Managing Defecation Disorders in Children

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Educational Needs
Constipation is a common complaint in clinical practice. Constipation in pediatric patients often is complicated by behavioral issues, communication difficulties, and parental involvement. Diagnostic criteria vary, and conventional therapies often pose challenges related to patient acceptance and tolerability. Better appreciation of the complicating factors can aid physicians’ clinical decision-making related to diagnosis, evaluation, and treatment of constipation and enuresis.

Learning Objectives
After reading the material in this educational publication, participants should be able to:
• Appreciate the limitations of current diagnostic criteria for constipation and encopresis, particularly infant dyschezia.
• Recognize the treatment options for childhood constipation.
• Recognize features of functional defecation disorders in children.
• Evaluate the safety and efficacy of polyethylene glycol (PEG) 3350 in comparison to other therapies for constipation.
• Understand the potential of PEG 3350 as an option for bowel cleansing prior to colonoscopy.

Accreditation
This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of Excerpta Medica, Inc., and Internal Medicine News. Excerpta Medica is accredited by the ACCME to provide continuing medical education for physicians. Excerpta Medica designates this educational activity for a maximum of 1 category 1 credit towards the AMA Physician’s Recognition Award. Each physician should claim only those credits that he/she actually spent in the educational activity.

The American Medical Association has determined that non-U.S. licensed physicians who participate in this activity are eligible for AMA Physician’s Recognition Award category 1 credit.


Target Audience
This activity has been developed for pediatricians and other health care professionals involved in the treatment of constipation in children.

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Dutch investigators led by Dr. Wieger Voskuil showed that reduced-volume or low-dose PEG 3350 leads to greater improvement, compared with lactulose, in constipated children. While questions may be raised regarding the adequacy of the dosage used and the stringency of outcome criteria (symptom improvement vs. symptom resolution), PEG 3350 did succeed in demonstrating superiority, compared with lactulose.

Dr. Dinesh Pashankar reported that PEG 3350 is safe and effective for long-term treatment of constipation in pediatric patients. The agent also had good acceptance among children who were treated with it.

Dr. Jack DiPalma reported on the successful use of PEG 3350 for bowel preparation for adult patients undergoing colonoscopy. The results indicated that PEG 3350 offers a safe, effective, and well-tolerated alternative to other available colon-cleansing methods.

Current literature on management of functional defecation disorders in children is reviewed in detail by Dr. Samuel Nurko. The presentation offers a useful summation of available data on the related issues, which include both diagnostic and therapeutic challenges.

Two different studies reported at a recent medical meeting provided new data on the safety, efficacy, and tolerability of PEG 3350 in the management of constipation in pediatric patients.

Collectively, these presentations provide an overview of current issues and strategies involved in the management of constipation and related conditions. Data recently reported show that PEG 3350 is an effective treatment for constipation and encopresis, more palatable than many of the other available treatment options, and safe for long-term use.

While our treatment options for constipation and encopresis are varied, very few of these approaches seem to be completely effective. The introduction of PEG 3350 provides us with an easily administrated as well as safe and effective medication for the treatment of these patients.

“Conventional treatment options are varied, but few seem to be completely effective.”

Constitution and encopresis are recurrent problems in pediatrics. Patients with these conditions may present with acute or chronic abdominal pain or with soiling. These patients also may be among those who frequently visit the practitioner’s office. Therefore, when presented with a patient who has abdominal pain, the clinician should inquire about stool consistency and frequency. In addition, when faced with a patient who has chronic diarrhea, the clinician should also rule out the possibility of encopresis from an impaction.

Treatment of these patients with constipation or encopresis has varied from the use of fiber to stimulant laxatives. Pediatricians prefer to use stool softeners with a good safety profile. This review will address these issues regarding therapy in this patient population. The presentations in this publication reflect ongoing efforts to refine the definitions and improve the treatment for constipation, encopresis, and related conditions. The content represents the opinion of experts in pediatrics who have much experience related to these important clinical conditions and includes results from new clinical studies.

