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NFSC 370

Case Study # 1: Diverticular Disease and Colostomy

Pathophysiology:

Diverticulosis is the condition of having pouches in the colon, called diverticula, which protrude out of weak portions of the colon. It is suggested that half of the population over the age of 60 has diverticulosis. (Medline Plus, Diverticulosis) Diverticulosis can progress to diverticulitis when the diverticula become infected, or inflammation occurs. The main cause of the formation of diverticula, which leads to these two cases, is a low fiber diet. When there is not enough fiber in an individual's diet, constipation can occur, which is what causes the diverticula to form. Over time, this build up and lack of proper function of the digestive tract can lead to more severe problems.

The symptoms of diverticulosis are highly individualized. The most common symptoms include constipation, bloating, or cramping. Abdominal pain is the most common symptom of diverticulitis. This pain can intensify depending on the severity of the infection. Nausea, vomiting, chills, and cramping can also be experienced during this time. In more serious cases, blockage, infection, tears or bleeding can occur. These need to be treated quickly to prevent serious complications. Fistulas, or the fusing together of two different parts of the intestine, can often lead to infection and may even require surgery. (National Institute of Health)

The exact prevalence and incidence of diverticulosis is difficult to determine, because of the sporadic onset of symptoms and progression. It has been found to be most common in Western countries. In these countries, 5-10% of patients over the age of 50 have diverticulosis. (p. 496 of text)

The diagnosis of diverticular disease is often done through a series of tests. The most common testing method used is a CT scan. Colonoscopy, blood test, or stool samples are other ways to assess if a patient has the disease. (NDDIC)

Mr. Gonzalez experienced several onsets of symptoms that are tied with diverticular disease. He experienced abdominal discomfort in his lower left abdomen, as well as constipation. At first, the symptoms were mild and far between, but the intensity and frequency began to increase. Based on these symptom recurrences, and the fact that Mr. Gonzalez is 71 years old, he was showing prominent signs of having diverticulitis. Due to the increase in frequency and intensity of his symptoms, it appears that his case of diverticular disease developed from diverticulosis, most likely caused due to a low-fiber diet.

Biochemical Measurements:

Test	Result	Normal	Test	Result	Normal
Hgb	11g/dl	13.5-17.5	**BUN**	12mg/dl	7-18
Hct	33%	40-54%	**Creat**	0.9mg/dl	0.6-1.2
K+	3.4	3.8-5.0	**Cl^-**	97mEq/L	95-102

Na+	133mEq/L	135-142	**WBC**	13 X $10^3/mm^3$	4.3-10

Na, K, Cl (Nelms 186)
Creatinine, BUN (University of Alabama)
WBC, HgB, Hct (Nelms 125)

Mr. Gonzalez's lab values showed areas that were abnormal, including hemoglobin, hematocrit, potassium, sodium, and white blood cells. Each of these abnormal values can be interpreted in Mr. Gonzalez's case, and most can be explained due to his current condition, or corrected using specific medical nutrition therapy. For low hemoglobin values, this could mean chronic diseases, anemia, or protein malnutrition. Hematocrit values also test for anemia, and are much more accurate in diagnosing it. This is because the values are only lowered when iron deficient anemia has progressed to a certain point. The lowered potassium levels indicate hypokalemia, which is caused by an insufficient intake of potassium, or increased potassium losses from either renal or gastrointestinal areas. Mr. Gonzalez's sodium levels were slightly lowered, which is due to either an increase in water intake, a decrease in sodium intake, or a combination of both. Sodium is used to maintain osmolarity, which is important maintaining fluid balance. The increased white blood cell count could be due, in Mr, Gonzalez's case, to anemia, infection, or the physical and emotional stress that he is undergoing. (MedHelp) Several of these lab values could also be slightly skewed due to over hydration.

Anthropometric Measurements:

To properly assess Mr. Gonzalez and his current nutritional status, his ideal body weight, current body weight, and body mass index were determined. His ideal body weight was found to be 148 pounds, and the range that accompanies these values was found to be 133-162. His current percent of his ideal body weight was found to be 141%, which indicates that he is obese. His BMI confirmed this by showing class 1 obesity, with a BMI of 33.

