

**Education-Family Physician Corner****Constipation in Children**

Amani Al Hajeri, MD, CABFM, IBFM, MSc MG\*

Constipation in pediatrics age group is frequently encountered in primary health care. It can affect up to 10% of all children at any given time. However, only about 3% of parents seek doctors' advice for this problem<sup>1</sup>. In most cases, the problem is functional and short-lived. Nevertheless, family physicians should always be alerted to the red flags pointing out to more serious pathological abnormalities. Constipation can be defined as reduced frequency of defecation, passing hard or dry stool or painful defecation. The problem might be very distressing to both parents and children.

In this article the causes of constipation in infants and children will be reviewed, as well as provide a guide for management at the level of primary care.

**Causes of Constipation****Neonatal Period**

In neonates, organic causes are the commonest such as Hirschsprung's disease, congenital anorectal malformations, neurologic disorders, encephalopathy and spinal cord abnormalities. The neonate may present with failure to pass meconium in the first 48 hours of life<sup>2</sup>.

**Infancy**

Hirschsprung's disease can be missed in the neonatal period and the infant can present with abdominal distention, bile stained vomitus, failure to thrive and passing thin streaks of stool. On examination, the rectum is classically empty. If the disease is missed at this stage, it can progress to severe enterocolitis, bloody diarrhea and fever<sup>2</sup>.

The second commonest pathological cause is hypothyroidism. In addition to constipation, the infant might present with failure to thrive. On examination, bradycardia, hypotonia, hoarse cry, umbilical hernia, low body temperature and large fontanelles could be found. Although rare in our region, constipation accompanied with recurrent pneumonia, rashes and failure to thrive should alert the physician to cystic fibrosis.

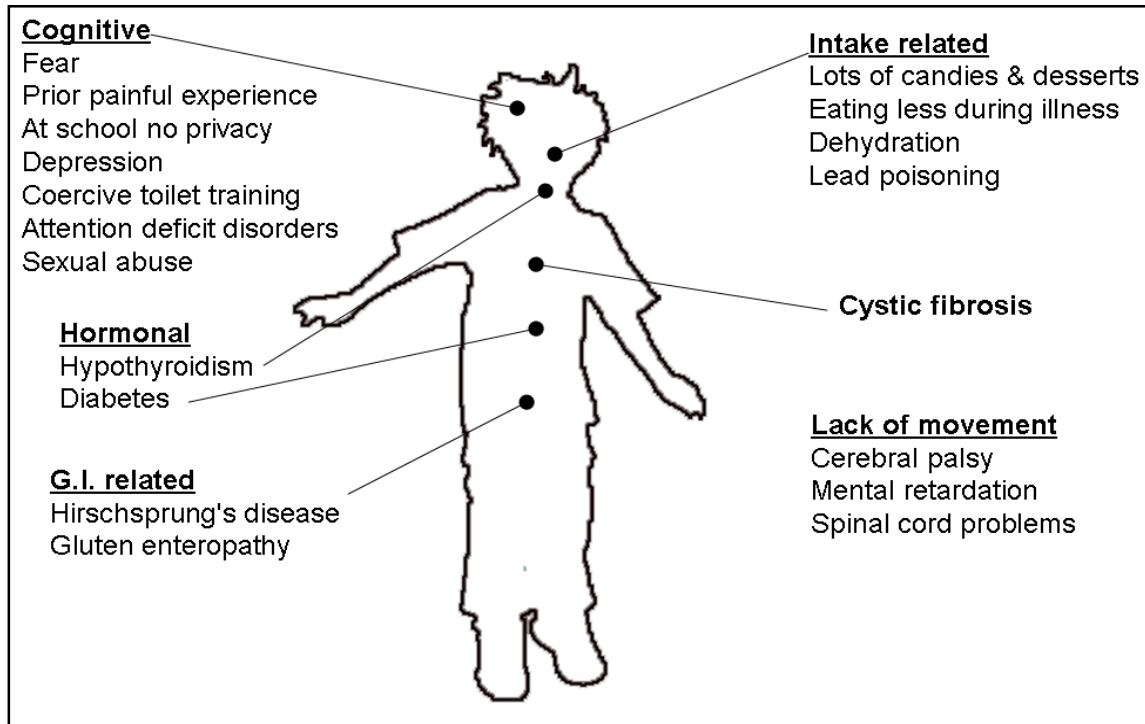
**Childhood**

In children, 95% of cases are due to a functional rather than organic problems<sup>2</sup>. These can be listed under cognitive factors resulting from the child's own behavior. In children older than 18 months, their activities during playing time might distract them from having a break to

---

\* Primary Care Consultant and Consultant Clinical Geneticist  
Genetic Department  
Salmaniya Medical Complex  
Kingdom of Bahrain  
Email: alhajeriamani@gmail.com

defecate. Older children might fear the process of passing stool especially when they are unintentionally intimidated by their parents' coercive toilet training. Occasionally they might think that stool is part of their bodies, which is flushed away into the horrible toilet. When children go to school, they might find the bathrooms dirty or might feel shy. Children with attention deficit disorder, depression and autism might develop constipation, which could be related to the drugs they take, such as, opiates, phenobarbital and tricyclic antidepressants. One should not miss sexual abuse especially when accompanied with suggestive behavioral signs, see figure 1.



**Figure 1: Causes of Constipation in Children**

Organic causes in children are uncommon such as short-segment Hirschsprung's disease. Hormonal causes of constipation include hypercalcemia, hypothyroidism and rarely diabetes mellitus and diabetes insipidus. Other GI related causes include gluten enteropathy/coeliac disease, cystic fibrosis, faulty dietary habits (many candies), reduced food intake because of chronic illnesses and lead toxicity, see figure 1.

### **History Taking and Physical Examination**

It is very important to take detailed history of the infant/child in order to narrow the differential diagnosis taking into consideration that functional constipation in children above one year is the commonest, see table 1. Physical examination comes next with great emphasis on signs suggestive of organic causes, see table 2.

**Table 1: Points to Ask the Parents of a Child Suffering from Functional Constipation<sup>2</sup>**

Did the child pass meconium within the first 48 hours of birth?	Is there blood mixed with stool?
Is the stool of a large or small caliber	Any anal fissures?
Is the stool hard or soft?	Is there occasional abdominal pain?
Is there fecal soiling?	How is the child appetite?
Is there pain during defecating?	What is the type of food the child takes?
Does the child try to withhold stool?	Does the child avoid the toilet?

**Table 2: Points to Look for during Examining a Child Suffering from Functional Constipation<sup>2</sup>**

Mild abdominal distention	Normal anal sphincter tone
Palpable fecal mass felt in left lower quadrant	Rectum full of stool
Normal anal opening	Positive anal wink
	Cremasteric reflex

### Investigations

At the level of primary health care and in the absence of any alarming signs, no further investigations are recommended to confirm the diagnosis of functional constipation. However, if in doubt or if it is difficult to examine the child for fecal impaction a plain radiograph for the abdomen may clearly display fecal impaction<sup>3</sup>. Laboratory investigations should be reserved for patients suspected of having underlying condition<sup>4</sup>. Anorectal manometry can be useful to diagnose Hirschsprung's disease<sup>4</sup>.

### Management

It is expected that around 60% of children diagnosed with functional constipation will be free from the condition after 6 to 12 months<sup>5</sup>. Prompt management will hasten the time needed for resolution. The management plan starts with disimpacting the rectum and then getting the child used to a regular bowel movement.

Disimpaction is achieved by using the different types of enemas, rectal suppositories and oral agents, see table 3 and table 4.

**Table 3: Medications Used for Disimpaction in Children with Functional Constipation<sup>2</sup>**

Medications	Notes
<b>&lt; 1 year</b>	
Glycerin suppositories	No side effects
Enema*: 6 ml per kg	
<b>&gt;1 year</b>	
Enemas*: 6 ml per kg every 12 to 24 hours one to three times	Risk of mechanical trauma
Combination treatment: enema, suppository and oral laxative	
Slower disimpaction	
Oral high-dose mineral oil: 15 to 30 ml per year of child's age per day for three or four days	Risk of lipoid pneumonia Give chilled
Oral senna: 15 ml every 12 hours for three doses	Abdominal cramping May not see output until dose two or three

Oral magnesium citrate: 30 ml per year of child's age per day for two or three days	Hypermagnesemia
Maintenance medications (see Table 5)	Maintenance medications also may be used for disimpaction
Mineral oil	Lubricates hard impaction For large impaction, administer a normal saline or phosphate enema one to three hours after the mineral oil enema.
Normal saline	Abdominal cramping May not be as effective as hypertonic phosphate enema
Hypertonic phosphate	Abdominal cramping Risk of hyperphosphatemia, hypokalemia and hypocalcemia, especially in children with Hirschsprung's disease or renal insufficiency. Some experts do not recommend phosphate enemas for children younger than 4 years; others do not recommend the enemas for children younger than 2 years
Milk and molasses (1:1)	Used for impactions that are difficult to clear

\* For types of enemas, please see table 4

**Table 4: Types of Enemas Used for Disimpaction<sup>2</sup>**

Mineral oil	May not work Lubricates hard impaction For large impaction, administer a normal saline or phosphate enema one to three hours after the mineral oil enema
Normal saline	Abdominal cramping May not be as effective as hypertonic phosphate enema
Hypertonic phosphate	Abdominal cramping Same as mentioned in table 3

After the disimpaction is accomplished, a maintenance medication is necessary. Usually one medication of the listed in table 5 is sufficient to maintain a reasonable daily motion.

**Table 5: Maintenance Medications for Use after Disimpaction in Children with Functional Constipation<sup>2</sup>**

Medications	Notes
Oral administration	
Lubricant	Softens stool and eases passage
Mineral oil: 1 to 3 ml per kg per day, given once daily or in divided doses, twice daily	Chill or give with juice Risk of lipoid pneumonia Adherence problems Leakage may occur if dose is too high or impaction is present
Osmotic laxatives	Retain water in stool, which adds bulk and softness
Lactulose (concentration: 10 g per 15 ml): 1 to 3 ml per kg per day given in divided doses twice daily	Abdominal cramping, flatus Lactulose is a synthetic disaccharide
Magnesium hydroxide (concentration: 400 mg per	With overdose or renal insufficiency: risk of

5 ml): 1 to 3 ml per kg per day given in divided doses twice daily Magnesium hydroxide (concentration: 800 mg per 5 ml): 0.5 ml per kg per day given in divided doses twice daily	hypermagnesemia, hypophosphatemia or secondary hypocalcemia
Polyethylene glycol powder (17g per 240 ml of water or juice): 1g per kg per day given in divided doses, twice daily. (approximately 15 ml per kg per day)	Titrate dosage at three-day intervals to achieve mushy stool consistency Solution may be prepared in advance for administration over one to two days Excellent adherence
Sorbitol: 1 to 3 ml per kg per day given in divided doses twice daily	Less costly than lactulose
Stimulants	Short-term use only; improves effectiveness of colonic and rectal muscle contractions
Senna syrup (8.8 g sennoside per 5 ml) Age two to six years: 2.5 to 7.5 ml per day given in divided doses twice daily. Age six to 12 years: 5 to 15 ml per day given in divided doses twice daily.	Risk of idiosyncratic hepatitis, melanosis coli, hypertrophic osteoarthropathy, analgesic nephropathy, abdominal cramping Melanosis coli improve after medication is stopped Tablets and granules are available
Bisacodyl (5-mg tablets): one to three tablets given once or twice daily	Abdominal cramping, diarrhea, hypokalemia
Rectal administration	
Glycerine suppository	No side effects
Bisacodyl suppository (10 mg): one-half to one suppository administered once or twice daily	Abdominal cramping, diarrhea, hypokalemia

### Explanation for Parents

Parents' education about the nature of the problem is of paramount importance. Understanding the pathophysiology behind the constipation and how is the child's behavior get him/her into a vicious cycle will help in dissipating the child's fears. Needless to say, dietary advice to increase fibers proportion in the child's meal is very helpful<sup>6</sup>.

### CONCLUSION

**In summary, functional constipation is not rare and can be diagnosed by taking a thorough history and physical examination. A balanced diet, which contains enough fibers found in whole grains, fruits and vegetables, is an essential part of the treatment plan for constipation. So does the behavioral modification which should decrease the time needed for remission in children with functional constipation<sup>7</sup>.**

**Potential Conflicts of Interest:** No

**Competing Interest:** None, **Sponsorship:** None

**Submission date:** 25 October 2011 **Acceptance date:** 2 November 2011.

### REFERENCES

1. Ferry RJ Jr. Constipation in Children. [http://www.emedicinehealth.com/constipation\\_in\\_children/article\\_em.htm](http://www.emedicinehealth.com/constipation_in_children/article_em.htm). Accessed on 16.10.2011.
2. Biggs WS, Dery WH. Evaluation and Treatment of Constipation in Infants and Children. *Am Fam Physician* 2006; 73(3): 469-77.

3. Reuchlin-Vroklage LM, Bierma-Zeinstra S, Benninga MA, et al. Diagnostic Value of Abdominal Radiography in Constipated Children: A Systematic Review. *Arch Pediatr Adolesc Med* 2005; 159(7): 671-8.
4. Borowitz S. Pediatric Constipation. <http://emedicine.medscape.com/article/928185-overview>. Accessed on 23.10.2011.
5. Pijpers MA, Bongers ME, Benninga MA, et al. Functional Constipation in Children: A Systematic Review on Prognosis and Predictive Factors. *J Pediatr Gastroenterol Nutr* 2010; 50(3): 256-68.
6. Borowitz SM, Cox DJ, Sutphen JL, et al. Treatment of Childhood Encopresis: A Randomized Trial Comparing Three Treatment Protocols. *J Ped Gastroenterol Nutr* 2002; 34(4): 378-84.
7. AHRQ. Evaluation and Treatment of Constipation in Infants and Children: Recommendations of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition. <http://www.ngc.gov/content.aspx?id=9792>. Accessed on 25.10.2011.