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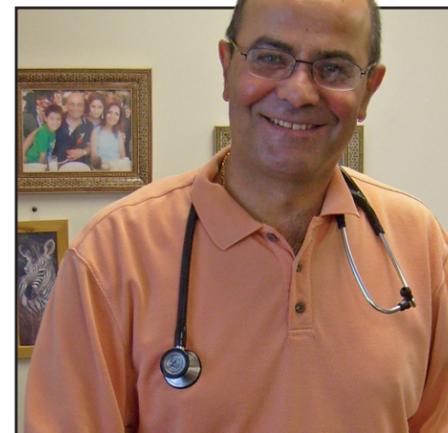
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Winter is setting in and the holidays are fast approaching. We all look forward to sharing time with family and friends and eating a variety of good food. Patients with chronic diarrhea, however, often face tremendous anxiety just thinking about eating. Sometimes their diarrhea goes on for days and it seems like it will never end.

Diarrhea occurs commonly, and most cases are caused by self-limiting viral or bacterial infections. In this issue, we will discuss some of the causes of chronic diarrhea. We will also discuss how an appropriate diet can help speed up the process of getting the intestinal track back to normal.

At GiforKids we have the right team of certified gastroenterologists, mid-level providers, nursing staff and dietitians who can not only endorse the diagnose of acute diarrheal illness but can also uncover the underlying cause of chronic diarrhea, which is a step ahead of appropriate management.



For more information about all of our services, please visit our website at www.giforkids.com.

Regards,

Youhanna S. Al-Tawil, MD
Medical Director

LIVER CARE FOR KIDS

GiforKids, PLLC has developed Liver Care for Kids under the supervision of Dr. Diana Moya. Dr. Moya is a Pediatric Gastroenterologist with interest in liver diseases.

Dr. Moya's interests include a wide range of liver conditions such as elevated liver enzymes as well as more complicated disease such as autoimmune hepatitis, infectious hepatitis and chronic liver diseases or conditions. GiforKids, PLLC utilizes a specialized team of pediatric gastroenterologists, nutritionists, psychologists and support groups to provide education and assistance for patient and families including pre and post liver transplant care and coordination with transplant centers.

For more information about Liver Care for Kids, please call GiforKids, PLLC at (865) 546-3998 or visit our website at www.giforkids.com.



DIARRHEA!

M. Samer Ammar, MD

What is a better topic for me to write about than the opposite of my first one—constipation! Let me first take this opportunity to thank you for allowing me to be part of your team in providing care for your patients.

Diarrhea is defined as an increase in frequency and water content of bowel movements. In reference to stool volume, more than 10 ml/kg/day for infants and toddlers or more than 200 ml/day for older children is an acceptable measurement index for diarrhea. The basic science terminology of diarrhea is the disturbance of water and electrolytes handling across apical and basolateral membranes of small and/or large intestine. On the intracellular level, diarrhea may be classified as osmotic or secretory. Although theoretically that distinction is possible, practical, and often the case, in any given patient diarrhea is caused by combined osmotic and secretory mechanisms. Diarrhea is a symptom rather than a diagnosis. Based on duration of symptoms, diarrhea can be either acute, that is less than 2 weeks, or chronic when the patient is symptomatic for longer than 2 weeks.

As for etiology, diarrhea can be infectious versus non infectious. Infectious etiology is when we suspect the presence of a microbial agent whether we are able to isolate such agent or not. Usually, in non immunocompromised patients, infectious diarrhea is acute. There are too many causes of non infectious diarrheal bowel movements. Although diarrhea is almost always chronic in non infectious causes, acute intermittent presentation may be the only early red flag in a subgroup of patients. Among non infectious causes of diarrhea are congenital (e.g. congenital chloride diarrhea, congenital sodium diarrhea, microvillus inclusion disease, tufting enteropathy, congenital disaccharidase deficiency), malabsorptive (e.g. cystic fibrosis, gluten enteropathy), inflammatory (e.g. regional ileitis, non infectious colitis whether ulcerative or not), or diet induced.

Effective evaluation starts with obtaining a detailed

history and conducting a full physical examination. How much further the case is investigated should be based on clinical suspicions. Symptoms persisting beyond two weeks require investigation. Irritable bowel syndrome is a common cause; however organic disease should be suspected if there is weight loss, a recent onset of diarrhea (less than three months), or nocturnal or continuous symptoms. Pale and offensive stools may suggest malabsorption. The presence of blood or mucus in stools or a family history may indicate inflammatory bowel disease. Recent hospital admission or antibiotic treatment may indicate Clostridium difficile infection. Signs of malnutrition or failure to thrive may indicate cystic fibrosis, celiac disease, or a chronic infection, such as a UTI. These are some of the red flags that may require a specialist referral.

