Approach to patient with Acute abdomen

Presented By:
Abdullah Khateeb
Deema Essam
Alaa Elwan
Michael Habash
Acute Abdomen

Definition: Recent or sudden onset of severe abdominal pain, this can be new pain or an increase in chronic pain.

Acute abdominal pain is the most common general surgical problem presenting to ER.

Acute abdominal pain (AAP) accounts for 7-10% of all Emergency Department visits.
Types of Abdominal Pain

1- Visceral
   ▪ directly related to the organ involved
   ▪ - Not a severe pain \ Poorly localized

2- Parietal pain
   ▪ - occur when there is an irritation of the peritoneum
   ▪ - More severe \ easier to localize \ sharp and constant pain

3- Referred pain:
   ▪ is pain perceived at a location other than the site of the painful stimulus (because of organs sharing the same nerve pathway)
   ▪ Ex: biliary tract pain usually referred to right shoulder
1- Patient Profile:
- It is important to consider the patient's Name, Age, Occupation, Living place, Marital status
- Admission: (date, time and how)

2- Chief Complain and Duration
3) HISTORY OF PRESENTING ILLNESS (Socrates)

<table>
<thead>
<tr>
<th>Right</th>
<th></th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gallstones</td>
<td>Stomach Ulcer</td>
<td>Stomach Ulcer</td>
</tr>
<tr>
<td>Stomach Ulcer</td>
<td>Heartburn/ Indigestion</td>
<td>Duodenal Ulcer</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td>Pancreatitis, Gallstones</td>
<td>Ulcer</td>
</tr>
<tr>
<td></td>
<td>Epigastric hernia</td>
<td>Biliary Colic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pancreatitis</td>
</tr>
<tr>
<td>Kidney stones</td>
<td>Pancreatitis</td>
<td>Kidney Stones</td>
</tr>
<tr>
<td>Urine Infection</td>
<td>Early Appendicitis</td>
<td>Diverticular Disease</td>
</tr>
<tr>
<td>Constipation</td>
<td>Stomach Ulcer</td>
<td>Constipation</td>
</tr>
<tr>
<td>Lumbar hernia</td>
<td>Inflammatory Bowel</td>
<td>Inflammatory bowel disease</td>
</tr>
<tr>
<td></td>
<td>Small bowel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Umbilical hernia</td>
<td></td>
</tr>
<tr>
<td>Appendicitis</td>
<td>Diverticular Disease</td>
<td></td>
</tr>
<tr>
<td>Constipation</td>
<td>Pelvic pain (Gynae)</td>
<td></td>
</tr>
<tr>
<td>Pelvic Pain (Gynae)</td>
<td>Appendicitis</td>
<td>Pelvic pain (Gynae)</td>
</tr>
<tr>
<td>Groin Pain (Inguinal Hernia)</td>
<td>Diverticular disease</td>
<td>Groin Pain</td>
</tr>
<tr>
<td></td>
<td>Appendicitis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inflammatory bowel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pelvic pain (Gynae)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Inguinal Hernia)</td>
<td></td>
</tr>
</tbody>
</table>
2- Mode of Onset and Progression of Pain:

**sudden pain** occurs with perforation of a hollow viscous:

Perforated peptic ulcer,

Ruptured AAA

rupture ectopic pregnancy

**Gradual and constant pain** suggests inflammation.
History

- Characterization of the pain:
  - **COLICKY PAIN**; **INTESTINAL OBSTRUCTION**, **URINARY STONE**
  - **STABBING PAIN**; pancreatitis
  - **TEARING PAIN**; ruptured aortic aneurysm

*Sharp superficial constant pain due to severe peritoneal irritation* is typical of perforated ulcer or a ruptured appendix, ovarian cyst, or ectopic pregnancy

- **BURNING PAIN**; peptic ulcer
Radiation:

- allbladder pain may radiate through to the back and to the right, to reach the tip of the scapula.

- Ulcers in the posterior wall of the stomach or duodenum cause a pain that radiates through to the back.

- Pancreatic pain also tends to go through to the back and sometimes to the left.
History

5) Associated symptoms:

a) Vomiting

Bilious vomitus suggests a bowel obstruction.
“Coffee grounds” in the vomitus suggests peptic ulcer

b) Anorexia and nausea are important to note because the diagnosis of appendicitis is practically excluded if anorexia is not present.

c) Diarrhea

(i) Bloody diarrhea suggests inflammatory bowel disease, diverticulitis, or an invasive gastroenteritis.

