic ulcer
    - Gastric cancer obstructs the pylorus
    - Superior mesenteric artery syndrome
    - In bezoar psychiatric patient who eats foreign bodies e.g. Hair forming a ball that obstructs the gastric
- Frequent or occasional
- Does vomiting relieve the pain or not:
  - Most of abdominal colic's relieved by vomiting
- Content:
  - Undigested food
  - Digested food: greenish
  - small bowel obstruction: thick material
  - peptic ulcer & gastritis: coffee ground material
  - liver cirrhosis causing varices, peptic ulcer (duodenal more) : frank blood

DEFECATION:

- It is important to ask about the bowel habits.
- **Constipation** for 2 days with acute abdominal pain means there's an obstruction
  - Ask them can they pass gases or not, if not it's called **Obstipation** "complete bowel obstruction".
- Diarrhea with acute abdomen usually means infection; gastroenteritis usually does not cause acute abdominal pain unless bowel perforation happens.
  - Salmonella lead to typhoid fever and typhoid fever can cause gastroenteritis that lead to bowel perforation and acute abdominal pain.

- Acute abdominal pain with severe diarrhea "mixed with blood"
  - Ulcerative colitis
  - Bowel ischemia
  - Crohn's disease

FEVER (indicate infection)

- Rigors with acute abdominal pain means sepsis due to cholangitis

PAST HISTORY

- Similar episodes of UC or Crohn's disease but in less degree
- Past abdominal surgery adhesion, bowel obstruction, bowel strangulation or ischemia
- Bowel obstruction due to hernia
- Peptic ulcer perforation
- Gall stones obstruction
  - Acute cholecystitis (is a sudden inflammation of the gallbladder that causes severe abdominal pain)
  - Pancreatitis
  - Ascending cholangitis

e.g. pt who know to have peptic ulcer, he was not taking his medication regularly. He comes now with hematemesis. The diagnosis is posterior duodenal ulcer goes to gastroduodenal artery.

EXAMINATION

1. General look:

a. Lying on bed and they look ill and in pain, uncomfortable moving, because they want to obtain a position that relieves them from peritoneal irritation, sometimes they roll in bed in renal colic or sometimes in acute cholecystitis when gallbladder get contracted with stones

i. Anything related to stone make patient roll in bed

ii. Appendicitis dull aching pain that does not make patients roll in bed

b. obtunded pt = about to lose his consciousness

2. **Vital signs:** Important to see the hemodynamic state of the patient wither if the patient is tachycardic, tachypenic or hypotensive, they must be treated immediately or they will go into shock.

3. Head and neck

a. Check the eyes for jaundice. "jaundice+ fever+ abdominal pain to diagnose **cholangitis**"

b. JVP: in acute abdomen, patient will be hypovolemic hence the JVP will disappear

c. Mucus membrane: sings of dryness

d. Lymph node may present with lymphadenopathy

4. Chest

a. Pleural effusion caused by pneumonia. In lower pneumonia or lobar pneumonia you'll hear crackles and bronchial breathing

5. Abdomen

a. **Inspection:** distended, does not move with respiration because the peritoneum contracting the muscles of the abdomen, might see other signs (e.g. In chronic liver disease...etc)
b. **Palpation:** start superficial away from the site of pain.
c. **Percussion:**
i. Dullness fluid ascites
ii. Tympanic or tympanitic, drum-like sounds heard over air filled structures during the abdominal examination which suggest bowel obstruction.
d. **Auscultation**:
i. Paralytic ileus because of infection, absence of bowel sounds.
ii. Mechanical obstruction (bowel obstruction, UC, strangulation, condition in which circulation of blood to a part of the body is cut off by constriction, Enteritis) will lead to hyperactive bowel sounds.

