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KNH 411

Case#10

11/20/2012

Ulcer Disease

1. Identify this patient’s risk factors for ulcer disease.

Patient has been vomiting and diarrhea and experienced pain. She complained that there was blood in her vomit and diarrhea. Also, she is diagnosed with GERD approximate 11 months ago and diagnosed with duodenal ulcer 2 weeks ago. Furthermore, she has family history of Diabetes and Peptic ulcer disease from maternal grandmother, father and grandfather, which it lead Mrs. Rodriguez to have high risk of developing ulcer disease.

1. Is smoking related to ulcer disease?

Smoking cigarette can be a risk factor for the development, maintenance, and recurrence of peptic ulcer disease. Smoking has an inconsistent effect on gastric acid secretion. It also has other effects on upper GI function that could contribute to the pathogenesis of peptic ulcer disease, which is interference with the action of histamine-2 antagonists, acceleration of gastric emptying of liquids, promotion of duedenogastric reflux, inhibition of pancreatic bicarbonate secretion, reduction in mucosal blood flow, and inhibition of mucosal prostaglandin production.

<http://www.ncbi.nlm.nih.gov/pubmed/3053883>

1. How is H. *pylori* related to ulcer disease?

H. *pylori* is a spiral-shaped, flagellated, Gram-negative rod that lives under the mucous layer of the stomach and attaches to mucus-secreting cells lining the stomach. These organisms break down urea to produce ammonia, which helps neutralize acid in the immediate vicinity of these bacteria and enhances their survival. The H. *pylori* organisms subsequently produce various proteins that damage mucosal cells, attracting lymphocytes and causing persistent inflammation. (P.361)

1. This patient was prescribed four different medications for treatment of her H. *pylori* infection. Identify the drug functions/mechanisms. (use table below.)

|  |  |
| --- | --- |
| **Drug** | Action |
| Metronidazole | * Antibiotics * Taken up/reduced by anaerobic bacteria by reacting with reduced ferredoxin |
| Tetracycline | * Antibiotics * Used to treat infections by bacteria * Prevent the docking of amino-acylated tRNA |
| Bismuth subsalicylate | * Cytoprotective agents * An oral medication that exhibits both anti-secretory and anti-microbial action. * Used to treat ulcers and inflammation that caused by H. *pylori* * Provide some anti-inflammatory action |
| Omeprazole | * Proton pump inhibiotors * Inhibits the final transport of hydrogen irons into the gastric lumen. * Inhibits both basal and stimulated acid secretion irrespective of the stimulus |

(P.363)

1. What are the possible drug-nutrient side effects from Mrs. Rodriguez’s prescribed regimen? (See table above.) Which drug-nutrient side effects are most pertinent to her current nutritional status?

Some possible drug-nutrient side effects are nausea, vomiting, and abdominal pain associated with these regimens significantly hinder patient compliance and most often the 7 day treatment is recommended. Some side effects that most pertinent to her current nutritional status are vomiting and abdominal pain. (P.362)

1. Explain the surgical procedure that the patient received.

Mrs. Rodriguez received a gastrojejunostomy (Billroth II). The Billroth II is a partial gastrectomy with a reconstruction that consists of an anastomosis of the proximal end of the jejunum to the distal end of the stomach. Also, a blind loop of the duodenum is created. (P.364)

The Billroth II procedure is a form of weight-loss surgery that removes part of the stomach in an effort to make it a smaller reservoir, and then the jejunum is connected to the newly formed stomach for drainage. Reducing the size of the stomach can lead to absorption and emptying problems.

<http://www.livestrong.com/article/545768-billroth-ii-post-procedure-diet>

1. How may the normal digestive process change with this procedure?

Nutritional risk is due to reduced capacity of the stomach and potential changes in gastric emptying and transit time when the normal pathway for digestion and absorption is interrupted. Moreover, when portions of the stomach are resected, valuable components of digestion may be altered or lost. These issues combine can lead patient at a significant nutritional risk due to decreased oral intake, maldigestion, and/or malabsorption. (P.365)

1. The most common physical side effects from this surgery are the development of early or late dumping syndrome. Describe each of these syndromes, including symptoms the patient might experience, the etiology of the symptoms, and the standard interventions for preventing/treating the symptoms.

