Case Study 1

Diverticular Disease and Colostomy

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Diverticulum is one pouch on the surface of the small intestine or colon that bulges out of the lining through a weak area. Diverticulosis is the condition of having these diverticula present on the colon or small intestine. Diverticulosis may be caused from genetics, however, the main cause for developing diverticulosis is having a diet that is inadequate in fiber. A diet that is low in fiber causes one’s stool to be low in bulk, which leads to constipation and an increase in straining to defecate. Over time constipation and pressure in the colon pushes the intestinal lining outward through spaces in the colon wall, creating diverticula.

If untreated, diverticulosis can lead to the diverticula hemorrhaging from an irritation, causing internal bleeding. Those who are obese, have low physical activity levels, taking steroids, consume alcohol, caffeine and who smoke cigarettes are at highest risk for developing diverticulosis.

This case study involves Mr. Gonzales, a 68 yr. old Hispanic male who weighs 208 lbs. Mr. Gonzalez meets high risk criteria, as he is obese, consumes alcohol occasionally and his weight indicates that he engage in low activity and exercise. He experienced progression of the diverticula hemorrhaging which was present when he passed bloody stool.

Symptoms of diverticulosis may not be present in many patients, but when symptoms are present they include lower abdominal pain, cramping, bloating, fullness and constipation. Patients with diverticulosis often have complaints of steady abdominal pain that increases after eating and may go away after passing a bowel movement. This is consistent with Mr. Gonzalez’s first symptoms that included abdominal discomfort in the lower left quadrant and constipation that would come on strongly and then go away.
Infection and inflammation can occur in the diverticula from irritation of fecal matter accumulating in the colon, which causes the diverticula become inflamed and form puss. Inflammation leads to diverticulitis, which is caused from an infection that form by food and/or bacteria that collect in the diverticula. Twenty percent of patients with diverticulosis progress to diverticulitis. Mr. Gonzalez reported having a 100 degree temperature which is a sign of infection and inflammation and progression to diverticulitis.

Additional symptoms include acute constant pain in the lower left quadrant, fever, nausea, vomiting, diarrhea, constipations. The pain from diverticulitis comes on suddenly and become worse over several days, but then may go away. After Mr. Gonzalez ate popcorn it caused his diverticulosis to progress to diverticulitis because it irritated the diverticula and caused them to bleed. He also experienced severe pain and diarrhea, indicating hemorrhaging in the intestine by presence of blood in his stool, and reported bad cramping.

Complications of diverticulitis include bleeding, severe pain in the lower left quadrant, hemorrhaging, abscess, fistula formations and ultimately a bacterial infection. Infection is susceptible to spread out throughout the peritoneum and could potentially be life threatening.

There are about 300,000 new cases of diverticulosis in the US per year. 1 in every 136, or 2 million people in the USA has diverticulosis. 10-20% of patients with diverticulosis disease advance to diverticulitis. Diverticular disease occurs when one has diverticulosis and diverticulitis together which is Mr. Gonzalez’s case.
Biochemical measurements

Mr. Gonzalez’s lab values and explanation of abnormal numbers.

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>Normal</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hgb</td>
<td>11g/dl</td>
<td>14-18 g/dl</td>
<td>Low levels</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>from depleted iron store/anemia, hemorrhage, nutritional deficiency. Patient has hemorrhaging in the rectum from the diverticulitis which caused low Hgb numbers. Patient doesn’t eat because of discomfort, therefore nutrient deficient and has low iron stores/anemia which also causes low numbers.</td>
</tr>
<tr>
<td>Hct</td>
<td>33%</td>
<td>42-52%</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hct levels caused from hemorrhage and dietary deficiency. Dietary deficiency because the patient does not want to eat because of the discomfort it causes. Hemorrhaging is occurring in the patient from rectal bleeding.</td>
</tr>
<tr>
<td>K+</td>
<td>3.4 mEq/L</td>
<td>3.5-5.0mEq/L</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Low levels caused by deficient dietary intake, GI disorders and trauma. Patient has low levels because of low food intake, GI disorder (diverticulosis/diverticulitis) and trauma caused from rectal bleeding.</td>
</tr>
<tr>
<td>Na+</td>
<td>133mEq/L</td>
<td>136-145mmol/L</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Low levels caused by deficient dietary intake and diarrhea. Patient has low nutrition intake from discomfort after eating.</td>
</tr>
<tr>
<td>BUN</td>
<td>12mg/dl</td>
<td>7-21 mg/dL</td>
<td></td>
</tr>
<tr>
<td>Creat</td>
<td>0.9mg/dl</td>
<td>.6-1.2mg/dl</td>
<td></td>
</tr>
<tr>
<td>Cl-</td>
<td>97mEq/L</td>
<td>98-106mEq/L</td>
<td>Slightly low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cl- levels, low levels don’t reflect diverticulosis or the patients problems.</td>
</tr>
<tr>
<td>WBC</td>
<td>13x10³/mm³</td>
<td>5,000-10,000/mm³</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>High levels are caused from infection in the patients, trauma, stress and inflammation. The patient has trauma and inflammation from diverticulosis/diverticulitis and has stress from the disease as well.</td>
</tr>
</tbody>
</table>
Anthropometric Measurements

