Constipation (Pediatrics)

Constipation is defined as difficulty in emptying of stool in the interval of three or more days, which is often accompanied by painful defecation. The frequency of bowel movements varies according to the age of the children. For example, fully breastfed children could defecate at irregular frequencies, they may have stools even once in 10 days or several stools a day.

The most common causes of constipation vary depending on the age of the child. Constipation in children could be classified into two types: **organic** (5%) and **functional** (95%), as discussed below. Functional constipation is the most common cause of constipation in children, especially toddlers and older children.

Detailed medical history, physical and laboratory examination are important in the differential diagnosis of constipation. The information on the **first bowel movement** (also known as ***"meconium"***) of the newborn after birth is important. If it is longer than **24-48 hours**, there could be suspision of intestinal obstruction.

In infants, it is also important to consider the location of the anus, which should be located:

- 1/3 of the distance between the edge of the labia and the coccyx in girls
- Halfway between the scrotum and the coccyx in boys.

Its shift in the ventral direction can cause constipation in infancy. During the *rectal examination*, the *anal sphincter, its size and patency* (whether it is unobstructed) are assessed.

Rome IV Diagnostic Criteria for Pediatric Constipation

The Rome IV diagnostic definition could be used to diagnose constipation. The patient has to fulfill at least two of the symptoms as listed below over the past 3 months:

- Less than three spontaneous bowel movements per week
- Straining when defecating for more than 25% of defecation attempts
- Lumpy or hard stools for at least 25% of defecation attempts
- Sensation of anorectal obstruction or blockage for at least 25% of defecation attempts
- Sensation of incomplete defecation for at least 25% of defecation attempts
- Manual maneuvering required to defecate for at least 25% of defecation attempts

Organic Constipation

Organic constipation is referred to as constipation due to organic causes, which could involve specific anatomic, neurologic, toxic/metabolic, or intestinal disorders.

Anatomic causes

- Anal stenosis, atresia, fistula, intestinal stenosis (post-necrotizing enterocolitis), abnormality of structure of the anus

Disorders of muscle development

- Prune Belly syndrome, gastroschisis, Down syndrome, muscular dystrophy

Congenital malformations of the nervous tissue

- **Hirschsprung's disease**, visceral myopathy or neuropathy, interstitial neuronal dysplasia

Spinal cord disorders

- Spina bifida, injury of spinal cord

Drugs

- Anticholinergics, narcotics, methylphenidate, phenytoin, antidepressants, chemotherapeutics, pancreatic enzymes, hypovitaminosis D

Metabolic diseases

- Hypokalemia, hypercalcemia, hypothyroidism, diabetes mellitus, diabetes insipidus

Gastrointestinal disorders

- Celiac disease, cow's milk protein intolerance, cystic fibrosis, nonspecific intestinal inflammation, GIT tumors

Autoimmune diseases

- SLE , JIA , scleroderma

Functional constipation

Functional constipation is the most common cause of constipation in children (up to approximately 95%) - *due to causes other than organic reasons*. It occurs especially in toddlers and older children. Additionally, it usually manifests itself in acute abdominal pain with impaired bowel movements, which may be initiated by a unsuitable diet or infection. This acute condition can quickly turn into chronic constipation.

- A common cause is the **formation of an anal fissure**, which causes pain during defecation and subsequent prevention of defecation - the child typically squats at the onset of defecation, contracts the gluteal muscles and sweats.
- After the defecation reflex subsides, there is relief, but the accumulation of stool in the intestines leads to recurrent abdominal pain.
- Examination of the rectum is characterized by weakening of the anal sphincter, and often the examination is followed by a significant outflow of stool.

Early treatment is important for functional constipation, which includes:

- Training of defecation reflex
- Early and frequent potting
- Dietary measures - residual diet, adequate fluid intake, reduction of chocolate and confectionery
- Pharmacological treatment - softening of stool (macrogolum - polyethylene glycol; lactulose; bisacodyl)
- Sometimes the cooperation of a child psychologist is necessary

Chronic habitual constipation

Chronic habitual constipation is characterized as stool retention during incomplete emptying and/or hard stool lasting more than 3 months.

- It occurs frequently in childhood, in up to 16% of two-year-old children.
- Boys are affected 3 times more often than girls.
- One third of children with chronic constipation after the age of 4 have enuresis (the inability to control urination or "bed wetting").

Chronic constipation usually develops as a result of untreated acute constipation, which most often occurs as a result of changes in daily routine, environment or nutrition, painful defecation due to rectal injuries, etc.