Early dumping syndrome: It occurs within 10 to 20 minutes after eating. The chyme is hyperosmolar, fluid is drawn into the small intestine from the vascular compartment in an attempt to dilute intestinal content. These processes result in cramping, abdominal pain, hypermotility, and diarrhea. Furthermore, fluid changes in the vascular compartment result in dizziness, weakness, and tachycardia. (P.365)

Late dumping syndrome can occur anywhere from 1 to 3 hours after eating, and is especially common after consuming simple carbohydrates. In this situation, rapid absorption in the small intestine stimulates insulin release. Hypoglycemia is resulted, which is after quick movement and absorption of food through the small intestine, there is no longer any substrate for the insulin to act upon. Symptoms of late dumping syndrome includes shakiness, sweating, confusion, and weakness. (P.365)

Acarbose and Octreotide are the medications that can be used for the prevention of dumping symptoms. (P.365) The post-gastrectomy or “anti-dumping” diet encourages a well-balanced diet slightly higher in protein and fat. Simple sugar is avoided in order to prevent hyperosmolality and hypoglycemia that is associated with the dumping syndrome. (P.366)

1. What are other potential nutritional complications after this surgical procedure?

Patients may have potential for vitamin and mineral deficiencies. Research finds those patients who have had gastric surgery have a high prevalence of vitamin B12 deficiency. Treatment of the deficiency can prevent cardiovascular, hematologic, and neurologic abnormalities seen with B12 deficiency or pernicious anemia. Iron deficiency is also a chance to have. The cause is multifactorial, including a decrease in HCL, decreased dietary intake, and also a possible malabsorption. Furthermore, risk of osteoporosis is also increased due to decreased absorption of calcium. Calcium and vitamin D supplements are recommended to the patients. (P. 365)

1. Assess this patient’s available anthropometric data. Calculate percent UBW and BMI. Which of these is the most pertinent in identifying the patient’s nutrition risk? Why?

110Ib/2.2 = 50kg

5’2” = 1.57 m

UBW = (Current wt/ Usual Body wt) x 100

= (110 Ib / 145 Ib) x 100

= 75.86%

(P.48)

BMI = wt (kg)/ ht (m2)

= 50 kg / (1.57m)2

= 20.3 kg/m2

(P.48)

Mrs. Rodriguez’s %UBW is the most pertinent in identifying having nutrition risk. It is because from 75%-84% is considered moderately underweight, and since her %UBW is 75.9%, she is stated as underweight.

<http://wwwwin.cord.edu/fnd/msturnqu/MNT_Booklet_New.pdf.ppt>

1. What other anthropometric measures could be used to further confirm her nutritional status?

Other anthropometric measures could be used to further confirm patient’s nutritional status is blood pressure. Mrs. Rodriguez’s blood pressure is 78/60, which she is considered hypotension (low blood pressure). A blood pressure reading of 90 mm Hg or less systolic blood pressure or 60 mm Hg or less diastolic blood pressure is generally considered low blood pressure.

% Recent weight change= usual weight – actual weight x 100

usual weight

= 145-110 x 100

145

= 24.1 %

% IBW = actual body weight/IBW +/- 10%

= 110/110 – 10% = 0.9%

<http://www.mayoclinic.com/health/low-blood-pressure/DS00590>

1. Calculate energy and protein requirements for Mrs. Rodriguez. Identify the formula/calculation method you used and explain the rationale for using it.

REE = (10 x weight) + (6.25 x height) – (5 x age) – 161

= (10 x 50 kg) + (6.25 x 157.48cm) – (5 x 38) – 161

= 500 + 984.25 – 190 – 161

= 1133.25

TEE = REE x Activity factor

= 1133.25 x 1.2 (for hospital patients)

= 1360 kcal/day

1360 x injury factor of 1.1 – 1.3 = 1496 – 1768 kcal/day

Content if patient received 1632 kcal/day

Normal Protein Needs = 0.8 – 1.0g protein x kg body weight

= 0.8 – 1.0g x 50 kg = 40-50 kg protein

Postoperatively Protein Needs = 1.0 1.5 protein x kg body weight

= 50 – 75 kg protein/day

1. The patient was started on an enteral feeding postoperatively. Why do you think this decision was made?

It is because it maximizes nutritional absorption leading to a faster recovery, also it helps to prevent malabsorption or malnutrition. Furthermore, it could impair wound healing and recovery time since she was already malnourished when she came in.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1191041/>

1. What type of enteral formula is Vital HN? Is it an appropriate choice for this patient?

Vital HN is a peptide-based, elemental, low-residue feeding intended as a source of complete and balanced nutrition for patients with chronically impaired gastrointestinal function. It is administered via tube or NOT for parenteral use. Also, it contains peptides and free amino acids to use the dual protein absorption systems of the gut. Vital HN contains <4g of fat and 41.5g protein/L per 300-cal serving.