(ii) Melena is consistent with an upper gastrointestinal source of bleeding
watery diarrhea is characteristic of gastroenteritis and other medical causes of an acute abdomen.

d) Constipation or obstipation suggests obstruction

e) Fever, sweats, and chills are noted in an infectious process.

(f) Weight loss may be seen with cancer, inflammatory bowel disease, or ischemic bowel syndromes.

(g) Jaundice suggests hepatobiliary
(6) Exacerbating and relieving factors:

(a) **Movement.** Patients with peritonitis find any movement painful.

(b) **Position.** Patients with pancreatitis often find that leaning forward improves the pain.

(c) **Food may** exacerbate the pain (as in pancreatitis and cholecystitis, gastric ulcer) or relief the pain (as in duodenal ulcer disease).

(d) **Medications.** Antacids usually relieve the pain of peptic ulcer disease.
Other Relevant Aspects of the History

Drug History

(NSAID) is associated with peptic ulcer disease.

• Anticoagulants have been implicated in retroperitoneal and intramural duodenal and jejunal hematomas.
• Oral contraceptives have been implicated in the formation of benign hepatic adenomas and in mesenteric venous infarction.
• Corticosteroids, in particular, may mask the clinical signs of even advanced peritonitis
Other Relevant Aspects of the History

Past medical history and surgical HX

Medical history. A medical history should be taken, inquiring about any condition that can cause (pain (e.g., diabetes, sickle cell anemia, porphyria)

Previous similar attacks
Hospital admission
Previous surgery
HTN/DM/hyperlipedemia/PUD
History of trauma
Other Relevant Aspects of the History

Family History
FHX of PUD /DM/HTN/cardiovascular disease
Autoimmune disease /malignancy/liver disease jaundice

Social factors
(a) Alcohol abuse raises the possibility of pancreatitis, hepatitis, cirrhosis, gastritis, and peptic ulcer disease
(b) Smoking also increases the probability of peptic ulcer disease
PHYSICAL EXAMINATION
Physical Examination

- A systematic approach to the abdominal examination.
- One should search for specific signs that confirm or rule out differential diagnostic possibilities.
- Conscious level of the patient: diminished responsiveness or an altered consciousness.
Before we start:

▸ 1. we should maintain privacy
▸ 2. take a consent
▸ 3. ask for a chaperon
▸ 4. hand hygiene
▸ 5. worm your hands
A) Inspection

- Ideally, patients should be uncovered from nipples to knees.
- Supine position.
- Start by taking consent from the right side of the patient, then you start by inspection from the foot of the bed.
Inspection

Look for any general visible abnormalities:

- **Scars** - midline scars (*laparotomy*) / RIF (*appendectomy*) / right subcostal (*cholecystectomy*). Or maybe a trauma.

- **Abdominal distension / Asymmetry** - ascites / intestinal obstruction / large masses, hepatomegaly, splenomegaly, constipation, abdominal aortic aneurysm, and pregnancy.
Any discoloration - obvious pallor suggests significant anemia.

A patch of ecchymosis may be visible on any part of the abdomen on inspection and usually indicates internal hemorrhage.

The ‘Grey Turner sign’, the ecchymosis of the flank and groin seen in hemorrhagic pancreatitis and the ‘Cullen's sign’, that is a periumbilical ecchymosis from retroperitoneal hemorrhage or intra-abdominal hemorrhage.
A
Cullen’s sign

B
Grey Turner’s sign
- **Masses** - may suggest malignancy / organomegaly.
- **Scaphoid contracted abdomen** - perforated ulcer.
Palpation

- Ask about any areas of pain and examine these last.
- Sit or kneel on the right side of the patient with the hand and forearm in the same horizontal plane as the patient’s abdomen.
- Observe the patient’s face throughout for signs of discomfort.
Superficial (light) palpation:

- **Rigidity** - peritonitis.