Dr. Warren Bishop reviews key elements of the differential diagnosis of constipation in children and the current treatment options. Dr. Bishop participated in one of the pivotal studies of polyethylene glycol (PEG) 3350, and he expresses his support for use of the agent in the management of constipation in pediatric patients. He also addresses the need for precise and stringent criteria for diagnosis of infant dyschezia and functional constipation in infants and toddlers.

PEG 3350 had better acceptance among pediatric patients when compared to milk of magnesia in a randomized clinical study. Dr. Vera Loening-Baucke reported that the two therapies led to similar improvement in constipation and encopresis. Nevertheless, it was shown that PEG 3350 is associated with better patient acceptance, which is a prominent issue in the treatment of children.
Infant Dyschezia and Functional Constipation in Infants and Toddlers

Warren P. Bishop, MD

Infant dyschezia is manifested by straining and fussing associated with the passage of otherwise unremarkable soft stools. Very little is known about the causes and natural history of infant dyschezia, although it is believed that it tends to resolve as the infant matures.

The etiology of infant dyschezia has not been well studied. One theory is that the condition is related to poor coordination of defecation events, such as clenching along with straining or failure to bring the knees up into proper position for defecation. The features that differentiate this condition from true constipation are the eventual successful passage of stool with normal frequency and absence of large, hard, or scalybulous stools. Infants who fuss and strain but who nevertheless defecate normally may not benefit from stool softeners or other therapies. Most pediatricians advise against overtreatment and discouragement of invasive measures, such as suppositories and enemas.

The Rome II criteria define infant dyschezia as at least 10 minutes of crying and straining before successful passage of soft stools in an otherwise healthy infant younger than 6 months of age (Gut. 1998;41:1060-1068). One problem with this definition is that straining with a bowel movement is, in many ways, completely normal. It may be difficult for parents to watch their little baby turning red and grunting with defecation, so even normal passage of stool can lead to great concern. The key to differentiating normal straining from infant dyschezia is the prolonged nature of the straining and the fussing or crying that accompany the straining. Additionally, the child passes a soft stool, which is not typical of constipation. Some infants may exhibit this behavior many times throughout the day.

Evaluation Issues

The evaluation of true constipation in infants involves considerations that differ from those that apply to older children. With infants, the physician must be cognizant of the possibility of congenital anomalies. Because the child cannot give any history directly, clinicians must also rely to a great extent on information provided by parents. Dosing of medications must be appropriate to the child’s size. Efficacy and toxicity of individual therapies may differ considerably when used for infants versus older children and adults.

Common causes of neuromuscular function include Hirschsprung’s disease, neuronal intestinal dysplasia, and chronic intestinal pseudo-obstruction. Investigation of these disorders should emphasize the neurologic component of the problem, as opposed to an anatomic problem. The most common presentations of Hirschsprung’s disease is delayed passage of meconium, generally more than 24 hours after birth. Infants with this condition typically pass stools very infrequently, and often only with the help of a suppository or enema. They may become very ill quite quickly due to functional colonic obstruction and subsequent enterocolitis. Evaluations include barium enema, anorectal and colonic manometry, and biopsy.

Structural anomalies causing congenital constipation are usually visible externally and easily identified. The most common abnormalities are anal abnormalities, including anal atresia (with or without a cutaneous fistula), anal stenosis, anteriorly displaced anus in females, and meconium ileus.

Congenital anomalies are far less likely when constipation begins in toddler years, so the evaluation in this age group generally proceeds in a different direction. In many cases, the origin of constipation in toddlers is often cultural change required for toilet training. Children who do not want to sit on a toilet often hold in their feces, resulting in stools that are large, hard, and more painful. Passage of such stools results in pain and deep-seated fear of defeation. In this manner, a vicious cycle is often created, with active avoidance of “pooping” associated with continued passage of large, painful stools.

Need to Disimpact

Treatment begins with disimpaction to relieve symptoms. Enemas offer a quick method of removing retained stool. Solutions include saline, mineral oil, and milk of magnesia. Enemas may be used as often as several times daily until pain and fear of defecation diminish. With continued passage of large, painful stools, a child overcomes the fear of defecation, and treatment is complete.