<http://www.dmes.com/p-12902-vital-hn.aspx>

1. Why was the enteral formula stated at 25cc/hr?

25cc/hr is the standard starting rate to monitor tolerance prior to increasing the formula, also feeding jejunostomy was placed during surgery.

1. Is the current enteral prescription meeting this patient’s nutritional needs? Compare her energy and protein requirements to what is provided by the formula. If her needs are not met, what should be the goal for her enteral support?

1632 kcal/ 1 kcal/ml = 1632 ml x 1L/ 1000ml =1.632L

1.632 x 41.6 g protein/L = 67.9 g protein

It meets the requirement.

1. What would the RD assess to monitor tolerance to the enteral feeding?

To monitor tolerance to the enteral feeding, the RD must monitor intake and output, take daily weight, vitamin, mineral, monitor fluid balance and ask patient if feel any discomfort or bloating. Fluid status can be assessed by balancing fluid intake with fluid output including urine, stool, or ostomy output, emesis, wound losses, and tube drainage.

<http://www.ncbi.nlm.nih.gov/pubmed/16215143>

<http://www.nutritioncare.org/assets/0/50/130/176/9444CA8A-CE4A-4DC0-BC2C-228944883E2A.pdf>

1. Go to the patient care summary sheet. For postoperative day 2, how much enteral nutrition did the patient receive? How does this compare to what was prescribed?

For postoperative day 2, she received 25cc/hour for enteral nutrition. However, the nutrition consult with orders have been left to advance the enteral feeding to 50 cc/hour, which it means she is not having enough enteral nutrition for her continuous drip.

1. When evaluating the patient care summary sheet, you notice the patient has gained 1 pound in 24 hours, should you address this in your nutrition note as an improvement in nutritional status?

During intervention, the patient gained 1 pound in 24 hours. Although we are concerned about the patients low body weight, it is not considered this is a sign of improvement because it is most likely related to fluid shifts.

1. As this patient is advanced to solid food, what modifications in diet would the RD address? Why? What would be a typical first meal for this patient?

The first meals should consist of protein, fat, and complex carbohydrate, but with only one to two food items at a time. The post-gastrectomy of “anti-dumping” diet would be address to the patient. It is a well-balanced diet slightly higher in protein and fat than what is recommended by the U.S. Dietary Guidelines. Simple sugars, including clear liquids, are avoided in order to prevent hyperosmolality and hypoglycemia that is associated with the dumping syndrome. RD should also advise Mrs. Rodriguez to receive only ice chips by mouth and small sips of water. (P.366)

1. What other considerations would you give to Mrs. Rodriguez to maximize her tolerance of solid foods?

Other considerations to give to Mrs. Rodriguez to maximize her tolerance of solid foods are she should stay away from tough foods that are not easily broken down mechanically. Also she should avoid some acidic foods such as spicy foods, caffeine, chocolate, milk products, alcohol, and pepper. (P.367) Those foods items may cause discomfort to the patient.

1. Mrs. Rodriguez asks for you to come to her room because she is concerned that she may have to follow a special diet forever. What might you tell her?

Mrs. Rodriguez should not worry that she may have to follow a special diet forever. Simple carbs, lactose, and fresh fruits and vegetables can add gradually as she is able to tolerate them. (P.366-367)

1. Should Mrs. Rodriguez be on any type of vitamin/mineral supplementation at home when she is discharged? Would you make any recommendations for specific types?

Mrs. Rodriguez should take vitamin B-12, calcium, and iron supplements. She may also consider taking a glutamine supplement, which it can help to heal the damage that caused by H. pylori. Also, she should start to begin intaking Vitamin B-12, calcium, and iron supplements orally. (P.365)

1. Why might Mrs. Rodriguez be at risk for iron-deficiency anemia, pernicious anemia, and/or megaloblastic anemia secondary to folate deficiency and/or poor vitamin B12 absorption?