6. Rectal Examination

a. Trickling of exudates in the Douglas pouch
b. Between the rectum & uterus in female
c. Rectum & bladder in male
d. Pressing interiorly to see if there is tenderness
e. Look for blood & malena.
f. Any mass specially in elderly

*Important examination because if the patient have bowel obstruction can be diagnose by that. Also, pt with lower abdominal pain for 12h & look toxic. In rectal exam they have sever tender interiorly it's perforating appendicitis because pus is accumulating in douglas pouch.

7. Vaginal Examination (we have to do it in all cases of acute abdomen pain)

a. Ectopic pregnancy by moving the uterus “put your finger till you reach cervix then you move the cervix” but more commonly you inspect with speculum to check for pelvic inflammatory disease, it manifests by exudates\ pus ”vaginal discharge”
    i. Rule out salpingitis (infection and inflammation in the fallopian tubes).

INVESTIGATIONS:

1. Complete Blood Count:

a. High WBC "Leukocytosis" more than 40,000 is a suggestive of appendicitis
b. Low hemoglobin indicates hemorrhage, UC, Ischemia, Ulcer, anemia.
c. Platelet count, if the patient is thrombocytopenic because sometimes thrombocytopenia can happen due to severe sepsis also it is
d. An indication of a problem that might prevent you from doing surgery or in splenomegaly.
e. nutrophilia suggest bacterial infection, lymphocytosis suggest viral or TB and eosinophilia suggest parasitic infection.

2. Electrolytes, BUN, Creatinine

a. In acute abdomen, there will be loss of fluid in and electrolytes will decrease
b. Hypokalemia from upper GI cause (In vomiting you expect low potassium). Also, in persistence vomiting there will be metabolic alkalosis in which we give normal saline.
c. Hyponatremia from lower GI cause (diarrhea) and could cause metabolic acidosis and here we give ringer lactate.

d. BUN & Creatinine if elevated? In acute abdomen, hypovolemic prerenal azotemia, insufficient profusion to the kidney that will lead to renal failure.

3. Liver Function Tests

a. If you suspect jaundice, biliary disease and cholangitis.
b. High bilirubin and high alkaline phosphatase are suggestive of cholangitis.
c. High ALT and AST are suggestive of Hepatitis.

4. Serum Amylase

a. It will be high in pancreatitis but it will go down after 2-3 days, so check lipase because it will persist high in pancreatitis.

5. **Lactate**:

a. (Product of anaerobic metabolism): if there is bowel ischemia.

6. Arterial blood gases [ABGs]

a. Reflex the respiratory and metabolic states.
b. Do it if ischemia is suspected, severe sepsis, metabolic acidosis and before anesthesia.

7. Chest x-ray

a. Perforation of hollow viscous (commonly duodenal ulcer perforation), see air under the diaphragm. Ask for upright chest x-ray

8. Abdominal X-Ray – KUB:

a. In bowel obstruction the abdomen will look distended in supine position.
b. Other AXR is erect "upright" position to look for air fluid level, if more than 3 it mean there's significant obstruction
c. In gastroenteritis you can see dilated loops of small or large bowel but not necessary to have obstruction.
d. KUB- for renal stones.

9. Abdominal Ultrasound

a. Mainly used to rule out stones (gall bladder or renal), ascites, pyelonephritis, polycystic ovarian disease.

In acute cholecystitis it will show 3 signs : thickened wall + acoustic shadow + pericholecystic fluid

10. Abdominal CT

a. To diagnose difficult echo vocal appendicitis (diagnosis of appendicitis is commonly clinical), rule out pancreatitis, tumors and bowel ischemia.
b. If we suspect mesenteric ischemia so we can see the blood vessels causes of ischemia (thrombus, embolus)
c. We usually do CT and angiography
d. CT to see the bowel

e.g. Young female with mid cyclic pain + lower abdominal pain that is similar to acute appendicitis but we are not sure CT will help us.

11. Angiography to see blood vessels/ **Duplex Scanning**:

a. If they match no blood in the vessel and bowel is edematous this is gangrene.
b. Duplex: for peripheral blood vessels.