- **Guarding** - A voluntary tension in the abdominal muscles - and it tends to be generalized over the entire abdomen, because of: neurologic disorders / renal colic / peritoneal inflammation (the patient do this to avoid pain). *(Guarding can often be overcome by having the patient purposely relax the muscles; rigidity cannot be)*

- **Tenderness** - acute cholecystitis, appendicitis, diverticulitis, and acute salpingitis.

- **Rebound tenderness** - pain is worsened on releasing the pressure - peritonitis.

- **Masses** - large/superficial masses suggest malignancy / organomegaly.
Deep Palpation

- Palpable organs/masses: relevant pathology.
- Rebound tenderness: peritonitis.
- If any masses are identified then assess:
  - Location - which region?
  - Size
  - Shape
  - Consistency - smooth / soft / hard / irregular
  - Mobility - is it attached to superficial/underlying tissues?
  - Pulsatility.
Specific signs:

1) **Murphy’s Sign:** Pressing on the RUQ while the patient is taking a deep breath elicits pain because of movement of the inflamed gall bladder. Typically, it is positive in cholecystitis.
2) Boas’s Sign:

An area of hyperesthesia between 9th and 11th rib posteriorly right side. Pain at the tip of the scapula and an area of tenderness - cholecystitis, can also indicate stomach and duodenal disease.
3) **Rovsing sign**: is a sign of appendicitis. If palpation of the left lower quadrant of a person's abdomen increases the pain felt in the right lower quadrant, the patient is said to have a positive Rovsing's sign and may have appendicitis.
4) **Psoas sign:** also known as Cope’s psoas test.

- Indicates irritation to the iliopsoas group of hip flexors in the abdomen.
- Indicates appendicitis in retrocaecal orientation
- (as the iliopsoas muscle is retroperitoneal).
5) Dunphy's sign:
- increased abdominal pain (RLQ) while coughing.
- It may be an indicator of enlarged or inflamed appendix.
- It is not a definitive diagnostic tool for the diagnosis of acute appendicitis.
Percussion

- **Resonance** - intestinal obstruction.
- **Loss of liver dullness** - gastrointestinal perforation (due to free air accumulating under the diaphragm).
- **Dullness** - free fluid, full bladder.
- **Shifting dullness** - free fluid changes shape and moves (ascites).
- Percussion causes **pain** if peritonitis is present.
**Shifting Dullness**

This maneuver is performed with the patient supine.

Percuss across the abdomen as for flank dullness, with the point of transition from tympany to dullness noted.

The patient then is rolled on his/her side away from the examiner, and percussion from the umbilicus to flank area is repeated.

Positive test: When ascites is present, the area of dullness will shift to the dependent site. The area of tympany will shift toward the top.

Note: The shift in zone of tympany with position change will usually be at least 3 cm when ascites is present.
Transmission thrill:

Have the patient lying supine.

The patient or an assistant places one or both hands (ulnar surface of hand downward) in a wedge-like position into the patient's mid abdomen, applying with slight pressure.

The examiner places the fingertips of one hand along one flank, and with the other hand firmly gives a sharp tap along the opposite flank.

Positive test: The examiner is able to detect "a shock wave" of fluid moving against the fingertips pressed along the flank, as the fluid is pushed from one side of the abdomen to the other by the force of the tap along the opposite flank.
Auscultation

- The diaphragm of the stethoscope should be placed on the right side of the umbilicus (ileocecal valve) to listen to the bowel sounds, and their rate should be calculated after listening for at least two minutes.
- Consist of clicks and gurgles and 5-30 per minute. (Normally)
- Absent sounds over a 30-second period: paralytic ileus.
- Hyperactive sounds: mechanical obstruction / gastroenteritis / dysentery.
- Change in the character of the sounds: mechanical obstruction.
- Bruit (Aortic bruits / Renal bruits): vascular disease
CAUSES OF ACUTE ABDOMEN
The **DDx of acute abdomen:**

- appendicitis.
- peritonitis.
- bowel perforation.
- pancreatitis.
- diverticular disease.
- cholecystitis.
- perforating gastric or duodenal ulcer.
- ruptured ectopic pregnancy.
- ruptured or hemorrhagic ovarian cyst.
- ruptured AAA.
- Tubo-ovarian cyst.
FIVE PRINCIPAL CAUSES OF ACUTE ABDOMEN:

1. Inflammation
2. Obstruction
3. Ischemia
4. Perforation
5. Rupture
<table>
<thead>
<tr>
<th>inflammation</th>
<th>ischemia</th>
<th>obstruction</th>
<th>perforation</th>
<th>rupture</th>
</tr>
</thead>
<tbody>
<tr>
<td>- constant pain.</td>
<td>It is defined as a low O2 state due to inadequate blood flow and loss of perfusion.</td>
<td>Specifically bowel obstruction and we will talk about it later on..</td>
<td>Perforation of a viscus allows its contents (acid, bacteria, feces, bile, urine) to enter the peritoneum rapidly causing chemical or bacterial peritonitis. The pain usually begins near the site of perforation but rapidly spreads across the whole abdomen.</td>
<td>Such as ruptured AAA which is a localized dilatation of the abdominal aorta exceeding the normal diameter by more than 50%. Actually, it is the most common cause of aortic aneurysm. Unfortunately, when AAA ruptures only 18% of the patient survive.</td>
</tr>
<tr>
<td>- exacerbated by movement or coughing.</td>
<td>For example: Mesenteric ischemia: which is an ischemia of the small bowel.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- the inflammatory category of causes could be divided into 2 subgroups:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1- bacterial: such as acute appendicitis &amp; diverticulitis.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2- chemical: such as the perforation of a peptic ulcer where a spillage of acidic gastric contents causes intense peritoneal reaction.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ischemic colitis: Which is ischemia of the colon.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Acute appendicitis

- So what is the underlying pathophysiology of the disease?
- Firstly the appendix is obstructed, by what?
- Commonly the causes of obstruction are different based on different age groups,
  - pediatric ......lymphatic hyperplasia
  - adult....fecalith
  - elderly....malignancy could be in the cecum, ileum, ascending colon, or even appendix.
- Ok, so after obstruction, this leads to increased intraluminal pressure(tension) and some sort of ischemia & consequently this triggers the visceral pain in the periumbilical area initially, and this type of pain is referred pain, poorly localized, dull ache of no specific nature.
- Then due to ischemia, the GMB(gut mucosa barrier) is disrupted leading to bacterial translocation from the lumen of the appendix into the wall leading to inflammation (appendicitis), so the somatic pain is developed as well, and the partial peritoneum is irritated so the pt complains of a well localized pain with a specific nature like stabbing.
- # in short, obstruction(tension)....ischemia( visceral pain)....disruption of the GMB....bacterial translocation....inflammation....somatic pain (well localized).
So acute appendicitis: is a visceral somatic sequence of pain.

History taking:

History:

- Sudden-onset, **constant**, severe abdominal pain initially **periumbilical** with migration to **right lower quadrant depending on the site of the appendix**
  - if the appendix is retrocaecal (74%)...RIGHT ILEAC FOSSA
  - if the appendix is pelvic(21%)...SUPRAPUBLIC PAIN & so on...
  - if the pt is a pregnant female so the gravid uterus may displace the appendix superiorly ... RUQ pain.

- usually **worse on movement or cough as this will increase the contact between the inflamed appendix and parietal peritonium**: nausea, vomiting, anorexia, and fever because it is a systemic inflammatory response including the release of inflammatory mediators, more common in **children and young adults**.

- **Catarral....edematous...gangrenous.**
Physical examination:
- To begin with, when you are going to examine a pt with acute appendicitis,
- Look at the general appearance of the patient, usually the pt looks ill, what about the position, so the pt usually found in a supine position while flexing the right thigh in 90 degrees to decrees the irritation of the parital peritoneum, then you may notice that the pt is breathing slowly to reduce the pain also,
- Then you may examine the cervical lymph nodes (to see that if there is any sign of lymphadenitis, then ask the pt to cough, if this induces pain so this is a positive dunphy sign.
- Then start with superficial palpation to gain the confidence of your pt and always start from the area away from the painful site, then deep palpation so this will trigger a tenderness in McBurney point in the right ileac fossa then release your hand suddenly so if the pt had pain, this is a rebound tenderness.
- Then palpate the left ileac fossa and if it triggers pain in the Right ileac fossa....this is a positive rovsing sign.
Then perform a passive internal rotation of the flexed thigh on the right side, so if there is any tenderness so this is a **positive obturator sign**, seen in pelvic appendicitis.

Then, you can either extend the hip joint with a full extension of knee joint or flex the hip against resistance so if there is any tenderness, this is a **positive psoas sign** seen in retrocecal appendicitis.

**Valentino syndrome**: refers to a clinical syndrome of right iliac fossa pain secondary to a perforated peptic ulcer.

It is an important DDx for acute appendicitis.
**Investigations:**
- Lab investigations: leukocytosis more than 10,000, usually neutrophils represent more than 70-75%.
- US, & investigations to exclude DDx (urine analysis).
- Laparoscopy for diagnosis and treatment (laparoscopic appendectomy).

**Treatment:**
- IV ABx
- Laparoscopic / open appendectomy
# Acute Right Iliac Fossa Pain Causes

## Causes
- Acute Appendicitis
- Meckel's Diverticulitis
- Mesenteric Lymphadenitis
- UTI Right ureteric calculus
- Ectopic pregnancy Mittelschmerz
- Twisted ovarian cyst PID

## The Alvarado Score

### Signs
- Right lower quadrant tenderness: 2
- Elevated temperature (>99.1°F): 1
- Rebound tenderness: 1

### Symptoms
- Anorexia: 1
- Nausea or vomiting: 1
- Migration of pain to right lower quadrant: 1

### Laboratory Values
- Leukocytosis (>10,000 WBC): 2
- Left shift (>75% neutrophils): 1
Acute Cholecystitis

History:

History of cholelithiasis (gall bladder stones) and biliary colic; intense right upper quadrant pain or epigastric pain, lasting more than 30 minutes, exacerbated by eating (especially fatty foods); right shoulder pain (referred pain from the gallbladder may be felt in the right shoulder or interscapular region); fever, nausea, and/or vomiting; more common in women than men; risk factors (5F’s) include obesity, age over 40, pregnancy, use of oestrogen, history of liver disease, cirrhosis, and pancreatitis, truncal vagotomy for peptic ulcer.
Physical Examination

- fever, tachycardia, right upper quadrant tenderness, **Murphy’s sign** (right upper quadrant tenderness with arrest of inhalation during palpation), local guarding.

Investigation:

- CBC: elevated WBC count
- liver function test (albumen, INR, PT)
- **right upper quadrant ultrasound (abdominal U/S)**: gallstones; thickened gallbladder wall (>4 mm); pericholecystic fluid; may also see ultrasonographic Murphy's sign (maximal abdominal tenderness from pressure of the US probe over the visualized gallbladder).
Treatment:

IV ABx
Laparoscopic / open cholecystectomy
PEPTIC ULCER

- Definition: break in the continuity of the epithelial surface mainly in the duodenum or stomach. 4:1
- DU is more common: either on the posterior wall of the 1st part of the D which tends to bleed, or on the anterior wall which tends to perforate, or even both (kissing ulcer in ZE syndrome).
- Etiology: - infection with H. pylori, NSAIDs, smoking, ZE syndrome (gastrinoma), steroid ttt, blood group O.
- CLINICAL PRESENTATION:
  - Sharp pain in the epigastric area, (pointing sign), intermittent pain, and may be asymptomatic.
  - GU: Exacerbated by eating and relieved by vomiting and antacids,
  - DU: relieved by eating and milk.
  - Complications: perforation, bleeding, stenosis, malignancy only with GU LESS THAN 1%.
INVESTIGATIONS:
- EGD, upper endoscopy for diagnosis and for taking biopsy in case of having GU.
- Investigations of H. Pylori
- Stool analysis for occult blood (upper GI bleeding)
- May investigate for ZE syndrome (serum gastrin).

Management:
- Conservative therapy (PPIs, clarythromycin, metronedazole, H2 receptor antagonest...).
- Surgical treatment:
  - Billroth Gastrectomy (I & II)
  - Gastrojejunostomy
  - Truncal vagotomy and drainage procedure
  - Highly selective vagotomy
  - Truncal vagotomy and antrectomy.
CAUSES OF ACUTE ABDOMEN
Perforation

- Perforation of a viscus allows its contents (acid, bacteria, feces, bile, urine) to enter the peritoneum rapidly causing chemical or bacterial peritonitis.
- The history and physical signs may indicate the site and cause of perforation.
- The pain usually begins near the site of perforation but rapidly spreads across the whole abdomen.
Bowel Obstruction