Painful defecation leads to the subsequent retention of stool with further hardening of stool in the intestines, which damages the mucosa when moving through the gut and thus creating a vicious cycle effect.

The intervals between bowel movements can often be up to 10 days. Chronic habitual constipation is accompanied by recurrent abdominal pain, bloating, loss of appetite and defecation pain.

The treatment first involves the emptying of the retained stool and then promotion of regular defecation. Ointments are used to treat anal fissures. In certain cases, the emptying of the stool could even require sedation. This is followed by training of the defecation reflex, adjustment of the diet (sufficient residual diet, sufficient fluid intake), and pharmacological stool softening (polyethylene glycol, lactulose, bisacodyl).

Simple constipation

- In infants and young children due to impaired neuromuscular mechanisms
- There is no feeling of urgency to defecate, it is usually without much difficulty, for a longer duration there is a feeling of fullness in the abdomen
- Therapy - especially dietary measures
  - Adding meat and fiber to the diet
  - Vegetables and fruits
  - Fluids are encouraged
  - In the case that dietary measures do not help, lactulose (synthetic disaccharide) could be administered - it has a pleasant taste and is not addictive

Spastic constipation

- It is usually associated with abdominal pain
- Pain is caused by spasms and involuntary contractions of the colon
- It is almost always related to emotional factors and is considered one of the forms of irritable bowel syndrome

Psychogenic constipation

- Usually begins in the third and fourth year of life (at the time of development of the mechanisms of defecation and continence)
- Free retention could be present

- Constipation deteriorates when attempting to defecat, which could be painful with spasms of the anal sphincter
- Diagnosis - it is necessary to distinguish Hirschprung's disease (it is typical to suffer from constipation since birth, with bloated abdomen and failure to thrive)
  - In the case of Hirschprung's disease, there is rarely accumulation of stools in the rectum
- Therapy - it is necessary to explain and provide the necessary information to the parents/guardian, in order that they are well informed of the child's condition
  - The goal of the treatment is to empty the rectum and keep it empty, keep the stools soft with promotion of regular emptying (once in one to two days)
  - Precondition for success is emptying with rectum - enema or paraffin oil (it is not suitable to combine it with other laxatives)
  - Consultation with a psychologist could be of help if necessary

Source

- ws:Zácpa (pediatrie)

Reference

1. VOLF, Vladimír. Zácpa u dětí. *Pediatrie pro praxi* [online]. 2012, roč. 13, vol. 5, s. 322-324, dostupné také z <www.pediatriepropraxi.cz>. ISSN 1213-0494.
2. Cavalho RS, Michail SK Ashai-Khan F, et al. An updated in pediatric gastroenterology and nutrition: a review of some recent advances. Curr Prob Pediatr Adolesc Health Care 2008; 38: 197-234.
3. Skočit nahoru k:a b Nelson texbook of Pediatrics, 19th Edition, Kliegman R, et al, Elsevier, 2011.
4. Hoffenberg EJ, Rothenberg SS, Bensard D. Outcome after exploratory laparoscopy for unexplained abdominal pain in childhood. Arch Pediatr Adolesc Med 1997; 151: 991-993.
5. ↑ Hyams JS, Hyman PE. Recurrent abdominal pain and the biopsychosocial model of medical practise. J Pediatr 1998; 133: 473.
6. Plánka L, Tůma J, Rak V, a kol. Výsledky elektivní laparoskopické apendektomie u nejasných bolestí břicha v pravém podbřišku. Rozhl. Chir 2006; 85: 7: 343-346.
7. Sartor RB. Cytokines in intestina inflammation: Pathophysiological and clinical considerations. Gastroenterology 2000; 106: 533
8. MUNTAU, Ania Carolina. *Pediatrie.* 4. vydání. Praha : Grada, 2009. s. 385. ISBN 978-80-247-2525-3.
9. Skočit nahoru k:a b c BENEŠ, Jiří. *Studijní materiály* [online]. [cit. 13.02.2010]. <http://jirben.wz.cz>.

Literature

- HRODEK, Otto a Jan VAVŘINEC, et al. *Pediatrie.* 1. vydání. Praha : Galén, 2002. ISBN 80-7262-178-5.
- ŠAŠINKA, Miroslav, Tibor ŠAGÁT a László KOVÁCS, et al. *Pediatria.* 2. vydání. Bratislava : Herba, 2007. ISBN 978-80-89171-49-1.