Elizabeth Zak

Nutrition Therapy I: 81962

Case study 3: Irritable Bowel Syndrome (IBS)

Dr. Alireza Jahan-Mihan

November 12, 2014
Questions:

1. IBS is considered to be a functional disorder. What does this mean? How does this relate to Mrs. Clarke’s history of having a colonoscopy and her physician’s order for a hydrogen breath test and measurements of anti-tTG? (3 points)

A functional disorder is a part of the human body that is not functioning in a normal bodily process, but all other areas of the human body look normal under examination. This diagnosis comes after ruling out all other organic causes.

After having a colonoscopy her colon could have looked normal during the examination and under the microscope. The physician has decided to run further tests to see what is causing this patient’s to have gastrointestinal problems. The hydrogen breath test was ordered from the physician to look for other symptoms to support having lower gastrointestinal disorder. The hydrogen breath test is testing for hydrogen on the breath which is caused from the anaerobic bacteria that are in the colon. These bacteria produce hydrogen when there is unabsorbed food in the colon. The hydrogen is than absorbed into the blood and travels to the lungs where it’s exhaled. This test will help physician's know if the bacteria in the intestines are over grown into the small intestine or if there is rapid passage of food through the small intestine. The physician would be measuring the patient’s anti-tTG to see if there they are present and if so they are used to help detect autoimmune disease such as celiac. When the body is fighting against something that it believes will harm the body them immune system produces antibodies to protect the body. If the patient has measurements of these anti-tTG then they could have an autoimmune disease or there is something in there intestines causing the body to create this antibodies against these enzyme.

2. What are the ACG and the Rome III criteria? Using the information from Mrs. Clarke’s history and physical, determine how Dr. Cryan made her diagnosis of IBS-D. (2 points)

The ACG is the American College of Gastroenterology. Rome III criteria are the system developed to classify the functional gastrointestinal disorder. The patient chief complaint says she has always had a “funny stomach”. She described having diarrhea and constipation for some time and that the diarrhea has gotten worst and she is having now having several episodes per day. According to the Rome III criteria; recurrent abdominal pain or discomfort at least 3 times per month in a 3 month time span and there are two or more of the other symptoms present. The other symptoms are improvement with defecation, onset associated with a change in frequency of stool, onset associated with a change in form (appearance) of stool. The subtype that the Dr. Cryan diagnosed her with is the diarrhea predominant subtype. The diagnosis for some on with IBS-D is loss and water stools, having abdominal pain, bloating, gas and other gut pain.

3. Discuss the primary factors that may be involved in IBS etiology. You must include in your discussion the possible roles of genetics, infection, and serotonin. (3 points)

The current research is focused on multiple factors that could be the cause of IBS. Some factors that are being focused on are genetic predisposition which is still controversial, altered immune response stimulated by food sensitivity and altered microbial environment, an elevated inflammatory response to gastroenteritis, small intestinal bacteria overgrowth (SIBO), abnormal release, transport, or recognition of serotonin, and an increased sensitivity of the enteric nervous system that causes abnormal motility and pain. Infections of the gastrointestinal tract have been observed to cause IBS from there being non-micro gut organisms causing an infection such as Campylobacter and Salmonella. Bacterial infections often produce enterotoxins that result in diarrhea. Overgrowth in the small intestine can also show similar symptoms as IBS. Serotonin can activate both excitatory and inhibitory neurons in the gastrointestinal tract. Serotonin stimulates both the release of acetylcholine, which causes the smooth muscle to contract, and the inhibitory neurons that release nitric oxide, which relaxes the smooth muscle. Altered levels of serotonin have been documented for all types of IBS which can lead to abnormal motor and secretory function.

4. Mrs. Clarke's physician prescribed two medications for her IBS. What are they and what is the proposed mechanism of each? She discusses the potential use of Lotronex if these medications do not help. What is this medication and what is its mechanism? Identify any potential drug–nutrient interactions for these medications. (3 points)
The two medications that she is to begin taking are Elavil 25 mg daily and Metamucil 1 tbsp in 8oz of liquid twice daily. Elavil is an antidepressant. This medication should be taken with food to decrease GI distress. Increase fiber intake will decrease drug effect. Patient should avoid grapefruit while taking this drug. Metamucil is a laxative (bulking forming). This medication should be taken 2 hours before or after other medications. There should be a decrease in sodium in the diet. The patient might have a decrease in appetite; there can be a decrease in cholesterol and LDL as well. Lotronex is used to treat severe cases of IBS for females. This medication is used for females whose main symptoms are diarrhea. Lotronex deregulates serotonin which prevents serotonin from binding to receptors which than reduces the effects of excess serotonin. Those who do take this medication can suffer from constipation.