IBW range: 106+ (6x7) +/- 10% = 148 +/- 10% = 133.2-162.8 lbs

%IBW = 208/148 x 100 = 141% IBW

BMI = 208lbs x 703 / (67)^2 = 32.6

Mr. Gonzalez is obese based on %IBW, and Class I obese based on BMI.

Drug-Nutrient Interactions

Mr. Gonzalez is prescribed Lisinopril and Ampicin. Lisinopril is an ACE (angiotensin conversion enzyme) inhibitor and is typically used for hypertension or heart failure. Side effects of Lisinopril include coughing, dizziness, headache, nausea vomiting, and/or diarrhea. Vomiting, diarrhea or heavy sweating may cause dehydration or kidney failure, therefore while taking Lisinopril one should drink plenty of water and consume adequate fiber. Lisinopril may interfere with potassium supplements, salt substitutes that have potassium, insulin or diuretics.

Ampicin is a penicillin that is used to treat bacterial infection. Side effects from Ampicin include nausea, vomiting and diarrhea. It may also cause anemia. Ampicin is less effective when taken with food, therefore should be taken on an empty stomach.

Medical nutrition therapy recommendations

PES statements:

1- Food and nutrition related knowledge deficit (NB 1.1) related to no prior education on colostomy diet as evidenced by recent colostomy surgery.
2- Limited adherence to nutrition related recommendations (NB-1.6) related to consuming foods that doctor told patient to avoid as evidenced by patient reports, bloody stools, and severe abdominal pain after consuming foods told to avoid resulting in severe intestinal problems and eventually a colostomy.

**Post Surgery Recommendations**

Mr. Gonzalez is to be given NPO post surgery. During Mr. Gonzalez’s recovery, he can advance to clear liquid diet. He needs B12 supplements, fat soluble vitamins, and calcium supplements after the colostomy surgery. While healing, Mr. Gonzalez’s bile salt and fluid/electrolyte loss need to be monitored. After about 8 weeks, it is recommended that his diet advance from full liquid to a low fiber, GI soft, bland diet to prevent obstructions and promote stoma healing. When advancing to mechanical soft diet, add one food at a time in small amounts to check for digestive tolerance. Although fluids fill up the bag quickly, Mr. Gonzalez will be encouraged to consume fluids because it will help adaptation and keep the patient hydrated. Advance Mr. Gonzalez’ diet as he can tolerate it.

Mr. Gonzalez will need to be educated about what types of foods that he will be able to digest and absorb, and stress the importance of following a diet order. An explanation of complications that may occur if he does not follow the diets orders strictly and stay with them for as long as the patient is recommended to.

To prevent obstructions in the stoma, Mr. Gonzalez should avoid stringy foods and foods with tough skin that can get stuck in the stoma. Foods to avoid that may cause obstructions include popcorn, nuts, sesame seeds, sunflower seeds, cabbage, celery, mushrooms, coconut, corn, olives, fibrous or mushroom shaped foods. Mr. Gonzalez should also cut up his foods and chew them well. Multivitamins will not get digested so they are not recommended.
If Mr. Gonzalez experiences diarrhea when advancing to solid diet, he should consume foods that thicken the stool and limit diarrhea with foods such as applesauce, bananas, bread and cheeses. Foods that should be avoided with diarrhea are foods that aggravate it, such as apple, grape or prune juice, caffeine or any foods that individually irritate the patient’s diarrhea.

Long term recommendations for Mr. Gonzalez include education about his new digestive system, advancing to a high fiber intake, low saturated fat and ultimately to lose weight (about 40 pounds) to achieve an IBW range between 133-163 lbs. Since cardiovascular disease runs in Mr. Gonzalez’s family, losing weight may help lower his risk of cardiovascular disease. As soon as possible, Mr. Gonzalez should begin mild exercise such as walking for 30 minutes a day, then advance to 30-60 minutes of moderate exercise for about 5 days a week.
References:


