Acute Abdomen In Children

Dr Aayed Al-Qahtani

## Surgical Causes:

- Acute appendicitis 30% ( most common)
- Intussusception
- Meckel's diverticulitis
- Twisted ovarian cyst
- Primary peritonitis (rare)

Note: primary peritonitis associated with pt who has ascites secondary to nephritic syndrome or serositis while secondary peritonitis related to bowel problem

- Malrotation of midgut (rare)
- Acute Cholecystitis (rare)
- Acute pancreatitis (rare due to medication or trauma).

## Medical Causes:

- Acute Non-specific abdominal pain ,(NSAP) 30-50% .
- Gastroenteritis .
- Constipation .
- Genito-urinary infection .
- Mesenteric adenitis .

  Note: it is inflammation of lymph node in the mesenteries it proceeded by upper respiratory infection

- Pelvic inflammatory disease .

- Pneumonia.

  Note: Lower lobe pneumonia irritate the diaphragm and give acute abdomen

- Measles.
- Sickle cell crisis .
- Henoch-Schönlein purpura .

  Note: pt present with vasculitis,serositis, Intussusception and pancreatitis.

## Acute appendicitis :

- **Pathology :**

  Obstruction of lumen by faecal material or proliferated lymphoid tissue due to inflammation of appendical wall that lead to congestion of appendix.

- **Diagnosis:**
  - Difficult and delayed .
- **Management .**
- **Differences :**
  - high rate perforation :
    - difficult to examine .
    - reduced immunity .
    - scanty omentum .

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- **History :**
  - Periumbilical pain (early) followed by vomiting and localized right lower quadrant pain.( while in gastroenteritis it start with vomiting then abdominal pain)
  - Anorexia .
- **Physical Examination** :
  - Fever >37.5 C .

    Note: if the fever preceded 39 that indicate perforated appendix
  - Localized right lower quadrant tenderness .
- **Investigation :**
  - CBC: Increased WBC .( left shifted neutrophil)
  - Urine: No Bacteria, possible WBC.( to exclude UTI)
  - X-Ray .( erect supine looking for air fluid level and pneumopretonium )
  - US .

    Note: there are specific signs for US in acute appendicitis which include thick appendical wall, incompressible appendix and blind ended loop .
- **Treatment :**
  - Appendectomy .
  - Rehydration Pre-op .
  - Antibiotic: At induction .

- **Complications** :
  - Perforation .
  - Abscess .
  - Mass .

    Note: the acute appendicitis is either simple or complicated with mass, abcess or perforation and each of which has specific treatment.

    - ✓ Simple:treated with rehydration ,antibiotic then laparoscopic surgery.
    - ✓ Complicated with perforation; open the abdomen and clean.
    - ✓ Complicated with abcess: treated by percutanous drainage guided by US then laproscopic if it not work then do laprotomy.
    - ✓ Complicated by mass:this mass is formed by creeping mesenteries that wll form a mass .in this case conservation is advisable for tow weeks IV fluid and antibiotic given to the pt for 3 days then shift to oral antibiotic then send the pt home if the mass resolved bring him back and excised the mass among 6 weeks or 3 months and before 6 months.

Note: in any operation the prophylactic antibiotic should be given 30 min before the operation if it early but if late so we can give the antibiotic later.

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## Intussusception :

- Pathology .
- Diagnosis .
- Management .

- **Pathology** :
  - Incidence : 1.5-4/1000 live births .
  - Sex : male predominance .
  - Peak Age : 6-9 months .
  - Pathogenesis :

    * invagination of intestine .

    * mesentery with it .

    * venous obs - arterial obs .
  - Site: commonly - ileo-colic

    less commonly - ileo-ileal

    colo-colic .
  - Aetiology :

    ☒ unknown?? 95% :

    Adenovirus or Rotavirus

    (Marked lymphoid tissue in ileum may act as leading point)

It may be associated with upper respiratory tract infection or gastroenteritis .

☒ %5 leading point :

e.g. Meckel's diverticulum

Polyps

Intestinal duplication

Lymphomas .

Henoch's purpura .

Haemangiomas .

- **Diagnosis :**

History:

- Pain: colic every 10-15 minutes

healthy, robust infant screaming suddenly pulls the legs up .

- Stool : red mucoid, bleeding PR Current Jelly .
- Vomiting : bilious (late) .
- History of viral gastroenteritis or URTI .

Examination :

- Vital sign : stable initially

  dehydration, tachycardia,

  temperature.
- Abdomen : sausage shaped mass

bowel sounds increased .

- PR: blood stained stool .

Investigations :

- AXR : supine and erect .
- USG: target lesion
  - pseudo kidney sign .
- Contrast enema : coiled spring sign .

- **Management** :
  - Nasogastric tube .
  - Intravenous fluid therapy .
  - Antibiotics : confirmed diagnosis
    - 24< hour history
    - Not necessary in all cases .
  - Blood Work-up : CBC

    Electrolytes .
  - Child , stable and no peritonitis :
    - treatment : hydrostatic reduction with barium/air enema .
  - Child , shock or peritonitis or perforation :
    - treatment : laparotomy .
  - Post operative:
    - 5-10 % recurrence rate
  - Discharge : hydrostatic 1 day

laparotomy 4-7 days .

