

تبييض مخاضة

Acute Abdominal Pain in Children

د. أحمد عودة

Done by :

الطب والجراحة
لجنة



Acute Abdominal Pain in Children

- Acute abdominal pain in children is one of the most frequent reasons for emergency room visits and pediatric surgical consultations.
- Through a detailed history, physical exam findings and consideration of the incidence of specific etiologies, the differential diagnosis of acute can be narrowed



Case :

6-year old , Child Came with abdominal pain in right iliac fossa, with vomiting & nausea → **acute appendicitis**

Case :

2-year old , Child Came with abdominal pain in right iliac fossa, with vomiting → **intussusception**

- visceral pain → generalized
 - somatic pain → localized
- appendicitis pain started as visceral (whole abdomen) then become somatic (at right iliac fossa)

History Taking

if the pain is gradual it's an indicator for inflammatory Process

•Abdominal pain features

- pattern – constant (inflammatory) , intermittent (Obstruction)
- character – dull, sharp, crampy
- intensity – increasing, stable, decreasing; impact on normal activities
- location – migratory or consistent location

•Associated symptoms

- nausea, emesis – emesis color
- diarrhea, constipation, obstipation; stool color/presence of blood
- constitutional – fever, malaise, lethargy
- other – cough, sore throat, dysuria

•Duration (time from onset)

•Exacerbating and/or relieving factors (Stay-Still)

المريض ما يتحرك
من شدة الألم

noticed in cases of
inflammation and perforation



Physical exam

- Child's appearance and movement while obtaining the history

if the child moves
without pain Think
about obstruction
(Not inflammatory)

- Distraction, Warming the hands or examining while still clothed or in their parents arms

- Abdominal, Throat, respiratory, groin, costovertebral angle, scrotum

- Special maneuvers such Roving, obturator and psoas signs



The initial presentation in patients with abdominal pain can be associated with:

- Obstruction
- Inflammation
- Both.



Obstruction

* Congenital (Neonatal Period)

Intestinal [malrotation](#)/volvulus
Intestinal duplication cyst, mesenteric cyst
Incarcerated inguinal [hernia](#)
[Distal intestinal obstruction syndrome](#) (DIOS)
[Hirschsprung](#) associated enterocolitis (HAEC)

age :

<1 month → neonate
<1 year → infant
1-3 years → toddler
3-6 years → preschool
>6 → school age

* Acquired:

[Intussusception](#) (6-18 months)
Adhesive bowel obstruction → إذا تعرضت لعملية جراحية من قبل
[Crohn disease](#)-Stricture
Foreign bodies
Henoch-Schonlein purpura (HSP)
Idiopathic Constipation



Inflammation

Appendicitis (The most common surgical cause of abdominal pain in children)

- acute (**Simple / not perforated**)
- complicated/perforated

Gallstone complications ^{the most common causes are →}
hemolytic diseases
(Spherocytosis, G6PD)

- cholecystitis
- choledocholithiasis/cholangitis

Pancreatitis

Pelvic inflammatory disease (PID)

Other intestinal

- Meckel diverticulitis **Mimic appendicitis**
- Crohn disease – phlegmon/abscess
- Neutropenic enterocolitis → **inflammation of the secum**
- Perforated viscus
- Peptic ulcer disease PUD
- Nonaccidental abdominal trauma
- Pneumonia
- Viral mesenteric adenitis/gastroenteritis
if with history of URT infection.
(upper respiratory tract)



Both

Intestinal obstruction with ischemic/infarcted bowel:

- Complicated appendicitis
- Crohn disease
- Hirschsprung associated enterocolitis (HAEC)

Other

Abdominal/retroperitoneal neoplasm

- Ovarian/Scrotal pathology
- Torsion
 - Ovarian ruptured cyst

gastroesophageal reflux (GERD)



Assessment

Laboratory tests:

CBC, CRP, ESR, BMP, CMP, Amylase, Lipase,

UA → WBCs
H_g
HCT
inflammatory markers

Indication for perforated viscous

Radiological Tests:

- Abdominal X-Ray (Erect/Supine) → Check for → (air under diaphragm , level of obst.)
- Abdominal/Pelvis Ultrasound
- UGI Contrast study/SBFT/Contrast Enema
- Abdomen/Pelvis CT scan
- Abdominal MRI
- CXR → if with respiratory symptoms .