It is because vitamin B-12 and iron absorption both depend on an acidic environment. Since her stomach acidity has been altered because of the acid suppressor drugs that she is taking. If the absorption is interfered with too much, deficiency can occur causing iron-deficient anemia, pernicious anemia, and/or megaloblastic anemia. (P.365-366)

1. Will the oral vitamin/mineral supplement be adequate to prevent the anemia’s discussed in question 24? Explain.

Yes, adequate supplement will prevent the anemia. Adequate Iron supplement can treated anemia because it is difficult to get the necessary amount of iron from dietary sources alone. Patient should avoid take iron pills with coffee because coffee might decrease the absorption of iron from iron-rich foods and supplements

<http://www.livestrong.com/article/528396-why-cant-you-take-iron-pills-with-coffee/>

<http://www.skylakes.org/adequate-iron-can-prevent-anemia.html>

1. From the information gathered within the intake domain, list possible nutrition problems using the diagnostic term.

Since patient had surgery, she may have higher chance to have different deficiency, such as calcium and iron deficiency. The reason is because her stomach has been altered so she may not able to absorb enough nutrients.

1. Using her admission chemistry and hematology values, which biochemical measures are abnormal? Explain.
   1. Which values can be used to further assess her nutritional status? Explain.
   2. Which laboratory measures (see lab report, pages 117-118) are related to her diagnosis of duodenal ulcer? Why would they be abnormal?

Her abnormal biochemical measures included high transferrin, low total protein, low albumin, low prealbumin, high WBC, high glucose, low HCT, low MCHC, high RDW, high SEGS, low LYMPHS, high ferritin, and high BUN.

Some laboratory measures are related to her diagnosis of duodenal ulcer included a high WBC is an indication of infection, the low HGB and HCT can be an indication of anemia that caused by vitamin deficiencies and chronic bleeding. She has low MCHC, which it can be an indication of iron-deficiency anemia. Also, she has a high RDW, which it can indicate iron-deficiency anemia and B12 deficiency that is common in duodenal ulcers.

<http://www.aafp.org/afp/2003/0301/p979.html>

1. Do you think this patient is malnourished? If so, why? What criteria can be used to diagnose malnutrition? Within what category does this patient fir?

Yes I think she is malnourished because she is 35 Ibs less than her normal weight and she complained that she has been vomiting and diarrhea. Also when calculated her %UBW on previous questions, it indicated that she is moderate underweight. Vomiting and diarrhea could consider as an indicators.

1. Select two high-priority nutrition problems and complete the PES statement for each.

* Evident protein-energy malnutrition related to inadequate protein intake and GI dysfunction as evidenced by low prealbumin of 14 (which normal is 16 – 35), 76 % of UBW (which indicated moderate malnutrition), and a BMI of 20
* Food and nutrition knowledge deficit related to gastrojejunostomy as evidenced by the patients question on how long it will be until she can eat again and her previous diet high in caffeine and simple sugars for breakfast.

1. For each of the PES statements that you have written, establish an ideal goal (based on the signs and symptoms) and an appropriate intervention (based on the etiology).

* Goal: to increase her energy and protein intakes, to increase her prealbumin from 14 to 16-35 and to maintain her weight in the healthy BMI range of 18.5-24.9.
* Intervention: adjust her enteral feeding of Vital HN from 25 mL/hr to 50mL/hr and then to 68 mL/hr as suggested. Doing so will increase her protein and calorie consumption to meet her needs adequately.
* Goal: Patient should able to describe and understand the strategies to reduce and prevent dumping syndrome.
* Intervention: Nutrition education to manage and avoid dumping syndrome.

1. What nutrition education should this patient receive prior to discharge?

The first nutrition education would be educate Mrs. Rodriguez on nutrient dense foods and possible supplemental foods that will increase her prealbumin and energy intake. Also, provide optimal nutritional intake and minimize symptoms of malabsorption and/or maldigestion. (P.366)

1. Do any lifestyle issues need to be addressed with this patient? Explain.

Yes, there are lifestyles issues need to be addressed with the patient. Some suggestion to the patient will be slowly progress to five to six small meals each day, consume liquids 30 minutes to 1 hour after solid food, and lie down after eating. Patient is not recommended to drink milk or other beverages with meals or snacks, also tough or chewy meats are not recommended. (P.366-367)