Constipation in Childhood: The Back(ed) Up Plan

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Educational Day 9/9/2020
Constipation
What’s the normal amount of go?

<table>
<thead>
<tr>
<th>AGE</th>
<th>MEAN NUMBER OF BOWEL MOVEMENTS PER WEEK</th>
<th>MEAN NUMBER OF BOWEL MOVEMENTS PER DAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 3 months:</td>
<td>5 to 40</td>
<td>2.9</td>
</tr>
<tr>
<td>breastfed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 to 3 months:</td>
<td>5 to 28</td>
<td>2.0</td>
</tr>
<tr>
<td>formula-fed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 to 12 months</td>
<td>5 to 28</td>
<td>1.8</td>
</tr>
<tr>
<td>1 to 3 years</td>
<td>4 to 21</td>
<td>1.4</td>
</tr>
<tr>
<td>&gt; 3 years</td>
<td>3 to 14</td>
<td>1.0</td>
</tr>
</tbody>
</table>
Definitions

- **Constipation**
  - A child who passes infrequent stools (2 or less per week), has pain with defecation, or large caliber stools that require excessive straining.
  - "A delay or difficulty in defecation present for 2+ weeks that is sufficient to cause distress to a patient."

**Rome IV criteria for the diagnosis of functional constipation in children**

<table>
<thead>
<tr>
<th>Infants and toddlers up to 4 years old</th>
<th>Children and adolescents (developmental age ≥4 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>At least 2 of the following present for at least 1 month:</td>
<td>At least 2 of the following present at least once per week for at least 1 month:*</td>
</tr>
<tr>
<td>2 or fewer defecations per week</td>
<td>2 or fewer defecations in the toilet per week</td>
</tr>
<tr>
<td>History of excessive stool retention</td>
<td>At least 1 episode of fecal incontinence per week</td>
</tr>
<tr>
<td>History of painful or hard bowel movements</td>
<td>History of retentive posturing or excessive volitional stool retention</td>
</tr>
<tr>
<td>History of large-diameter stools</td>
<td>History of painful or hard bowel movements</td>
</tr>
<tr>
<td>Presence of a large fecal mass in the rectum</td>
<td>Presence of a large fecal mass in the rectum</td>
</tr>
<tr>
<td>In toilet-trained children, the following additional criteria may be used:</td>
<td>History of large-diameter stools that may obstruct the toilet</td>
</tr>
<tr>
<td>At least 1 episode/week of incontinence after the acquisition of toileting skills</td>
<td>The symptoms cannot be fully explained by another medical condition</td>
</tr>
<tr>
<td>History of large-diameter stools that may obstruct the toilet</td>
<td></td>
</tr>
</tbody>
</table>

**Organic Constipation**
- Hirschprung’s, anorectal anomalies, CF, cow’s milk intolerance, hypothyroidism, celiac, intestinal obstruction
- <5% of causes
Definitions Cont.

**Recent Onset**
- Symptoms present for 8 weeks or less
- Typically respond to short course of laxatives and behavioral modifications

**Chronic**
- Symptoms present for 3 mo or more
- Typically require longer treatment with laxatives and more intensive interventions behavioral modifications
**Be sure to perform rectal exam to assess for anal wink and evaluate for anal fissures**

### History and Exam

**TABLE 4**  
Findings Consistent with Functional Constipation

<table>
<thead>
<tr>
<th>History</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stool passed within 48 hours of birth</td>
</tr>
<tr>
<td>Extremely hard stools, large-caliber stools</td>
</tr>
<tr>
<td>Fecal soiling (encopresis)</td>
</tr>
<tr>
<td>Pain or discomfort with stool passage; withholding of stool</td>
</tr>
<tr>
<td>Blood on stools; perianal fissures</td>
</tr>
<tr>
<td>Decreased appetite, waxing and waning of abdominal pain with stool passage</td>
</tr>
<tr>
<td>Diet low in fiber or fluids, high in dairy products</td>
</tr>
<tr>
<td>Hiding while defecating before toilet training is completed; avoiding the toilet</td>
</tr>
</tbody>
</table>

**Physical examination**

<table>
<thead>
<tr>
<th>Mild abdominal distention; palpable stool in left lower quadrant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal placement of anus; normal anal sphincter tone</td>
</tr>
<tr>
<td>Rectum packed with stool; rectum distended</td>
</tr>
<tr>
<td>Presence of anal wink and cremasteric reflex</td>
</tr>
</tbody>
</table>
# Evaluating for Red Flag Sxs

## TABLE 2

### Warning Signs for Organic Causes of Constipation in Infants and Children

<table>
<thead>
<tr>
<th>WARNING SIGNS OR SYMPTOMS</th>
<th>SUGGESTED DIAGNOSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passage of meconium more than 48 hours after delivery, small-caliber stools, failure to thrive, fever, bloody diarrhea, bilious vomiting, tight anal sphincter, and empty rectum with palpable abdominal fecal mass</td>
<td>Hirschsprung’s disease</td>
</tr>
<tr>
<td>Abdominal distention, bilious vomiting, ileus</td>
<td>Pseudo-obstruction</td>
</tr>
<tr>
<td>Decrease in lower extremity reflexes or muscular tone, absence of anal wink, presence of pilonidal dimple or hair tuft</td>
<td>Spinal cord abnormalities: tethered cord, spinal cord tumor, myelomeningocele</td>
</tr>
<tr>
<td>Fatigue, cold intolerance, bradycardia, poor growth</td>
<td>Hypothyroidism</td>
</tr>
<tr>
<td>Polyuria, polydipsia</td>
<td>Diabetes insipidus</td>
</tr>
<tr>
<td>Diarrhea, rash, failure to thrive, fever, recurrent pneumonia</td>
<td>Cystic fibrosis</td>
</tr>
<tr>
<td>Diarrhea after wheat is introduced into diet</td>
<td>Gluten enteropathy</td>
</tr>
<tr>
<td>Abnormal position or appearance of anus on physical examination</td>
<td>Congenital anorectal malformations: imperforate anus, anal stenosis, anteriorly displaced anus</td>
</tr>
</tbody>
</table>

Differential Diagnosis

- Functional
  - Infantile dyschezia
  - Dietary changes

- Organic
  - Hirschsprung disease
  - Slow transit constipation
  - Cow’s milk intolerance
  - Anorectal anomalies

- Cystic fibrosis
- Celiac disease

- Other causes
  - Dyssynergic defecation
  - Lead poisoning
  - Botulism
  - Internal anal sphincter achalasia
  - Chronic intestinal pseudo-obstruction
Imaging

- No imaging needed if fecal impaction noted on exam
- Can consider abdominal radiography is rectal exam not possible or too traumatic for child
- CT not indicated
- If Hirschsprung’s is suspected, anal manometry is useful
Management of infants <6 mo

Constipation
   History, physical examination, occult blood testing
   Delayed passage of meconium (more than 48 hours after birth)?
     Yes
     Red flags? (Table 3)
     Yes
     Referral for evaluation of possible organic etiologies (e.g., Hirschsprung disease, cystic fibrosis)
     No
     Exclusively breastfed (older than two weeks)?
       Yes
       Most likely normal
       Functional constipation
       Treatment: Education and diet modification (e.g., fruit juice, such as prune; increased fluids; verification of formula preparation)
       Effective?
       Yes
       Maintenance therapy
       No
       Medication: Lactulose, sorbitol, polyethylene glycol solutions (Miralax), occasional glycerin suppository
       Effective?
       Yes
       Maintenance therapy
       No
       If therapy fails despite good adherence and education, refer for further evaluation
Management of infants >6 mo
Management of Recent-onset constipation for infants <1 year

- Infants who have not begun solid foods: indigestible, osmotically active carbs to the formula
  - Sorbitol containing juices (apple, pear, prune)
- Infants >4 mo: 2-4 oz of 100% fruit juice
- Infants <4 mo: 1-2 oz diluted prune juice
- Alternative: lactulose (1 mL/kg qday) added to formula
- Follow up Counseling: avoid excessive juice intake after episode ceases
- Infants who have begun solid foods: sorbitol containing fruit purees, substitution of rice cereal for multigrain or barley cereal, substitution of other pureed veggies or fruits for pureed peas or prunes
- Glycerin suppositories
Management of recent onset constipation in children >1 year

- Provide parental education, age-appropriate toileting advice, and possibly laxative therapy depending on severity of symptoms
- +hard stool, +straining, -pain, -withholding: dietary changes
- +withholding, +pain, +rectal bleeding, +anal fissure: miralax (dose: 0.4 g/kg/day) w/ or w/o electrolytes
  - +fecal impaction, can uptitrate to 1-1.5 g/kg/day for maximum of 6 consecutive days
- Safe alternatives: milk of magnesia or lactulose
- Treat anal fissures with petroleum jelly
Next Steps