• other X-ray findings :

→ Adjacent small bowel to ileus (sentinel loop)

X-Ray findings of appendicitis:

- loss of psoas shadow → Due to inflammation
- focal ileus انمحاء للعضلة ، مارح تبين لانها
- scoliosis ال bowel غطته
- fecalith ↪ Sideways curve of the spine
انحناء بالعمود الفقري عشان ما يصير irritation to peritoneum

If the lumen of appendix closed by contents of calcium (calcified بيبين)



1] Pneumatosis: NEC → necrotizing enterocolitis
Air in sub-mucosa

2] Pneumoperitoneum: Perforated viscous



Ultrasound Findings

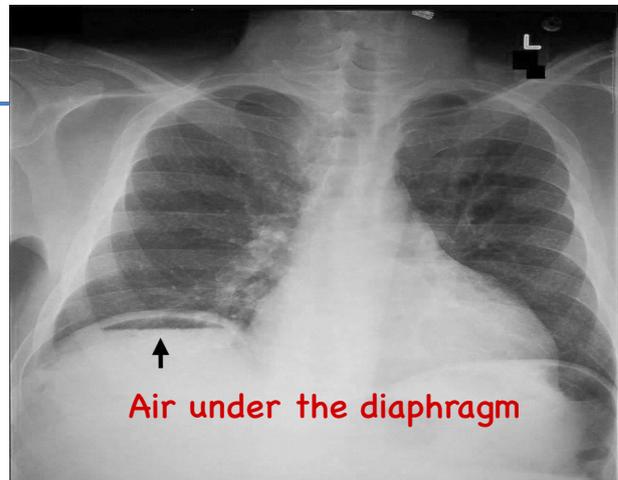
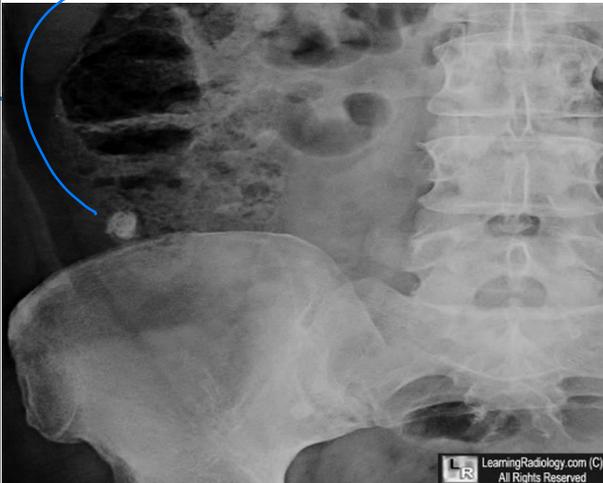
for **Target Sign:**
Intussusception

Appendicitis:
non-compressible tubular structure in right lower quadrant (greater than 7 mm diameter)

Cholecystitis:
gall bladder wall thickening
pericholecystic fluid, $>3\text{mm}$
sonographic Murphy sign



fecalith on U/S + RUQ pain without Signs of appendicitis on X-ray → Indication for appendectomy



12 years old boy with 16hrs of abdominal pain

Pain initially diffuse and non-specific, now located in the right lower quadrant

Nausea and 1-2 episodes of emesis

if the patient presented with 6-7 episodes of emesis → Think of gastro-enteritis

Fever, No Similar previous episodes of pain

if with similar attacks → obstruction or Familial Mediterranean fever .

Anorexia



((classical presentation of acute appendicitis))



Differential Diagnosis

- Gas pain from constipation (acute onset, severe, episodic pain)
- Viral gastroenteritis (high volume emesis prior to pain, then diarrhea)
- Viral mesenteric lymphadenitis
- Ovarian torsion, ruptured ovarian cyst
- Urinary tract infection, IBD
- Ileocolic intussusception



Acute Appendicitis

- **Most common indication for emergency abdominal surgery in children**
- **Peak incidence between 10-12 years**
- **Rate of perforation is 10-30% in children > 5yo, and 50-90% in children < 5yo** → **They usually perforated in very late stage**



Pathophysiology:

- **Appendiceal luminal obstruction – Fecalith (appendicolith) – Lymphoid hyperplasia (viral infection)**
- **Increased intraluminal pressure leading to ischemia and intramural bacterial infection**



McBurney point: 1.5-2 inches from the anterior superior iliac process along a line drawn from the process to the umbilicus

Rovsing sign: RLQ pain that results from palpation of the left lower abdomen

The obturator sign: RLQ pain with flexion and internal rotation of the right hip.

psoas sign: RLQ pain when the patient is in the left decubitus position and the right leg is extended. A positive psoas sign is often suggestive of a retrocecal appendicitis.