Milk of magnesia (MOM) has been used for years. Some children like its taste, but most dislike its chalky taste. Chronic MOM therapy poses a risk of hypermagnesemia, especially in children who have renal disorders.

Mineral oil can also be effective, but it has several potential drawbacks. The oil has little taste but because of its consistency, children dislike it. When a child takes a dose sufficient to soften the stool, oil often leaks from the anus, staining clothing and creating an unpleasant wet sensation. Additionally, mineral oil can cause severe pneumonitis if aspirated. Nonabsorbable sugars, such as sorbitol and lactulose, soften stools by their osmotic effect. Both are sweet and can be palatable when diluted in a drink.

Unfortunately, they can be fermented by resident bacteria in the lower bowel and cause symptoms identical to those seen in a lactose-intolerant patient, including flatulence, cramping, diarrhea, and diaper rash. Fiber offers yet another option for stool softening, but it is seldom sufficient by itself in children.

New Option

My personal belief is that polyethylene glycol (PEG), with an average molecular weight of about 3500, is the best therapy currently available to treat constipation in toddlers. PEG is nonabsorbable, biologically inert, nonfermentable, and nontoxic. Although PEG was first marketed in combination with electrolytes, this product does not need to be coadministered with electrolytes for small-volume stool softening. Even with long-term use, no abnormalities of electrolytes or renal function tests have been described.

In one clinical trial, PEG 3350 was administered at a dose of 1 g/kg/day, dissolved in a child’s preferred beverage (J Pediatr. 2001;139:428-432). Parents were allowed to adjust the dose up or down in increments of 25% every 3 days as needed, to arrive at a dose that resulted in two to three soft stools daily. In this study, stool frequency increased from approximately two bowel movements per week at baseline to 15 or 16 per week. Stool consistency was hard at the beginning of the study. With therapy, stools became soft to slightly runny, which was the goal of treatment. Patients with soiling, which occurred an average of 1.5 times weekly before treatment, had almost complete resolution of this problem. All symptoms associated with constipation improved significantly.

In addition, PEG has proved safe and effective in long-term use. Loening-Baucke, et al., compared PEG and MOM for 12 months and found similar efficacy. No patient treated with PEG had clinically significant side effects. Moreover, no patient refused PEG, whereas about one-third of patients refused MOM over the course of the study (J Pediatr Gastroenterol Nutr. 2002;34:372-377).

Additional evidence of long-term safety and efficacy will be found in a paper that my colleagues and I have in press. We evaluated 83 children treated for more than 3 months with PEG and found no evidence of tachyphylaxis, no change in serum electrolytes, and no change in renal function tests (Arch Pediatr Adolesc Med. 2003;157:661-664).
Therapies for Constipation and Encopresis in Children

Vera Loening-Baucke, MD

Children with chronic encopresis benefit from clearing fecal impaction, preventing future impaction, and promoting regular bowel habits. After initial bowel clearing, maintenance includes increased intake of dietary fiber and daily defecation trials. Many patients also begin long-term laxation therapy. Recently, polyethylene glycol (PEG) 3350 has become available for treatment of constipation. A prospective, randomized, controlled clinical study was undertaken to determine the acceptability, efficacy, and optimal dose of PEG 3350 for treatment of chronic childhood constipation and encopresis, compared with milk of magnesia (MOM).

The study involved 29 children aged 4 to 14 years (24 boys, 5 girls). Patients randomized to PEG 3350 without electrolytes began treatment at a dose of 0.7 g/kg/day. Those randomized to MOM therapy started treatment at a dose of 2 mL/kg/day. Either therapy could be mixed with the child’s drink of choice. Patients were instructed to adjust the dose of assigned therapy as necessary to produce one soft bowel movement daily and prevent soiling.

Combination Strategy

Drug therapy was accompanied by behavior modification consisting of mandatory toilet sitting after meals and parent diaries of the child’s bowel movements, soiling episodes, and abdominal pain. Follow-up was at 1, 3, and 6 months, and telephone follow-up was conducted if patients did not return to the clinic.