Recent-onset functional constipation (eg, ≤8 weeks of symptoms) and no alarm symptoms or signs

Provide parental education, age-appropriate toileting advice, and laxatives

Clinical follow-up in 2 to 3 months, review symptoms and adherence to toileting plans and laxatives

Symptoms improve
- Reinforce toileting plans
- Wean laxatives
- Follow clinically for recurrence

Little or no improvement in symptoms
- Adherence to toileting plans and laxatives?
  - Yes
    - Continue and reinforce importance of adhering to toileting plan and laxatives
    - Adjust laxative doses if needed
  - No
    - Identify obstacles to adherence to toileting plans and laxatives
    - Reinforce plans to achieve adherence if possible
    - Refer for behavioral support if appropriate
    - Provide closer follow-up (eg, monthly visits)

Symptoms improve within 6 months
- Follow clinically every 2 to 3 months
- Review and reinforce toileting plans
- Gradually wean laxatives
- Follow clinically for recurrence

Symptoms continue for ≥6 months
- Chronic functional constipation
  - If possible, refer to a pediatric gastroenterologist for further evaluation and management
  - Refer for behavioral support if psychosocial stressors or problems with adherence are suspected
  - Consider radiopaque marker study to evaluate for slow-transit constipation

Δ
Counseling

- Understanding contributing factors
  - Introduction of cow’s milk
  - Introduction of solid foods
  - Painful Defecation
  - Toilet Training
  - Predisposing conditions: ASD, ADHD
  - School Entry
Non response or relapse in infants <1 year old

- Repeat same dietary interventions

- No response → consider fecal impaction
  - Glycerin suppositories or rectal stimulation
    - Not to be used as mainstay; possible to become behaviorally conditioned

- Enemas not recommended for infants

- Infants >6 mo: can use miralax, lactulose, or sorbitol given daily titrated to at least one soft stool per day
Nonresponse or relapse in toddlers and children >1 yo

- Identify and address continuing dietary problems and precipitating events
- Painful defecation 2/2 anal fissure, fear of bathroom use at school, inadequate or premature weaning of laxatives, inadequate time to use the bathroom after meals or at school

Management:

- Optimized dietary fiber intake
- Ideal fiber intake = age + 5 - 10 grams/day
- Can start fiber supplements (psyllium, wheat dextrin, or methylcellulose) + 32-64 oz of water or non-milk liquids/day
- AVOID excessive fiber intake in patients who exhibit withholding behaviors
- Laxatives
- Maintenance regimen may be considered
- Disimpaction
- Treat with higher dose of oral laxatives or consider sodium phosphate enema
- Repeat enemas not recommended

<table>
<thead>
<tr>
<th>Vegetables</th>
<th>Serving size</th>
<th>Total fiber (grams)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raspberries</td>
<td>1 cup</td>
<td>8.0</td>
</tr>
<tr>
<td>Pear</td>
<td>1 medium</td>
<td>5.5</td>
</tr>
<tr>
<td>Apple, with skin</td>
<td>1 medium</td>
<td>4.5</td>
</tr>
<tr>
<td>Banana</td>
<td>1 medium</td>
<td>3.0</td>
</tr>
<tr>
<td>Orange</td>
<td>1 medium</td>
<td>3.0</td>
</tr>
<tr>
<td>Strawberries</td>
<td>1 cup</td>
<td>3.0</td>
</tr>
<tr>
<td>Carrot, raw</td>
<td>1 medium</td>
<td>1.5</td>
</tr>
</tbody>
</table>
Case #1

5 week old ex-FT M presenting to same day clinic for constipation. Last BM 2d ago, soft and dark green in color. Feeding q2h w/ 3oz breastmilk topped off with formula (Similac Pro). Denies emesis. Endorses passing of gas but that he looks uncomfortable attempting to pass it, often with grimacing and crying and lasting >10 min. Denies h/o bloody bowel movements. Activity level otherwise normal. Denies f/c, diarrhea, sick contacts. UTD vaccines. No fam hx of CF, Hirschsprung. Passed meconium within 24 HOL.