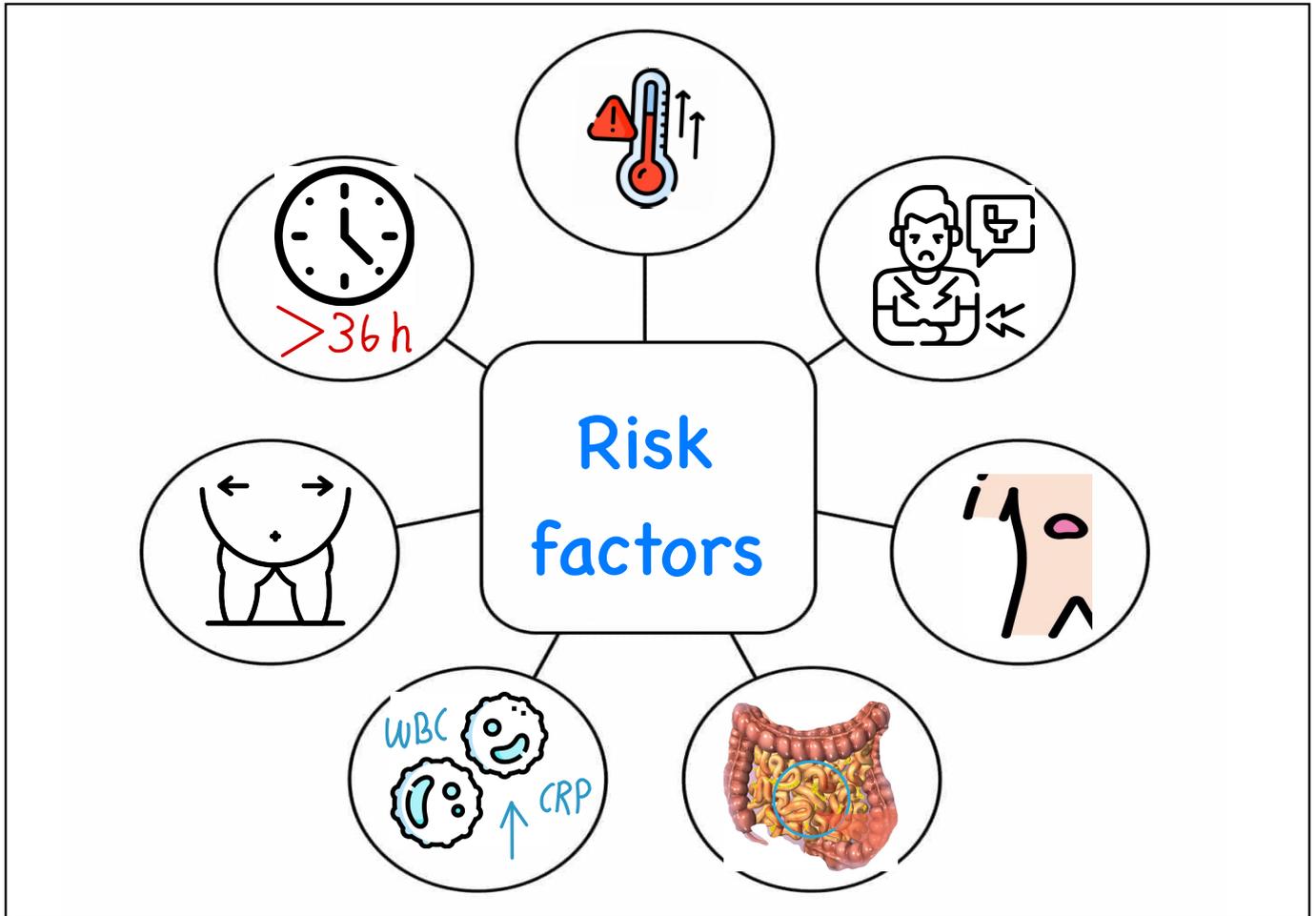
The Dunphy sign: is increased RLQ pain with coughing



Risk factors for complicated appendicitis

- Symptom duration >36hrs
- High or persistent fevers
- Palpable RLQ mass on physical exam
- Diffuse peritonitis
- Significant abdominal distention
- Diarrhea
- Extremely elevated WBC count, CRP