- One of the common causes of acute abdomen
- Intermittent colicky pain
- It can be classified into two types:
  - 1. Dynamic (mechanical)
  - 2. Adynamic

Dynamic (mechanical):
- 1. Intraluminal: impacted feces, foreign bodies, gallstones
- 2. Intramural: tumors, inflammatory strictures, congenital atresia.
- 3. Extramural: adhesion, hernias, volvulus, intussusception, tumors

Adynamic:
- 1. Paralytic Ileus (peristalsis is absent)
- 2. Peristalsis is present in a non-propulsive form
Bowel Obstruction

- The cardinal symptoms of intestinal obstruction:
  - Pain
  - Vomiting
  - Distention
  - Absolute constipation
Bowel Obstruction

History:

- history of abdominal or pelvic surgery; intermittent, cramp-like abdominal pain; nausea and/or vomiting, constipation, absence of flatus, history of intra-abdominal malignancy, including ovarian or colon cancer
Bowel Obstruction

- Physical Examination

- high-pitched (hyperactive) bowel sounds with rushes; distended abdomen, tenderness to abdominal palpation, involuntary guarding; tachycardia; tympany on percussion; presence of abdominal scars.
Bowel Obstruction

- Adhesive intestinal obstruction

- Investigations:

  - plain abdominal x-rays: may see dilated loops of bowel/air fluid level

  - CT of abdomen and pelvis: may see dilated loops of proximal bowel with collapsed loops posterior to site of obstruction

  - CBC: may not see any abnormalities with early obstruction
Air-fluid levels in ascending colon and hepatic flexure

Multiple air-fluid levels in moderately dilated small bowel
Figure 1. Small bowel obstruction, CT with intravenous and enteric contrast

circular cross-section through dilated bowel loop, greater than 2.5 cm diameter

non-dilated bowel, less than 2.5 cm diameter, filled with oral contrast, suggesting a partial obstruction

dilated bowel loop (>2.5 cm) with air-fluid levels

transition point – the point of obstruction – where dilated bowel gives way to non-dilated bowel
Bowel Obstruction

- high-pitched (hyperactive) bowel sounds with rushes; distended abdomen, tenderness to abdominal palpation, involuntary guarding; tachycardia; tympany on percussion; presence of abdominal scars
Bowel Obstruction

Treatment:

- Conservative management
- NG tube, bowel rest, IV fluid
- If failed, we can go for surgical adhesolysis
Pancreatitis

- Pain is the cardinal symptom
- Develops quickly, reaching peak within minutes, and persists for hours or days.
- Pain is severe and constant.
- Location: epigastrium, upper quadrants, diffuse abdomen
- Radiate to back
- Relieved by leaning forward
- Nausea, repeated vomiting
- Hiccoughs
Pancreatitis

Examination:
- Well/gravely ill (shock)
- Tachycardia, tachypnea, hypotension, hypoxemia
- Confusion
- Pleural effusion/pneumonitis
- Subcutaneous fat necrosis (red tender nodule on skin)
Pancreatitis

Abdominal exam:

- Distension
- Grey turner sign (flank bruising)
- Cullen's sign (umbilical bruising)
- Mass in epigastrium (inflammation)
- Epigastric tenderness and guarding
Pancreatitis

Investigations:

- Serum Amylase and lipase
- Lipase more sensitive and specific
- Amylase rise within few hours and decline over next 4-8 days,
- Normal serum level doesn't rule out pancreatitis
Pancreatitis

- Chest XRay: pleural effusion, ARDS
- Abdominal Xray: Generalized or local ileus (sentinel loop): A sentinel loop is a short segment of adynamic ileus close to an intra-abdominal inflammatory process.
- Colon cut-off sign: spasm of the descending colon
- Renal halo sign
- Calcified gallstone or pancreatic calcification
- CT scan of abdomen: edematous / necrotizing pancreas
Bilateral renal halo sign

The halo appears as ground-glass attenuation on imaging due to enhancement of the perirenal fat from the retroperitoneal collection of pancreatic exudates. Bilateral perirenal fluid collections are rare and suggest pancreatitis.
Sentinel loop - a focal dilated proximal jejunal loop in the left upper quadrant
Colon cut-off sign
Thank you 😊😊