

# Acute abdomen in children

**Acute abdomen** is a condition, of the abdomen that appear **unexpectedly and suddenly**, it affect the patient mostly in full health, and in a minority they worsen the stable state of the abdomen that was already sick. (definition according to Arnold Jirásek)

In contrast to acute abdomen in adults in children, especially in newborn and infant age, acute abdomen often occurs on the basis of congenital defects.<sup>[1]</sup>

## Distribution of acute abdomen in children

- **congenital** (arising on the basis of congenital defects)
- **acquired**
  - accidental
  - harmless
    - inflammatory
    - ileous
    - perforation
    - bleeding

## The most common acute abdomen in children

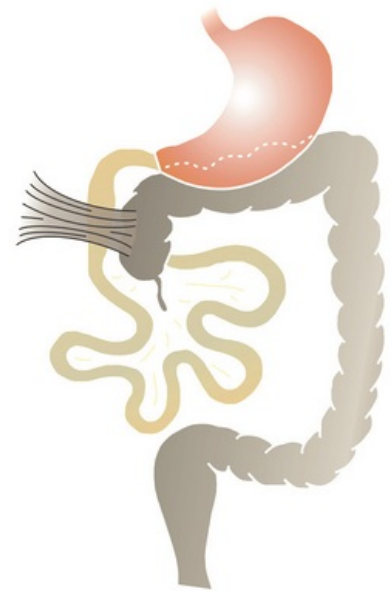
- **history of injury:** contusion, bleeding into the GIT and abdominal cavity, organ rupture, pancreatic injury
- **without previous injury :**
  - 0-2 years: invagination, inguinal hernia, megacolon congenitum, GIT stenoses and atresia
  - 2-5 years: uropathy, intussusception, purpura, tumor
  - over 5 years: acute appendicitis, scrotal syndrome, uropathy, gynecological problems, Meckel's diverticulum, tumor<sup>[2]</sup>

## Acute abdomen on the basis of congenital defects

- they mostly have the character of ileous acute abdomen
- they especially affect newborns a infants
- **subjective symptoms:** abdominal pain (restlessness, refusal of food), vomiting, impaired intestinal permeability (gas retention and stool/poop)
- **objective symptoms:**
  - general – pulse, breathing, temperature, icterus
  - local – look (bloated belly), palpate, listen, tap, per rectum (obstruction of the rectum)
- **other symptoms:** polyhydramnion
- **examination:** laboratory, USG, X-ray<sup>[1]</sup>

## Examples of congenital developmental defects causing acute abdomen

- congenital hypertrophic pyloric stenosis, compression of the pylorus by an aberrant vessel, torsion and volvulus of the stomach, congenital microgastria, annular pancreas
- **congenital atresia of the alimentary canal**
- congenital biliary atresia, choledochal cyst (Caroli syndrome)
- intestinal malrotation, omphalocele, Beckwith-Wiedemann syndrome, umbilical cord hernia, laparoschisis (gastroschisis), vesicointestinal fissure, foreskin (Zachary-Morgan syndrome), nonrotation, duodenal compression, duodenal hyperfixation, congenital midgut volvulus, Ladd's syndrome, internal hernias, inverted rotation, positional anomalies of the intestine, arteriomesenteric closure
- hepatodiaphragmatic interposition of the colon (Chilaiditi syndrome)
- **invagination (intususcepcion)**
- **Meckel's diverticulum**, cystic formations of the abdominal cavity
- splenic torsion
- Hirschsprung disease
- congenital diaphragmatic hernias
- anorectal malformation
- meconium ileus, meconium peritonitis



Ladd's syndrome - unrotated cecum and duodenal compression by peritoneal bands

## Obtained acute abdomen non-injury

## Inflammatory acute abdomen

- **acute appendicitis** and associated complications (peritonitis, periappendicular infiltrate, abscess) – the most common non-traumatic acute abdomen in children!
- chronic appendicitis
- primary peritonitis
- acute mesenteric lymphadenitis
- Crohn's disease
- necrotizing enterocolitis
- acute cholecystitis and cholelithiasis – exceptional in children
- biliary peritonitis in an infant
- acute pancreatitis
- serous peritonitis
- neonatal peritonitis

## Ileotic acute abdomen

- **ileus** (sudden intestinal obstruction) – divided into mechanical, neurogenic and vascular (vascular is rare in children)
  - mechanical is predominant in children
  - paralytic (neurogenic) can be partially or completely expressed in all acute abdomen, severe trauma and after operations
- foreign bodies in the alimentary canal – they can obstruct or perforate!
- intestinal parasites - roundworms

## Anamnesis

- severe symptoms – pain wakes the child up from sleep, the child does not want to eat, the abdomen hurts when shaking, forces to take a relief position, is accompanied by fever, nausea, vomiting
- repeated episodes of colic - beware! for volvulus, invagination
- in teenage girls – also gynecological issues (menses, sexual activity)
- it is necessary to look for problems with urination (dysuria, polakisuria), for oxyuriasis (= enterobiasis)
- in older children and adult problems – ulcers, cholelithiasis, urolithiasis
- we find out the mode of defecation
- we find out the mode of defecation

## Clinical picture

- acceleration of the pulse rate not corresponding to the temperature
- significant pain during palpation in a certain place, signs of obstruction (silence when listening)
- changes in the child's behavior - noticeable calmness, apathy alternating with pain, signs of peritoneal irritation
- tactile resistance
- pain during per rectum examination
- abnormal admixture in the stool (raspberry jelly on the glove - watch out for intussusception)
- inguinal hernia, scrotal syndrome in men (orchitis vs. torsion)
- in girls, examination by a gynecologist
- for school children think of dissimulation
- look for inflammation in the respiratory tract (abdominal pain during pleuropneumonia - be careful, even with pneumonia, a child can have appendicitis)
- Abdominal pain with rashes – Henoch-Schönlein purpura, varicella<sup>[2]</sup>

## Acquired accidental acute abdomen

- with children, it is always necessary to rule out injury with targeted questions!
- contusion of the abdominal wall, injury to the spleen, liver, pancreas, perforation of the GIT, bleeding into the abdominal cavity, detachment of the pedicle of the mesentery,...<sup>[1]</sup>

## Anamnesis

- mechanism of injury – fall from a height, what did the child fall on, where did it hit, what object caused the blunt injury...
- post-injury condition – consciousness, behaviour, complaints, pain, vomiting, abnormal urine or faeces, relief position

## Clinical picture

- look for external signs - hematomas on the wall, bruising in the groin or on the scrotum (possible hemoperitoneum), tenderness in the pelvic area - cave! – pelvic fracture
- signs of peritoneal irritation - usually with hemoperitoneum, free air or intestinal contents in the cavity
- palpable resistance – subcapsular hematoma of the liver, bleeding into the retroperitoneum
- silence when listening - paralytic post-traumatic ileus
- sometimes in case of injury to the liver, pancreas or spleen, the findings are minimal, so we send a child

suspected of having an abdominal injury to surgery for observation (X-ray, USG, blood count, ALT, AST, ...)<sup>[2]</sup>

## Links

### Related Articles

- Examination of child's gastrointestinal system
- Types of pain in acute abdomen
- Subjective signs of acute abdomen
- Objective symptoms of acute abdomen

### References

1. TOŠOVSKÝ, V. V. *Náhlé příhody břišní u dětí*. 9. edition. Grada, 1996. 304 pp. ISBN 80-7169-094-5.
2. HRODEK, Otto – VAVŘINEC, Jan. *Pediatric*. 1. edition. Galén, 2002. 64-65 pp. ISBN 80-7262-178-5.