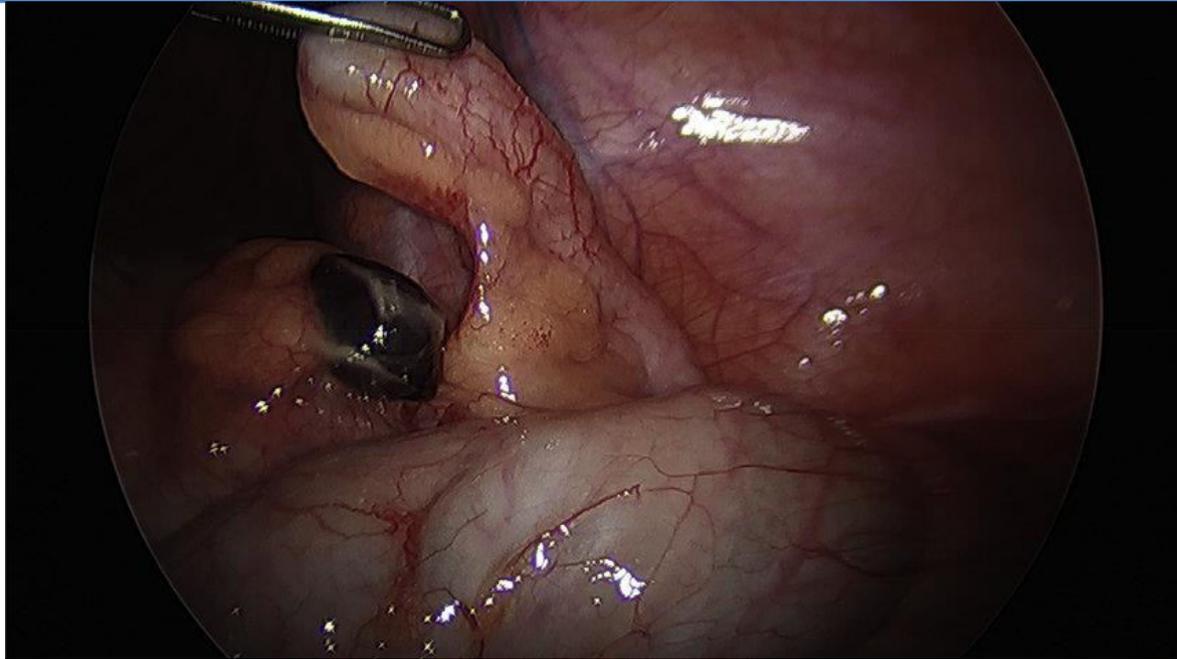




Treatment

**Uncomplicated appendicitis:
Surgery vs antibiotics and no surgery**

**Complicated appendicitis:
surgery vs antibiotics and delayed
surgery (interval appendectomy in
case of abscess)**



STEPS
STANDARDIZED TOOLBOX
OF EDUCATION FOR
PEDIATRIC SURGERY



Appendicitis ::

Diarrhea :: pelvic appendix irritate rectum and ileum

Do U/S

if the pain > 72 h do CT لأنها غالباً صارت complicated by perforation >> phlegmon or abcess (well difined wall)

No anorexia :: mainly no appendicitis

- Lower lobe pneumonia Maybe come with RLQ pain**

Archive

* boy with abdominal pain and anorexia and slight increase in temperature and after 1 week has RIF pain :

Appendicular abcess

* Most common cause of abdominal pain in adolescent age is:

- A. Volvulus
- B. Intussusception
- C. Appendicitis
- D. Mesenteric adenitis
- E. Cholecystitis

* A 14-years-old boy started to complain of central abdominal pain, nausea, anorexia and slight rise of temperature. One week later he developed a tender mass in the right iliac fossa. Most probably he has:

- A. Carcinoma of the cecum
- B. Ileo-cecal tuberculosis
- C. Appendicular mass
- D. Intussusception
- E. Fecal impaction



اللَّهُمَّ انصُرْ أَهْلَ غَزَّةَ وَثَبِّتْ أَقْدَامَهُمْ.
اللَّهُمَّ احْرُسْ أَهْلَ غَزَّةَ بِعَيْنِكَ الَّتِي لَا تَنَامُ.
اللَّهُمَّ كُنْ لِأَهْلِ غَزَّةَ عَوْنًا وَنَصِيرًا، وَبَدِّلْ خَوْفَهُمْ أَمْنًا وَأَمَانًا.

اللَّهُمَّ اجْبُرْ كِسْرَهُمْ، وَاشْفِ مَرَضَاهُمْ، وَتَقَبَّلْ شُهَدَاءَهُمْ بِرَحْمَتِكَ.
اللَّهُمَّ سَخِّرْ لَهُمْ مَلَائِكَةَ السَّمَاءِ وَجُنُودَ الْأَرْضِ...
اللَّهُمَّ انصُرْهُمْ عَلَى مَنْ عَادَاهُمْ وَافْتَحْ لَهُمْ فَتْحًا قَرِيبًا.