- Reduction of recurrence :
  - hydrostatic then laparotomy .

## Other causes of acute abdomen in children:

- **Intestinal obstructions**
  - Malrotation
  - obstructed Inguinal hernia
  - Adhesions (post operative) .
- **Meckel's diverticulitis**
  - Same as acute appendicit
  - Rule of 2% .
- **Twisted Ovarian cyst :**

## Summary, Acute abdomen in children:

- Acute appendicitis is an important surgical disease in children , 1 : 5 appendix will rupture prior to operation and cause serious illness .
- All children with acute abdomen should have urine test .
- Resuscitation of sick child must be done prior to operation .
- Diagnosis is mainly clinical however, Investigations ( US, x-rays) may be helpful .

## Appendectomy :

open or Laparoscopy .

## NEC necrotizing enterocolitis :

- Within the first 2 weeks of Life.
- Premature
- Early feeding.
- Feed intolerance
- Abdominal distention.
- Blood in stool.
- Septic .

## Pathologie :

- 50% des cas atteinte unique .
- 44% des cas atteinte du colon et grêle .
- 19% pancolite(75% de l 'intestin) .
- Iléon terminal, puis colon ascendant .

## Pneumatose intestinale :

- 14% absence
- Occurrence précoce
- Gaz; hydrogène provenant du métabolisme bactérien
- Pas pathognomonique
- Kystique vs Linéaire
- Plus commun avec Pancolite .

## Pneumopéritoine :

- Ligament falciforme(« Football sign »)
- Double-wall sign
- Autres causes qu 'intestinale
- Seulement 63% perforation chirurgicale montre pneumopéritoine .

## II: Inguino-scrotal swellings :

- Inguinal hernia
- Hydrocele
- Undescended testes
- Acute scrotum .

**Inguinal hernia :**

- 1-5% boys
- 9:1 male/female
- 99% indirect
- More in premature (up to 35%)
- More in right side
- Congenital in origin .

- Clinical History :
  - Intermittent groin swelling
  - Asymptomatic until incarcerated
  - In girls, lump in upper part of labia majora .
- Examination :
  - Examine the testes
  - Cough impulse
  - Reducibility .
- Management:
  - Herniotony .
  - Incarcerated hernia :
    - ☒ Sedation and analgesia
    - ☒ Reduction
    - ☒ Herniotomy as soon as possible .

Age is not contraindicated for operation !!

**Hydrocele :**

- Clinical History :

- Scrotal swelling
- Asymptomatic
- 1% over 1 years of age

- Examination
  - Get above the swelling
  - Not Reducible
  - transilluminates
- Management
  - Below Age 2 years surgery not advised
  - Ligation of PPV .

**Undescended testes :**

- Definitions:
  - True undescended testes
  - Ectopic
  - Retractile
- Incidence:
  - At birth 3-4%
  - At one year 1%
  - Pre-term 30%
- Diagnosis:
  - Parents/Doctors

- Clinical features
  - Empty scrotum
  - Palpable or not
  - Milk it down to scrotum
- Ultrasound ?
- Laparoscopy
  - Diagnostic
  - Therapeutic .

- Indication:
  - Abnormal fertility
  - Testicular tumour
  - Cosmetic/social
  - Trauma/torsion
- Treatment: at 1 yr
  - Single stage
    - Orchiodopexy
  - Two stages:
    - Laparoscopic .

**Acute Scrotum :**

- Introduction:
  - Acutely painful or swollen scrotum

- A few real pediatric surgical emergency

- Causes:
  - Testicular Torsion
  - Torsion of appendage
  - Epididymo-orchitis
  - Idiopathic scrotal edema
  - Other conditions e.g. incarcerated hernia, acute hydrocele, HSP, truma .

- Testicular Torsion:
  - Incidence: 1:4000
  - Common in peripubertal and perinatal

- Symtoms:
  - Initially, it may be lower abdominal pain and vomiting
  - Later localized to one side of scrotum
  - Swollen, red scrotum

- Signs:
  - Tender
  - Cremasteric reflux absent
  - Lies higher than contalateral tesis
  - Horizantal in position .

**Testicular Torsion :**

- Investigations:

- Colour Doppler US
- Radionuclide Scan

- Management:
  - Timing is critical 4-6 hrs
  - Exploration if any doubt
  - Untwist anticlockwise "Putting the clock back" if it viable
  - Fix the other side
  - If more than 10 hrs, it is likely to be non-vialable, needs excision .

**Torsion of appendage :**

- Introduction :
  - Embryological remnants of the mesonephric and mullerian duct system occur as tiny ( 2-10mm long) appendages of testis ( hydatid of Morgagani), epididymis and paradidymis
  - Peak age 10-12 yrs
- Presentation :
  - pain - more gradual onset
  - Blue spot in the scrotum
  - Swollen, red hemiscrotum
  - Somtines difficult to distinguish between two conditions
- Colour Doppler scan .
- Management: Conservative or operative if torsion cannot exclude .

**Idiopathic scrotal edema :**

- Introduction
  - Cause?
  - Peak age 4-5 yrs
- Presentation
  - Swollen, red hemiscrotum or bilateral
  - Pain minimum
- Management: Conservative, self limiting within 1-2 days .

**Acute hydrocele .**


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