Clinical parameters assessed at each follow-up were frequency of bowel movements, frequency of soiling, and presence of abdominal pain. Patients were considered to be doing well if they had at least three bowel movements weekly and no more than two soiling episodes monthly, independent of laxative use. Improvement was defined as at least three weekly bowel movements and a 75% reduction in soiling episodes with no more than one soiling episode per week. Less improvement was defined as treatment failure.

At baseline, patients were comparable with respect to history of primary encopresis, frequency of bowel movements and soiling episodes, presence of abdominal pain, and presence of abdominal fecal mass. (Table 1) One child refused PEG 3350, and two others in the PEG 3350 group required senna in addition to assigned therapy during the 6-month treatment period. All three of these patients were counted as treatment failures. In the MOM group, three children refused treatment and two others were switched to PEG 3350 due to relapse. No adverse events occurred in either treatment group.

Side-Effect Differences

At the end of the trial, both therapies significantly increased the frequency of bowel movements to more than eight per week (P<.05, PEG 3350; P<.01, MOM). Frequency of weekly soiling episodes decreased significantly in both groups (P<.01), and the proportion of children reporting abdominal pain decreased to about 20% in the MOM group (P<.03) and 0% in the PEG 3350 group (P<.01). More than half the patients in each group were doing well or had improved at 6 months (P<.01). Significant improvement was evident in both groups at 1-month and was maintained to the end of the study.

MOM has been used successfully for long-term treatment of chronic constipation in children. In this clinical study, PEG 3350 proved to be palatable, well tolerated, and effective for long-term treatment of childhood constipation. Significant improvement occurred in both treatment groups, including significant increases in the frequency of bowel movements and significant decreases in the frequency of soiling and abdominal pain. PEG 3350 should be considered an alternative to MOM for long-term treatment of chronic constipation in children.

Conventional vs. Newer Therapy for the Treatment of Childhood Constipation

Wieger P. Voskuijl, MD

Treatment of childhood constipation consists primarily of laxative therapy. In the Netherlands, lactulose is the laxative of choice for children. Recently, polyethylene glycol (PEG) 3350 has become available as a potential laxative alternative to lactulose. A clinical study was designed to compare PEG 3350 and lactulose.

Trial Design

The study involved 100 patients with constipation who ranged in age from 6 months to 15 years. Patients were randomized to 8 weeks of treatment with either PEG 3350 with electrolytes at a dose of 3.75 g or lactulose at a dose of 6 g. The starting dose of both compounds was 1 sachet daily in patients younger than 6 years and 2 sachets daily in older children. The dose of assigned therapy could be modified, depending on patient response.

The primary outcome parameters were frequency of defecation and encopresis and treatment success after 8 weeks. Success was defined as defecation frequency of more than three bowel movements per week and encopresis frequency of equal to or less than one episode every 2 weeks. Defecation frequency increased significantly in both treatment groups. In bowel movements per week, mean defecation frequency increased from 2.59 to 7.12 in the PEG 3350 group and from 2.75 to 6.43 in the lactulose group (P<.001). Patients in both groups also had significantly fewer episodes of encopresis during 8 weeks of therapy. Encopresis frequency decreased from 9.70 episodes per week to 3.11 in the PEG 3350 group and from 7.73 episodes per week to 2.84 in the lactulose group (P=.002).

The change in defecation and encopresis frequency did not differ between the two treatment groups. However, the rate of treatment success at 8 weeks was significantly higher in the PEG 3350 group, compared with the lactulose group, with rates of 56% and 29%, respectively (P=.01).

Fewer Side Effects

Treatment with PEG 3350 was associated with significantly fewer side effects. Rates of abdominal pain, straining, and pain during defecation were significantly lower in the PEG 3350 group, compared with the lactulose group (P<.05). However, more patients in the PEG 3350 group found the taste of the medication disagreeable than did those in the lactulose group (P<.05).

In conclusion, the results of this randomized clinical study showed that treatment of childhood constipation with PEG 3350 resulted in a significantly higher success rate, compared with lactulose therapy, and significantly fewer side effects. On the basis of these results, PEG 3350 should be considered the laxative of choice for treatment of childhood constipation.

Table 1. Baseline Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>PEG 3350</th>
<th>MOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary encopresis</td>
<td>43%</td>
<td>47%</td>
</tr>
<tr>
<td>Previous treatment</td>
<td>79%</td>
<td>67%</td>
</tr>
<tr>
<td>History of retentive posturing</td>
<td>93%</td>
<td>69%</td>
</tr>
<tr>
<td>Weekly bowel movements</td>
<td>3.7</td>
<td>2.9</td>
</tr>
<tr>
<td>Bowel movements clog toilet</td>
<td>62%</td>
<td>73%</td>
</tr>
<tr>
<td>Weekly soiling episodes</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>86%</td>
<td>67%</td>
</tr>
<tr>
<td>Abdominal fecal mass</td>
<td>50%</td>
<td>67%</td>
</tr>
<tr>
<td>Rectal fecal mass</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Comparison of Two Bowel Preparations Before Colonoscopy
Jack A. DiPalma, MD

The ideal colon-cleansing method for diagnostic and surgical procedures would be rapid, requiring a short period for ingestion and evacuation. It would be thorough, reliably emptying the colon of fecal material. Additionally, the solution would be safe, causing minimal patient discomfort and no significant shifts of electrolytes. Currently available methods of colon cleansing do not meet the criteria of an ideal method.

Osmotically balanced electrolyte lavage solutions (ELSs) provide adequate colon cleansing for diagnostic and surgical procedures with minimal water or electrolyte absorption or excretion. Polyethylene glycol (PEG) ELSs have sodium sulfate, with PEG as the electrochemical gradient and for osmotic effects. A sulfate-free (SF) ELS is an osmotic solution without sodium sulfate, which is the chemical responsible for the “rotten-egg” odor of PEG-ELS. The SF-ELS has a barely perceptible salty taste. Clinical trials have shown that SF-ELS is safe and effective for colonoscopy, barium enema x-ray, and colon surgery.

At the time of evaluation, the mean age of the children was 7.4 years and mean duration of PEG therapy was 8.7 months. There were 21 children taking PEG at an average dose of 0.75 g/kg/day for more than 12 months. Parents were asked about compliance and any adverse effects noted with PEG therapy. Children were asked if they liked the medication and about their preference, compared with other laxatives they used.

All children had blood tests while on PEG 3350 therapy, including a hematocrit and measurement of hemoglobin; serum electrolytes, including sodium, potassium, chloride and carbon dioxide; blood urea nitrogen; serum creatinine; serum osmolality; albumin; aspartate aminotransferase (AST); and alanine aminotransferase (ALT).

Minor Adverse Events
Clinical adverse effects were minor and acceptable with PEG 3350 therapy. Eight patients (10%) reported diarrhea that disappeared with reduction of the dose. Other adverse effects reported were flatulence in five children (6%), abdominal pain in two children (2%), and thirst, fatigue, and nausea in one patient for each symptom (1%). None of the patients stopped treatment due to adverse effects, and all were willing to continue PEG 3350 therapy.

Table 1. Success Rates

<table>
<thead>
<tr>
<th>CLEANSING SCORES</th>
<th>4L SF-ELS</th>
<th>REDUCED-VOLUME 2L SF-ELS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>51.6%</td>
<td>45.2%</td>
</tr>
<tr>
<td>Good</td>
<td>40.9%</td>
<td>41.9%</td>
</tr>
<tr>
<td>Fair</td>
<td>5.4%</td>
<td>10.8%</td>
</tr>
<tr>
<td>Poor</td>
<td>2.1%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Overall success</td>
<td>89.5%</td>
<td>86.2%</td>
</tr>
<tr>
<td>Mean rating</td>
<td>3.4</td>
<td>3.3</td>
</tr>
</tbody>
</table>


Laboratory evaluations including a hematocrit, hemoglobin, serum electrolytes, blood urea nitrogen, serum creatinine, serum albumin and osmolality were normal in all patients. Nine patients (11%) had a slightly elevated ALT level, and three patients (4%) had an elevated AST level (all values, less than 1.5 times normal). On repeat testing, these values were normal in 10 of 11 patients while on PEG 3350 therapy (Arch Pediatr Adolesc Med. 2003; 157:661-664).

Good Compliance
Children consumed different beverages, including fruit juice, cow’s milk, water, fruit-flavored beverage, and other beverages of their choice to prepare the PEG 3350 solution. A total of 78 children (93%) liked the PEG 3350 solution. Daily compliance, assessed by parent recall and diary, was good in 75 patients (90%) during the mean duration of 8.7 months of therapy. A total of 68 children had used other laxatives in the past, and all of them preferred PEG 3350.

In summary, PEG 3350 appears to be a safe medication for long-term treatment of constipation in children (Arch Pediatr Adolesc Med. 2003;157:661-664). It should be considered as a favorable option for children, particularly because of the excellent patient acceptance over the long term.

continued on page 7
The Rome II criteria define functional nonretentive fecal soiling as (Gut. 1999;45[suppl 11]:I60-I68): Once a week or more for the preceding 12 weeks, in a child older than four years of age, a history of:

- Defecation in places and at times inappropriate to the social context
- Soiling in the absence of structural or inflammatory disease
- Soiling in the absence of signs of fecal retention

The diagnosis is made clinically and includes a history of normal bowel movements and no evidence of constipation based on physical exam.

Prevalence of the condition is difficult to estimate because most studies have not differentiated between retentive and nonretentive soilers. Benninga and colleagues (Arch Dis Child. 1994;71:186-193) reported that one-third of patients with soiling or defecation abnormalities have nonretentive soiling. Benninga and colleagues (Gastroenterology. 2003;124(suppl 1):A113. Abst. 829.) pointed out that a better understanding of the pathophysiology of this condition has helped establish that most children with encopresis do not have psychiatric conditions. Over the last few years, it has been recognized that most had soiling as a result of stool retention, but it is now known that some children with soiling programs do not have retentive features. In a comparison of retentive and nonretentive soilers, Benninga and colleagues found no difference in orocecal transit time by lactulose breath test (Arch Dis Child. 1994;71:186-193). Transit time is not a reliable predictor of the category of fecal soiling: Some patients with retentive constipation have a significantly decreased transit time; some patients with nonretentive soiling may have prolonged transit times; and some with retentive features have normal transit times.

Anorectal dysfunction does not distinguish nonretentive soiling. In a comparison with a control population, nonretentive soilers did not differ with respect to resting tone, squeeze pressure, threshold of sensation, or critical volume. Overall, anorectal test results are normal and do not explain soiling (Arch Dis Child. 1994;71:186-193).

Various interventions have been evaluated for defecation disorders. In one study, an educational program that emphasized demystification and included advice about dietary and toilet habits led to improvement without further intervention. Biofeedback training was successful in almost half of the others. (Eur J Pediatr. 1997;156:689-692).

Combined treatment with laxatives and biofeedback have yielded mixed results. A study of patients with nonretentive soiling comparing laxative treatment with and without biofeedback showed poor clinical outcome in both groups (39% vs. 19%). They concluded that biofeedback training had no additional effect on the successful management of these patients. The findings also raised the possibility that there may be a negative impact of oral laxative treatment in these children (Arch Dis Child. 1996;75:367-374). In a more recent study in which laxatives were added to biofeedback therapy, there was a lower rate of improvement in children managed with laxatives and biofeedback versus biofeedback alone, indicating again that there may be a negative effect associated with the administration of laxatives (J Pediatr. 2000;137:808-813).

At this point, the suggested approach includes explanation and support, avoidance of accusatory statements, and use of a toilet training that has a reward system. Biofeedback has a minor role, and laxative use is not recommended (J Pediatr Gastroenterol Nutr. 2001;32:S42-S43).