DIAGNOSIS:

- Acute Abdomen + Shock – Acute Pancreatitis/ Ruptured AAA (abdominal aortic aneurysm) resuscitate & immediate surgery otherwise patient may die in minutes.
- Generalized Peritonitis – Ruptured Viscus.
- Localized Peritonitis,
  - Example: RLQ rebound tenderness means Acute Appendicitis.
- Bowel Obstruction (distention of the abdomen no movement during respiration)
- Medical Causes [Lobar Pneumonia, Acute Inferior MI "if the patient have epigastric pain and you think of MI you can rule it out by doing ECG or Cardiac enzyme (troponin)"]

MANAGEMENT:

- **Immediate operation** – Ruptured AAA
  - (Amount of bleeding is huge so if you don't stop it immediately patient will die, do surgery immediately and stop it)
- **Pre-operative** preparation and urgent operation within 6 hours
  - Because the condition can get worse if you operate immediately (ruptured Viscus but preoperatively is hypotensive dehydrated, has electrolyte abnormalities , quite septic , if you take him immediately to operation he might die, to prevent mortality in such condition resuscitate the patient and prepare them for surgery by giving fluids, antibiotics (they do it in ICU usually).
- **Urgent operation** within 24 hours
  - Especially in case of acute appendicitis
- **Conservative treatment**
  - In acute pancreatitis (operation will worsen the condition – except when there is pancreatic abscess or necrosis we operate on them)
  - IBD
  - Cholecystitis
- **Observation**
  - Patients with sudden onset acute abdominal pain, tender on examination but the diagnosis was not established yet. You should observe them (check on them every 2-4 hours tell next day if they have a disease it will manifest).
  - E.g. early appendicitis, after 24 hours will be obvious
  - If there is a follicle somewhere or ruptured Graafian follicle in the ovary, next day they feel better then you can discharge the patient at this step.
- **Discharge**

SCENARIOS:

Case1:

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!

Answer:

Subjective– History Taking:

35yrs, male, 2 days history of abdominal pain. He took antacids but there is no effect on him.

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

o Assessment – Investigations:

- CBC
- Electrolytes
- Chest x-ray

DDx:

- Acute appendicitis
- PUD
- Bowel obstruction.

o Plan - Treatment:

- IV antibiotics
- Appendectomy

Case2:

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.

Answer:

o Subjective– History Taking:
55yrs, male, known case PUD and H-pylori. Presented to the ER with severe abdominal pain for 6 hours.

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

o Assessment – Investigations:

- CBC
- Electrolytes
- Chest x-ray

DDx:

- Peptic ulcer perforation
- peritonitis

o Plan – Treatment :

- Aggressive fluid resuscitation
- Antibiotics to eradicate Helicobacter pylori (H. pylori)
- Surgery

Case3:

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.

Answer:

o Subjective– History Taking:
73yrs, M, Hx of an acute MI complicated by Afib, complaining of new onset severe mid abdominal pain

o Objective - Physical Examination:
pain with subjective symptoms disproportionate to their objective findings.

o 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:

- Surgical consultation
- CT angiography

DDx:

- Cholangitis
- Cholecystitis
- Acute mesenteric ischemia
- Ileus
- Gastric Volvulus

o **Plan - Treatment:**

- Surgical revascularization
- vascular interventional radiological
- thrombolytic medical treatment

Case4:

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.

Answer:

o Subjective– History Taking:
54yrs F, 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.

o **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

o 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
- Liver panels
- Abdominal X-ray:
  Dilated small-bowel loops with (more than six) air-fluid levels in supine and erect abdominal radiographs.
- CT
- US

DDx:

- Incarcerated groin hernia
- Malignant tumor
- Small bowel obstruction
- Hernia

o **P**lan – Treatment (based on the final diagnosis)

- 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.)
- Bp and cardiac monitoring

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.