5. For each of the following foods, outline the possible effect on IBS symptoms. (2 point)
   A. lactose- Bloating, nausea, flatulence, pain, and diarrhea
   B. fructose- Bloating, flatulence, pain, and diarrhea
   C. sugar alcohols- Close to 70% of patients suffering from IBS are sorbitol intolerant which is a sugar alcohol. Consumption of sugar alcohols causes cramping, flatulence, bloating, and diarrhea.
   D. high-fat foods- consumption of high-fat foods causes cramping and diarrhea

6. What is FODMAP? What does the current literature tell us about this intervention? (2 point)
   A FOODMAP is a proposed nutrition therapy for IBS focus on restriction of these foods contributing fermentable oligosaccharides, disaccharides, monosaccharides, and polyols (sugar alcohols), these collectively refers to the FOODMAP. There has been only one controlled trail using FOODMAP exclusion as nutrition therapy for IBS. The publication states that it did demonstrate significant reduction in the sign and symptoms of those who participated in the trail.

7. Define the terms prebiotic and probiotic. What does the current research indicate regarding their use for treatment of IBS? (2 point)
   Prebiotic- Are a special form of dietary fiber and they nourish the good bacteria that everyone already has in their guts. Prebiotics favor the maintenance of the so-called friendly lactobacillus and bifid us microbes and may prevent overgrowth of potentially pathogenic organisms. Fibrous material and several types of prebiotic foods also tend to slow gastric emptying, moderate overall GI transit, and hold water.
   Probiotic- They are live bacteria that is found in yogurt, dairy products, and pills and they can be killed by temperature, stomach acid, and the other bacteria in the gut. They are used to reestablish beneficial gut flora.
   The current research states that there is a link to probiotic helping with IBS but it is stain-specific. Some of the old studies of prebiotic say in low doses that there are benefits for the gut. These pre and probiotics can help with abdominal pain and flatulence.

8. Assess Mrs. Clarke’s weight and BMI. What is her desirable weight? (3 points)
   Wt: 191 lbs. (86.8 kg)          Ht: 5'5" (165.1cm: 1.651 m)
   Wt (kg)/ [ht (m)]² = 86.8kg/ [(1.651m)]² = 31.8 = 32 BMI
   IBW: 100 lbs. for first 5 feet, + 5 lbs. for every inch over 5 feet = 125 IBW

9. Identify any abnormal laboratory values measured at this clinic visit and explain their significance for the patient with IBS. (3 points)
   Glucose- Ref. range 70-110 mg/dL; patients: 115mg/dL- Her glucose level can be above range for she could be prediabetic. With her GI not digesting things properly things are not able to be absorbed which can create an above range glucose level.
   Cholesterol- Ref. range 120-199 mg/dL; patients: 201 mg/dL- Her cholesterol is slightly above range. Her cholesterol could be this high for she could be prediabetic.
Triglycerides- Ref. range 35-135 mg/dL; patients: 171 mg/dL. Her triglycerides are above the reference range and this can be because she is eating a large amount of foods that contain high amounts of lipids for the nuts to the sweets.

HbA1c- Ref. range 3.9-5.2%; patients: 6.1%. Her HbA1c levels are above reference range which could be linked to this patient being prediabetic. With this patient having a physical appearance of obese and looking at her other blood work she could be prediabetic.

10. List Mrs. Clarke’s other medications and identify the rationale for each prescription. Are there any drug–nutrient interactions you should discuss with Mrs. Clarke? (3 points)

The three medications that Mrs. Clarke is taking from her physician are Omeprazole 50 mg twice a day, lomotil prn, and Levothyroxine 25 mg. Omeprazole is a proton pump inhibitor which is to be taken 30-60 minutes before eating. This medication decreases the secretion of gastric acid and increases the gastric pH. This medication is for the patient’s gastroesophageal reflux disease. This medication could reduce the absorption of iron, calcium and vitamin B12. Avoid drinking alcohol and gingko. Lomotil is an antidiarrheal medication. This medication should be taken with food to avoid GI distress. Diet will need to increase fluids and electrolyte intake. Avoid drink alcohol with this medication. Levothyroxine is a medication for thyroid hormone T4. This medication is to be taken on an empty stomach before breakfast. This medication is for the patient’s hypothyroidism. Patient should take iron, calcium, or/and magnesium separate from this medication with a lag time over 4 hours or longer.

11. Determine Mrs. Clarke’s energy and protein requirements. Be sure to explain what standards you used to make this estimation. (3 points)

I choose to use the estimated energy expenditure prediction equation for this patient for she has a general appearance of obese and her BMI is over 25.