Whenever possible, management should be directed to target and correct the underlying cause. General principles of management may include: 1) eliminate juices and high fructose corn syrup whether diet induced diarrhea is suspected or not; 2) maintain hydration; 3) almost all infants with acute diarrhea can tolerate breastfeeding; and 4) the use of antibiotics, probiotics and zinc supplementation should be individualized. Regardless of the cause of recurrent acute or chronic diarrhea, an early referral may correlate with better outcome.

Diarrheal disease is so common and so often short-lived, and apparently benign, that neither physicians nor parents give it the attention it deserves. Unfortunately, this lack of concern plays an important role in the high mortality rate from diarrhea among children in developing countries. It also contributes to the high numbers and costs of hospitalizations for diarrhea in the United States. In the United States, it is estimated that 16.5 million children less than 5 years of age have between 21 and 37 million episodes of diarrhea annually. Of these, 2.1 to 3.7 million episodes lead to a physician visit, a total of 220,000 patients are hospitalized, and 325 to 425 children die.

GI for Kids, PLLC has an expert team readily available to assist in caring for your patient by providing the next step in evaluation and management.



CHRONIC DIARRHEA

Callie McCamy Jubran, RD, LDN

Diarrhea is frequent runny or watery bowel movements. Many times, diarrhea can be acute and caused by a viral, bacterial, or parasitic infection. However, some children have chronic diarrhea, which is diarrhea lasting for two or more weeks. Although chronic diarrhea can be the result of a congenital, malabsorptive, or inflammatory etiology, it is often induced by the diet. Certain foods may worsen diarrhea, and, as such, it is important to alter diet ingredients to facilitate caring for these patients. Foods that tend to worsen diarrhea include: high-fiber foods, high-fat foods, concentrated sugars, lactose-containing foods, and caffeine. It is important for each individual to pay attention to which foods seem to induce diarrhea, as everyone reacts differently to foods. In cases of acute diarrhea, a bland diet low in fiber would be recommended. Examples of bland foods include: white rice, white toast, crackers, plain potatoes, bananas, and baked chicken without the skin.

Chronic diarrhea can also be a symptom of stress and anxiety, especially in those with irritable bowel syndrome (IBS). If diarrhea is related to anxiety, it is important to use stress management strategies such as relaxation, exercise, and sometimes, medications. In cases of chronic diarrhea, it is very important to drink

a lot of fluids as dehydration is a major side effect of excessive loss of fluids in the stool. In cases of severe diarrhea, beverages with electrolytes, such as Pedialyte or Gatorade will help replenish your body's fluid and electrolyte levels.

Nutritional tips to help manage chronic diarrhea:

- Choose grains that are low in fiber (2 grams of dietary fiber per serving or less).
- Limit dietary fat – limit high fat dairy products, meats, greasy foods, etc.
- Avoid eating an excessive amount of raw fruits and vegetables as they contain a lot of fiber and can decrease intestinal transit time.
- Avoid dried fruits and fruit juice with pulp.
- Avoid beverages that contain caffeine, such as sodas, teas, coffees, and energy drinks as they can act as a stimulant to the GI tract.
- Limit beverages that contain a high amount of sugar, as this can cause dumping.
- Drink plenty of fluids in order to maintain adequate hydration.

Although chronic diarrhea is not uncommon in the pediatric population, it is important to be cautious in dealing with these patients. The presence of rectal bleeding, severe dehydration (poor urine output), or high fever are among diarrhea-associated features that justify an early referral to a specialist.

Here is a great recipe to help manage chronic diarrhea.....

Raisin Bran Muffins

Directions:

Stir together flour baking powder, salt and sugar. Set aside. Measure Raisin Bran and milk into mixing bowl.

Stir to combine. Let stand 1-2 minutes or until cereal is softened. Add the egg and oil; beat well.

Add dry ingredients to cereal mixture, stirring only until combined. Portion batter evenly into 12 greased muffin pan cups. Bake at 400 degrees for about 25 minutes or until muffins are golden brown. Serve warm.

Nutrition Facts:

Calories: 87 • Fat: 1 g • Protein: 2 g • Cholesterol: 16 mg • Sodium: 216 mg

Ingredients:

- 1 ¼ cups all-purpose flour
- 3 teaspoons baking powder
- ½ teaspoon salt
- ½ cup sugar (or SLENDA)
- 3 CUPS Kellogg's Raisin Bran cereal
- 1 cup milk
- 1 large egg (or egg substitute equivalent)
- 1/3 cup Canola oil