**Laxative Role**

From my own assessment of the literature and from clinical experience, I believe that even though laxatives may exacerbate the problem in many children with nonretentive soiling, some children with nonretentive soiling may benefit from laxatives, as they may have prolonged transit times. I would consider a laxative that does not soften the stool, because this has been associated with an increased frequency of soiling accidents. A small group of patients may also respond to medications that slow down intestinal transit.

Recovery rates among nonretentive soilers is relatively poor during the first years of follow-up but improves in later years. Among patients followed for up to 8 years, almost 80% have responded (Gastroenterology. 2000;118:A4382).

Many issues remain to be addressed to resolve key issues in the diagnosis, evaluation, and management of nonretentive fecal soiling. In particular, better methods are needed to validate the diagnosis and identify the subset of patients who have abnormal transit time. Better understanding of the pathophysiology is needed to develop more effective therapies.

**Comparison**

Continued from Page 6

<table>
<thead>
<tr>
<th>SYMPTOMS</th>
<th>4L SF-ELS</th>
<th>REDUCED-VOLUME 2L SF-ELS</th>
<th>P VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fullness</td>
<td>55%</td>
<td>28%</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Cramping</td>
<td>17%</td>
<td>12%</td>
<td>NS</td>
</tr>
<tr>
<td>Nausea</td>
<td>37%</td>
<td>18%</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Vomiting</td>
<td>21%</td>
<td>9%</td>
<td>&lt;.005</td>
</tr>
<tr>
<td>Overall discomfort</td>
<td>47%</td>
<td>24%</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Table 2. Symptom Scores: Bohsentrone to Distressing


Managing Defecation Disorders in Children 7
Continuing Education Instructions
There is no fee to participate in this activity. Please forward the Test Answer Sheet and Evaluation Form to: Excerpta Medica/Elsevier, Office of Continuing Medical Education, Department CONS, 105 Raider Blvd. Suite 101, Hillsborough, N.J. 08844-1528. FAX: (908) 874-5633. Responses for AMA/Physician's Recognition Award credit must be submitted before September 2004.

INSTRUCTIONS: For each question or incomplete statement, one answer is correct. Circle the letter of the most appropriate response. 6 of 8 correct responses are required for credit.

1. Which of the following statements is/are true of infant dyschezia?
   a. The condition has very clear and specific diagnostic criteria.
   b. Extensive study has resulted in a large volume of medical literature.
   c. Defecation is associated with passage of a soft stool.
   d. None of the above

2. The first objective of treatment for constipation is:
   a. Disimpaction of stool
   b. Dietary modification
   c. Modification of the mother’s diet for breast-fed infants
   d. Increased fluid intake

3. Which of the following traits is/are associated with the use of polyethylene glycol (PEG) 3350 for treatment of childhood constipation?
   a. Non-toxic
   b. Safe for long-term use
   c. Good acceptance by children
   d. All of the above

4. Which phrase or phrases are included in the Rome II definition of functional non-retentive fecal soiling?
   a. Once-weekly or more frequent soiling
   b. Soiling that persists for at least 12 weeks
   c. A history of inappropriate defecation
   d. All of the above

5. Which of the following has/have been evaluated as treatment for non-retentive fecal soiling?
   a. Education related to dietary and toilet habits
   b. Laxatives
   c. Biofeedback
   d. None of the above
   e. All of the above

6. In a randomized clinical trial of treatment for childhood constipation, milk of magnesia:
   a. Increased the frequency of bowel movements.
   b. Reduced episodes of encopresis.
   c. Decreased the incidence of abdominal pain.
   d. a and b
   e. All of the above

7. The comparison of PEG 3350 and lactulose showed that:
   a. Lactulose was superior.
   b. PEG 3350 led to significantly greater improvement in bowel function and fewer side effects.
   c. The two therapies provided equivalent results.
   d. The therapies were equivalent, but PEG 3350 was better tolerated.

8. A comparison of two bowel-cleansing solutions for colonoscopy demonstrated:
   a. Comparable results with reduced-volume and conventional solutions.
   b. Fewer abdominal side effects with the reduced-volume solution.
   c. A trend toward better results with the reduced-volume solution.
   d. a and b
   e. b and c

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