TEE= 448-7.95 x age (yr) + PA x (11.4 x weight [kg] + 416 x Height [m])

I will be using 1 for PA because this patient lives a sedentary patient’s values:

Wt: 191 lbs. (86.8 kg) Ht: 5’5” (165.1 cm: 1.651 m) Yr: 42

TEE= 448 - 7.95 x 42 + 1 x (11.4 x 86.8 kg + 619 x 1.65m)

TEE=2,125 kcal/day

Estimated protein requirement: (0.8g) x 86.8 kg= 69.44 g/d

12. Assess Mrs. Clarke’s recent diet history. How does this compare to her estimated energy and protein needs? Identify foods that may potentially aggravate her IBS symptoms. (3 points)

<table>
<thead>
<tr>
<th>Meal</th>
<th>Quantity</th>
<th>Calories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homemade yogurt</td>
<td>1c</td>
<td>198</td>
</tr>
<tr>
<td>smoothie with 1c.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fresh fruit(peaches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&amp; cherries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yogurt with nut mix</td>
<td>8oz.</td>
<td>239</td>
</tr>
<tr>
<td>Coffee</td>
<td>2 c. (8oz.)</td>
<td>5</td>
</tr>
<tr>
<td>Half and half</td>
<td>2 tbsp.</td>
<td>39</td>
</tr>
<tr>
<td>Artificial sweetener</td>
<td>2 packets</td>
<td>7</td>
</tr>
<tr>
<td>Midmorning snack</td>
<td>½ c</td>
<td>352</td>
</tr>
<tr>
<td>Dried fruit and nuts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diet Pepsi</td>
<td>1 can (12 fl.oz.)</td>
<td>7</td>
</tr>
</tbody>
</table>
### Lunch
<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity/Measurement</th>
<th>Calories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salad with kidney beans, cheese, tomatoes, carrots, asparagus</td>
<td>1c salad with other toppings, 6 spear tips, ¼ c. kidney beans</td>
<td>137</td>
</tr>
<tr>
<td>Wheat crackers</td>
<td>14 crackers</td>
<td>239</td>
</tr>
<tr>
<td>Diet Pepsi</td>
<td>1 can (12fl.oz)</td>
<td>7</td>
</tr>
</tbody>
</table>

### Dinner
<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity/Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicken breast (baked)</td>
<td>1 medium piece</td>
</tr>
<tr>
<td>Potatoes (baked)</td>
<td>1 medium</td>
</tr>
<tr>
<td>Vegetable (broccoli)</td>
<td>1c.</td>
</tr>
<tr>
<td>Roll</td>
<td>1 each</td>
</tr>
<tr>
<td>Butter</td>
<td>1 tab (tsp.)</td>
</tr>
</tbody>
</table>

### Snack
<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity/Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar-free caramel candy</td>
<td>3 pieces</td>
</tr>
<tr>
<td>Beer (12fl.oz)</td>
<td>1</td>
</tr>
</tbody>
</table>

**Totals:**
- **Calories:** 1900
- **Protein:** 82 g

Some of the foods that might be causing distress in her GI are: diet Pepsi since it contains sugar alcohol and the sugar free candies, the artificial sweetener that she adds to her coffee, the half and half since it contains lactose, maybe the yogurt as well if she has a lactose malabsorption, the wheat crackers, roll, the asparagus on the salad and the broccoli form dinner for they are both gas producing foods, kidney beans also produce gas, the dried fruit in the nut mix as well.

13. **Prioritize two nutrition problems and complete the PES statement for each. (5 points)**

Two prioritized nutrition problems are she is consuming a large amount of sugar alcohols and gas producing foods.

The patient is consuming a high amount of sugar alcohols throughout her day which can be causing her pain, cramps, and other symptoms. These symptoms can be linked to having a sorbitol or other sugar alcohol intolerance. The patient should remove foods and beverages from their diet that contain sugar alcohols to see if this items were the food/beverage trigger to her symptoms.

The patient is consume many different foods that produce gas and this gas being produce could be causing the flatulence, bloating, cramps and the other IBS symptoms. The patient should try and remove the foods that create more gas than others to see if they are the food trigging her IBS symptoms.

14. **The RD that counsels Mrs. Clarke discusses the use of an elimination diet. How may this be used to treat Mrs. Clarke's IBS? (2 point)**

The elimination diet would be a good place for Mrs. Clarke to start to see what foods might be causing the signs and symptoms. With taking one food item or group away for 12 weeks and then bring them back into the diet can help find out which foods are triggering the signs and symptoms of her IBS.

