

# Examination of child's gastrointestinal system

Gastrointestinal (GIT) diseases are very common in childhood.

## The most common symptoms

### Vomiting

- often accompanied by nausea
- in young children it is difficult to **distinguish regurgitation** of gastric contents in gastroesophageal reflux (not accompanied by nausea, gastric contents return to the esophagus spontaneously, without active expulsion)
- **vomiting + diarrhea** – in acute gastroenteritis
- **reactive vomiting** – in acute pyelonephritis, in AA (acute abdomen)
- **repeated vomiting without nausea + headaches + afebrilia** – in intracranial hypertension
- **bile admixture** in vomit – ileus, duodenogastric reflux, long-term persistent vomiting
- in vomit **leftover food** ingested more than 12 hours ago – lined GIT motility
- **blood admixture** in vomit – in case of mucosal damage by persistent vomiting, bleeding from esophageal varices or from peptic ulcer
- **vomiting of digested blood** – after massive epistaxis with blood swallowing<sup>[1]</sup>

### Abdominal pain

- one of the most common symptoms for a child to see a doctor
- children often localize pain to the periumbilical area
- **visceral** (diffuse, dull pain of inaccurate localization)
- **parietal** (sharp, precisely localized pain)
- pain may come **from the abdominal wall**, or be **vertebrogenic** etiology or **metabolic** etiology (*pseudoperitonitis diabetica* in diabetic ketoacidosis; lead intoxication)
- **psychogenic** pain (diagnosis per exclusionem – exclusion of organic cause)
- we ask about the intensity of pain, the duration of the problem, the triggering factor and the accompanying symptoms<sup>[1]</sup>

### Constipation

- **difficult bowel movements** (low frequency, painful defecation)
- the frequency of bowel movements varies in children (infants have 1-7 stools per day; fully breastfed children can only have 1 stool in 10 days)
- functional x organic constipation– Hirschprung's disease, cystic fibrosis
- important information – pitch departure after childbirth
- accompanying difficulties: abdominal pain, meteorism, abdominal pain, vomiting
- functional constipation most often in toddlers – during the cleanliness training period
- **spotting** – the consequence of overflowing the anal canal and ampoule of the rectum with faeces and a reduction in the tone of the rectal sphincters with the consequent departure of a smaller amount of faeces; we palpate skybal during the large intestine, especially in the rectosigmoid
- in older children and adolescents, constipation is a frequency of 3 or fewer stools per week + difficult bowel movements in min. 25% of defecation<sup>[1]</sup>

### Diarrhea in children

- **more frequent emptying of loose stools**
- Loss of fluid in the stool can lead to dehydration
- according to the course: acute x chronic x recurrent
- according to the pathophys. mechanism: increased fluid secretion, decreased water absorption, exudation
- by etiology: viral x bacterial x parasitic x drug x non-specific intestinal inflammation
- may be a sign of malabsorption (celiac disease, brush border disaccharidase deficiency)<sup>[1]</sup>

*see also Diarrheal diseases in infancy*

## Physical examination

- we examine while lying on back with bent knees and arms along the body

### View

- we monitor: size and shape of the abdomen, possible herniation in the inguinal canal area, distension (aerophagy, meteorism, hepatosplenomegaly, ascites, tumors), sunken abdomen (Congenital diaphragmatic hernia, spider nevi) and traumas <sup>[1]</sup>

## Palpation

- an essential part of the examination
- first surface palpation, then deep palpation
- we monitor the child's facial expression <sup>[1]</sup>

## Tap

- allows detection of enlargement of intra-abdominal organs, presence of free fluid, peritoneal irritation,...
- examination of the liver by tapping – we determine their upper and lower edge in the medioclavicular line – the total length of the liver in children is 6-10cm
  - in infants in the first half of life, the liver may extend the rib arch by 1-3 cm
  - the upper edge of the liver is usually in the 5th intercostal space in the medioclavicular line<sup>[1]</sup>

## Listening

- we detect the presence of peristalsis, its acceleration (e.g. in gastroenteritis) or disappearance (e.g. in ileus)<sup>[1]</sup>

## Per rectum

- we are looking for excoriations (roups), fistulas, perianal skin growths, .. (non-specific intestinal inflammations)
- we assess the tone of the sphincter, the content of the ampoule, the pain during the examination (during AA)<sup>[1]</sup>

## Special gastroenterological methods

### Hydrogen test

- the amount of hydrogen in the exhaled air depends inversely on the breakdown of lactose by intestinal lactase

(reduced lactase activity -> higher hydrogen content in the intestinal lumen and in the exhaled air)

- method:
  - 20% lactose solution after fasting (2g lactose/kg body weight, maximum 50g)
  - then the patient exhales air through the reduction valve into the syringe
  - we evaluate the last third of the tidal volume
  - we perform measurements at 30-minute intervals for a total of 180 minutes
- conclusion: pathological finding is a concentration of more than 10 ppm per basal value<sup>[1]</sup>

### 24-hour esophageal pH measurement

- to detect reflux of gastric contents into the distal third of the esophagus
- method:
  - Insert a pH-metric probe with an antimony sensor into the distal third of the esophagus,
  - continuously monitor the pH for 4 sec. after 24 hours.<sup>[1]</sup>

## Enterobiopsy

- to take a sample of the intestinal mucosa for histological examination
- Crosby capsules attached to a probe that the patient swallows
  - the capsule is made of X-ray contrast material
- we perform on an empty stomach (6 hours of fasting), for infants and toddlers in premedication<sup>[1]</sup>

## Liver biopsy

- Mengini needle percutaneous liver biopsy
- in infants, toddlers and uncooperative children in general anesthesia in apnea pause
- in cooperating children under premedication and local anesthesia
- collection in the supine position with the right hand in the lining or behind the head, injection in the apnea pause (in the expiration)
- after the biopsy, the child lies on his right side for 24 hours.<sup>[1]</sup>

## Links

### Related articles

- **Examination of the child:** Examination of the child's cardiovascular system ■ Examination of the child's respiratory system ■ Examination of the child's uropoietic system ■ Examination of the child's endocrine system ■ Examination of the child's musculoskeletal system ■ Examination of child's skin and skin adnexa ■ Examination of the child's sight and hearing
- Digestive system development

- Congenital malformations of digestive system

## References

1. LEBL, Jan – PROVAZNÍK, Kamil – HEJCMANOVÁ, Ludmila. *Preklinická pediatrie*. 2. edition. Praha : Galén, 2007. pp. 131-138. ISBN 978-80-7262-438-6.

## Literature

- LEBL, Jan – PROVAZNÍK, Kamil – HEJCMANOVÁ, Ludmila. *Preklinická pediatrie*. 2. edition. Praha : Galén, 2007. pp. 131-138. ISBN 978-80-7262-438-6.

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