IBW: 148 lbs IBW range: 133-162 lbs
5 ft 7 in: 106 lbs + (7 in * 6 lbs)= 106 + 42= 148 lbs IBW +/- 10%= 148 + 14.8= 162.8
148- 14.8= 133.2
% IBW: 208/ 148 * 100= 141% IBW
BMI: wt (lb) * 703/ ht (in)2= 208 * 703/ (67 in)2= 146224/4489= 33 Class 1 Obesity

Drug-Nutrient Interaction

Mr. Gonzalez is currently on two medications. One is an antibiotic, ampicillin, that he was instructed to take for ten days after his latest flare up of symptoms, and the other is blood pressure medication, Lisinopril, that he was been taking for approximately five years. Lisinopril is an ACE inhibitor and aids in increasing blood flow and allowing for more efficient pumping of the blood from the heart to the rest of the body. It is often used to lower blood pressure or treat heart failure. Lisinopril, like most other drugs, has a variety of side effects that should be taken into consideration. These side effects can range from mild, such as dizziness or diarrhea, to difficulty breathing or fainting. A doctor should confirm salt substitutes before being taken on this drug, especially ones that contain potassium. These two nutrients can interfere with the medication, and

produce adverse effects. (MedLine Plus, Lisinopril) Mr. Gonzalez is also currently on ampicillin, which is an antibiotic used to treat a variety of different infections, including urinary, respiratory, and gastrointestinal. Side effects are generally mild, and can include nausea, vomiting and colitis. There were no interactions found between the two drugs that the patient is currently taking. (RxList)

Medical Nutrition Therapy:

PES statement: The main concern in Mr. Gonzalez's care after his colostomy is his inability to manage self-care (NB 2.3) related to his lack of knowledge to properly administer his advancing diet and body changes as evidenced by previous lack of concern or effort to follow the dietary and lifestyle requirements given to him by his physician. Since he will be on an advancing diet, and he will have to manage his waste in a collective pouch, it is vital that he is properly monitored and educated on how to best care for himself and his nutritional needs. He will need to ensure that he is consuming a proper amount of the required nutrients and energy he needs, and to see that any needed supplements are being taken. Mr. Gonzalez can be educated before he leaves the hospital to some of the symptoms that are likely to come, but he also needs to have a professional explain his symptoms and the progression of his recovery to him as it occurs. He should be told that the side effects and changes that he is experiencing are normal for patients in his position, and the best way to care for them.

The medical nutrition therapy for diverticular disease varies based on the needs and severity of the patient. Dietary adjustments are the main form of treatment for patients with diverticulosis. Incorporating fiber into the patient's diet can often alleviate the build up of pressure in the colon, and can therefore allow fecal matter to pass through without difficulty. The current fiber recommendations for men are 30 grams or more per day. (Harvard) For a patient who has not been consuming fiber on a regular basis, the slow incorporation of fiber is an important factor. The amount of fiber in their diet should be gradually increased as tolerated. Physical activity and increased fluid intake are also recommended as treatment for diverticulosis, as they aid in relieving constipation. (Delaware Community College) The treatment used for diverticulitis may be more complex, according to the patient. Resting the colon and ridding the body of the infection are the key factors to be identified in treatment. To rest the colon, it is recommended to instruct the patient to consume a liquid diet, and to take antibiotics. If the onset of diverticulitis symptoms persists, surgery may be necessary. In this type of surgery, a colon resection, the doctor removes the infected part of the colon, and then connects the remaining part of the colon. The result is an alteration in the path that waste takes when exiting the body, and a collecting pouch is needed. This can be either inside the body, or outside, but both need to be removed and changed periodically. (Delaware Community College)

Immediately following his surgery, Mr. Gonzalez should be placed on a NPO, or nothing orally. After a few days of resting the colon, a fully parentral nutritious diet can be adopted, using a personalized diet for his ideal protein, nutrient, and energy needs. It is important to ensure that he is receiving proper fluid intake, as well as protein and energy required for healing and prevention of infection. After the initial diarrhea has begun to decrease, typically between 2 to 6 weeks, the diet can then be advanced and changed to

an oral one. A clear liquid diet, using sugar-free liquids, would be the first oral diet that the patient would be placed on. After this has been well tolerated, the diet can then be advanced slowly to a low- residue, low- fat, and lactose free diet. Once again, the foods that are tolerated differ based on the patient, and to find out which food items work best for Mr. Gonzalez, they should be added one at a time to check their tolerance. Once he has returned home, he should be placed on enteral nutrition that can be on a 10 to 12 hour cycle, which would allow him to have as normal an activity level as possible. A nurse would be recommended to help monitor and administer his at- home care, since he currently lives alone. Hs family would also be encouraged to help, if they were able. (Nelms 500-502)

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