PMH: Denies, though per chart review pelviectasis noted on prenatal US

PSh: Denies

Allergies: Denies

Med: Denies
Physical Exam

Temperature Skin  36.5 DegC
Heart Rate  184 bpm  HI
Respiratory Rate  28 br/min
Blood Pressure Time  17:55

*HR 144 on repeat check*

General: Alert, appropriate for age, no acute distress, looking around, cries intermittently but consolable.
Skin: Warm, dry, pink.
Head: Normocephalic, atraumatic, anterior fontanelle soft and flat.
Neck: Trachea midline.
Eye: Extraocular movements are intact, normal conjunctiva.
Ears, nose, mouth and throat: Oral mucosa moist.
Cardiovascular: Regular rate and rhythm, No murmur, Normal peripheral perfusion, No edema.
Respiratory: Lungs are clear to auscultation, respirations are non-labored, breath sounds are equal.
Chest wall: No deformity.
Back: No step-offs, no sacral dimples.
Musculoskeletal: No deformity, tone appropriate.
Gastrointestinal: Soft, Nontender, Non distended, Normal bowel sounds, no palpable mass.
Genitourinary: Normal genitalia for age, patent anus, +anal wink, no anal fissures noted.
Neurological: No focal neurological deficit observed.
Assessment and Plan

Infantile Dyschezia w/ possible component of recent dietary changes leading to changes in bowel regularity.

-  Counseled and provided reassurance
-  Encouraged leg bicycling and tummy massage
-  Can consider dropper feeding small amount of prune juice vs glycerin chip should symptoms persist
Infantile Dyschezia

- Ineffective defecation
- Failure of the pelvic floor to relax +/- inadequate abdominal muscle tone
- At least 10 min of straining before successful defecation in an otherwise healthy infant <9 mo
- Important to distinguish from painful defecation
  - Ask about hard stools!
Case #2

6 yo M w/ h/o severe constipation, followed by GI, presenting with worsening constipation and abdominal pain. Previously admitted for bowel clean out 8/31/2019-9/1/2019 and 2/20/20-2/21/20. Barium enema study 10/1/19 with tortuous, redundant sigmoid colon. Scheduled for anal manometry to eval for Hirschsprung’s. Per mom, patient w/ worsening abdominal pain x2 weeks. Worse with meals. Last stool was this AM but was small, green and hard. Compliant with daily bowel regimen including miralax, chocolate sennas, fiber cookie. Mom had tried home clean out with 7 caps miralax and two large bottles blue gatorade without success. Endorses patient eats high fiber diet, mostly fruits and veggies, and drinks ginger ale. No juice. No emesis, RLQ pain, fevers, testicular pain. Endorses umbilical pain that does not radiate, 3/10.
Physical Exam

Vitals & Measurements

Temp 36.2 DegC, HR 79 bpm, RR 24 br/min, SBP 109 mmHg, DBP 64 mmHg, MAP 79 mmHg
BMI Percentile: 49.69 (10/04/19 13:58:00)
Constitutional: Awake, alert, interactive, no apparent distress, walking around the room, talkative
HEENT: Head is atraumatic / normocephalic, no rhinorrhea, moist mucous membranes, posterior oropharynx clear without erythema or exudate.
Neck: Supple.
Cardiovascular: RRR, S1 S2, no murmurs / rubs / gallops. Brisk capillary refill. Pulses strong and symmetric.
Pulmonary: Lungs CTAB, no respiratory distress / wheezing. No cough.
Abdomen: Bowel sounds present. Soft, nontender, nondistended, no organomegaly or masses by palpation.
Genitourinary: Tanner 1 male genitalia, b/l descended testes, b/l cremasteric reflex intact, no testicular swelling/erythema/TTP
Skin: No apparent rashes or lesions.
Musculoskeletal: No peripheral edema.
Lymph: No apparent lymphadenopathy.
Assessment and Plan

The initial plan

- Obtain KUB
- Consider admission for bowel clean out

What actually happened

- Plan to trial daily clean out with 7 caps miralax, senna BID, lactulose, fiber cookie
- Liquid diet as tolerated with chicken broth and orange jello (no red or green foods)
- F/u phone visit Monday
Per chart review....

- Phone visit follow up 8/18 with improved abdominal pain and distention though no BM yet; upon further discussion weren’t following home clean out regimen as prescribed given difficulty

- Patient represented to the ED with worsening symptoms 8/20 and...
CLINICAL HISTORY:
6 y/o M - Other (please specify), Nasogastric / Orogastric tube line placement. Admitted for bowel cleanout.

IMPRESSIONS:
1. The NG tube terminates in the mid gastric body, and its port is just below the GE junction, please advance by 2 cm to position the port well within the gastric fundus.
2. Stool is seen almost throughout the colonic segments. No evidence of rectal impaction.
3. No discrete mass or organomegaly. No evidence of bowel obstruction or free air on this supine exam.
4. The lung bases are clear. No acute osseous findings.


