Case Study Project: Crohn's Disease

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Case Study: Crohn's Disease

Mia is a 55-year-old female who has suffered from Crohn's disease for the past 10 years. She has recently had a terminal ileum resection after not responding to corticosteroids and immunosuppressants during a recent flare-up with a severe fistula. She has experienced weight loss and intractable diarrhea with blood in the past month and also states that she is extremely fatigued. The doctor recommends bowel rest.

Height: 5'2" **Weight:** 95# **UBW:** 110#

PMH: Terminal ileum resection
Meds: Adalimumab (Humira), UCERIS
Dx: Crohn's disease s/p SB resection
Diet: Clear liquids
Labs:

137	100	10	76	Albumin:	3.2
3.4	26	0.6		Prealbumin:	14
				Hemoglobin:	12.9
				Hematocrit:	34%

Nutrition Hx:

Breakfast: Toast (1 slice), Jelly (1 tbsp), Eggs (2 scrambled), Orange Juice (8 oz)
Lunch: Rice (1 cup), Ground beef (4 oz), Mixed vegetables (½ cup)
Dinner: Chicken Soup (2 cup), Saltine crackers (8 count), Mixed leafy greens (1 cup)
Snacks: Granola Bar (1 small), Banana (1 whole), Ice cream (1 cup)

24hr recall:

Clear liquids since admission.

Nutrition Assessment:

(FH, CH, PD) 40 y.o. w/ Crohn's dz, s/p ileum resection. C/o intractable diarrhea and fatigue.

Meds: Adalimumab (Humira), UCERIS
PMH: none
Diet: Clear liquids
Dx: S/p ileum resection

(AD BD) Ht: 157.5 cm, Wt: 43 kg, IBW: 50 kg,%IBW: 86%, %UBW: 86%, % Wt change: -14% - severe rate of loss

137	100	10	76	Albumin:	3.2
3.4	26	0.6		Prealbumin:	14
				Hemoglobin:	12.9
				Hematocrit:	34%

(CS) Est. needs: Kcals:1376 kcal/d (32 kcal/kg), Protein: 64.5 g/d (1.5 g/kg), Fluids: 1505 ml/d (35 ml/kg)

Nutrition Diagnosis:

PES statement: Impaired nutrient utilization related to malabsorption as evidenced by unintentional wt loss, intractable diarrhea and removal of portion of the small bowel.

Nutrition Intervention

Nutrition Prescription: Dex15AA5 @ 55ml/hour +10% Lipids @ 30 ml/hour to provide 1333 kcal and 66g pro.

Goal: Meet nutrient needs

Intervention/s: Initiate TPN above.

Monitoring & Evaluation:

F/U with tolerance (N/V/D).

Case Study Questions:

1. **What is Crohn's disease and what effect does it have on the gastrointestinal tract?**

Crohn's disease is a type of inflammatory bowel disease characterized by flare and remission states and has the potential to damage all layers of the gastrointestinal (GI) mucosa. It typically affects multiple portions of the GI tract in a "skipping" pattern most commonly occurring in the ileum and colon. This inflammation and damage to the GI tract in turn causes symptoms such as abdominal pain, cramping, diarrhea, bloating, malabsorption and weight loss.

2. What are the nutritional complications of Crohn's disease?

The main nutritional complications of Crohn's disease are deficiencies in vitamin B12, Zinc, vitamin A, folate, macronutrients (fat, protein and carbohydrate), and water.

3. How do Mia's labs relate to her current diagnosis?

Mia's albumin and prealbumin are low which suggest that her Crohn's is affecting her normal digestion and absorption. Her hemoglobin and hematocrit levels are low suggesting inflammation and internal bleeding of her GI tract. Mia's basic metabolic panel also reveals that her sodium, potassium, chloride, creatinine, and glucose levels are also low which correlate with the recent trauma she has undergone as well as any malnutrition that may have occurred leading up to the time before her surgery.

4. What type of adaptation can the small intestine make after resection?

After resection the small intestine is capable of adaptation in three phases. In the first phase there is extensive fluid and electrolyte loss via diarrhea. In phase two, diarrhea is reduced and the bowel begins to adapt. In phase three, the remaining bowel continues to adapt with increased blood flow, secretions, and mucosal cell growth. In this stage the lumen of the intestine increases in both length and diameter, and an increase in villous height is also seen. All of this adaptation is increased given the presence of the colon.

5. What type of nutrition support would be best for Mia's situation?

Due to the nature of Mia's surgery it would be best if she was first placed on parenteral nutrition during the first phase of her intestinal adaptation post-surgery. In the second phase, Mia can be moved to enteral nutrition support and gradually transition to an oral diet depending on her tolerance in the third phase of her adaptation, however it is commonly practiced to transition the patient directly to oral feedings from parenteral nutrition support.

You are called in to see Mia for a follow up. She has been on TPN for the past two days following her resection surgery. Mia has no signs of N/V/D since placed on TPN.

Nutrition Assessment:

Pt reports no N/V/D.
New labs:

137	103	11	80	Albumin:	3.5
3.6	26	0.7		Prealbumin:	16
				Hemoglobin:	13.1
				Hematocrit:	36%

Nutrition Diagnosis:

Impaired nutrient utilization improving.

Nutrition Intervention

Nutrition Prescription: Dex15AA5 @ 55ml/hour +10% Lipids @ 30 ml/hour to provide 1333 kcal and 66g pro.

Goal: Meet nutrient needs

Intervention/s: Continue TPN above

Monitoring & Evaluation:

F/U with labs.

References:

Tappenden, K. A. (2014). Intestinal adaptation following resection. *Journal of Parenteral and Enteral Nutrition*, *38*(1_suppl), 23S-31S.

Vaughn, B. P., & Moss, A. C. (2014). Prevention of post-operative recurrence of Crohn's disease. *World Journal of Gastroenterology: WJG*, *20*(5), 1147.

2015 European Society Of Coloproctology Collaborating, G. (2018). Risk factors for unfavourable postoperative outcome in patients with Crohn's disease undergoing right hemicolectomy or ileocaecal resection. An international audit by ESCP and S-ECCO. *Colorectal Disease*, *20*(3), 219-227.

Calculations for TPN

Using Dex15 AA5

55 ml x 24 hours= 1320 ml (total volume)

Dextrose: 1320 ml x 15g/100 ml x 3.4g = 673 kcal

Amino Acids: 1320 ml x 5g/ 100 ml x 4 kcal = 264 kcal

Lipids: 30 ml x 12 = 360 ml x 1.1= 360 ml

Dex15 AA5 @55ml/hrs + 10% Lipid @30 ml to provide 1333 kcal and 66g pro.