15. **The RD discusses the use of the FODMAP assessment to identify potential trigger foods. Describe the use of this approach for Mrs. Clarke. How might a food diary help her determine which foods she should avoid? (2 point)**

The use of the FODMAP assessment will help teach Mrs. Clarke which foods don’t digest well and contribute to fermentation which potentially leads to those specific signs and symptoms associated with IBS. The food dairy will help her focus on dietary components that will decrease her gastrointestinal symptoms. Begin able to keep track of her food intake will help her figure out which foods do and don’t trigger her symptoms. Once there is a
baseline of her nutritional history the RD will be able to identify nutritional problems and can begin to identify any needed dietary changes. Since many patients with IBS tend to eat erratically due to their gastrointestinal symptoms, which causes eating to be stressful. The crucial first step is to establish a regular eating pattern that doesn’t exacerbate symptoms.

16. Should the RD recommend a probiotic supplement? If so, what standards might the RD use to make this recommendation? (2 point)

No the RD shouldn’t recommend a probiotic supplement. There is no guarantee that a probiotic will help this patient. According to different control studies there are some benefits to taking a probiotic but they are strain specific. The RD can educate the patient on a few different control studies and advise them to take to the physician or gastroenterologist about taking a probiotic supplement.

17. Mrs. Clarke is interested in trying other types of treatment for IBS including acupuncture, herbal supplements, and hypnotherapy. What would you tell her about the use of each of these in IBS? What is the role of the RD in discussing complementary and alternative therapies? (2 point)

Acupuncture is a popular alternative therapy there are some studies done by the NIH that have mixed results on it effectiveness for patients with IBS. There are some small studies that have results of acupuncture helping with bloating and other symptoms. However there is a need for larger studies for acupuncture and IBS.

Herbal supplements are used mostly oils and they are thought to calm the gut which the probiotics than are able to restore the good bacteria in the gut. There is no evidence based research on different herbal supplements to say if these supplements help with IBS or if they make it worse.

Hypnotherapy has helped those who suffer from IBS with their emotional and physical symptoms. There have been a few different studies that show those who underwent hypnotherapy had improvement with their emotional symptoms and their daily lives. The uses of cognitive behavioral therapy helps patients with IBS identify inaccurate perceptions they may have of themselves and the world around them which helps them improves their quality of life.

The role of an RD is to give unbiased information on these topics that will inform the patient. The RD should not give the patient false information and the information given should be from an evidence based study or a reliable source.

18. Write an ADIME note for your initial nutrition assessment with your plans for education and follow-up. (5 points)

Assessment: Patient came into get workup done on her stomach and intestinal problems. She has stomach issues since she can remember. She has been dealing with diarrhea and constipation for some time and now her diarrhea has gotten worse. She has had a few accidents not being able to make it to the bathroom on time. This problem is interfering with her daily life and she is having symptoms of abdominal pain almost daily with altering constipation and diarrhea. She has lately been experiencing predominantly diarrhea with several episodes daily.

42 y.o, Female, Dx: IBS-D
Ht: 5’5” wt. 191 lbs, IBW: 125
TEE:2,125 kcal EPR:69-70 g protein

Diagnosis: The patient is having severely bowel movements a day which are usually diarrhea. She has ongoing abdominal pains. The diagnosis is IBS-D for she meets the Rome III criteria. Schedule laboratory testing for hydrogen breath, anti-iTG to make clear that the patient is being diagnosed properly. Patient is consuming foods that could be creating so of her symptoms, and she could have intolerance to some of these items as well.

Intervention:
1. Will being patient on Elavil and initiate Metamucil these medication will help her with her symptoms.
2. Have her meet with an RD to educate her on which foods we eat can create more gas than other and help her understand the differences in which fats and carbohydrates she can eat without creating more gas in her system.
3. Teaching this patient on what foods is part of the FOOMAP will help her find other foods to eat that could give her less signs and symptoms.
4. Starting the patient on an elimination diet will be a place for her to start and once she reenters those foods in her diet she needs to start a food diary of what she ate, when she ate it and how much of it she ate.
5. Once she starts a food diary than the RD can see her nutritional baseline and can then identify any dietary
changes that are needed. Once this is established we can start her on a regular eating pattern.

**Monitoring/Evaluation:**
1. Patient will be back in three weeks for a checkup.
2. RD will go over some of the dietary changes she has made and discuss any questions she has regarding her new eating style or if she has questions about any alternative medicines
3. Patient will state understanding of current nutritional needs to have her gastrointestinal back in a functioning order.

**References:**