

Children's National Medical Center Case Study

Ulcerative Colitis

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Introduction

Ulcerative colitis is a type of inflammatory bowel disease (IBD) that affects primarily the colonic and rectal mucosa. Ulcerative colitis does not affect the small intestine, the part of the bowel that is responsible for the majority of digestion and absorption.⁷ Ulcerative colitis may be diagnosed in any age group, equal in both genders and may also be inherited.² A Colonoscopy of the rectum is performed to examine the surface of the colon and biopsies are used to confirm diagnosis to eliminate any gastrointestinal issues that may have similar symptoms.⁷ The main symptoms of ulcerative colitis include: bloody diarrhea, rectal bleeding, abdominal pain, cramping, anemia, weight loss, arthritis, mouth sores and skin rashes¹

Medications used for the treatment of ulcerative colitis include: aminosalicylates, steroids, immunosuppressive agents and anti-inflammatory medications are used to help reduce further damage to the colonic mucosa. ⁷

There are no dietary restrictions for ulcerative colitis while in remission but during a flare it is recommended that the patient should avoid trigger foods, high fiber fruits and vegetables, whole grains, consume lactose free products, small frequent meals and reduce fat consumption. ⁵ During remission a rich balanced diet is recommended which includes vegetables, meat olive oil, foods high in omega three fatty acids, fish and fiber does not have to be restricted. ³

Case Study

CK is a 15-year-old female patient with a history of ulcerative colitis and asthma that presented in emergency department with back and rectal pain three days prior to admission. Patient experienced one episode of bloody diarrhea and lower back pain three days prior to admission. CK continued to experience bloody diarrhea and had five loose stools in the past 48 hours. CK's mother reported that during CK's Ulcerative colitis flares she normally experiences back, rectal pain, malaise and bloody stools. The patient was diagnosed with ulcerative colitis in June 2011 with biopsy results that showed chronic inflammation from the rectum to the transverse colon.

Subjective:

1. Physical Appearance: Patient appears well nourished. Patient is quiet, provided brief answers at the time of assessment.
2. Diet History prior to admission
 - a. Feeding History- N/A patient is 15 3/12 years of age and is on a regular po diet with no restrictions. .
 - b. Method of feeding- N/A, Patient is currently on a po diet
 - c. Oral/Enteral Intake: Regular diet
 - Patient reports of fair appetite prior to admission and normally consumes three meals per day plus snacks in between. Patient reports of gagging on plain milk but able to tolerated flavored milk such as chocolate milk.

Patient denied of any food allergies and does not have any cultural or religious food preferences.

Diet history per patient report
Breakfast -Apple or banana and additional yogurt if she is hungry
Lunch - Sandwich - Yogurt - 1 cup of tea
Dinner - Pasta - Soup
Snacks - Potato chips - Raisins
Beverages - Orange juice - Water

- d. Vitamin or Mineral Supplements
 - Multivitamin + Iron PO daily- Per History and Physical patient is poorly compliant with this medication
 - Viactiv (calcium 500 mg (elemental +750 IU vitamin D) 2 chews per day and per H&P patient is poorly compliant with this medication
- e. Food allergies: None reported

PES

1. Altered GI function related to ulcerative colitis per H&P as evidenced by patient presents with bloody diarrhea and rectal pain.
 - Per H&P on the day of admission the patient had one episode of loose stool and about 2 tablespoon of blood on top. At baseline the patient has 2-3 soft stools per day without blood. Mother reports that during CK's UC flares she usually experiences back/rectal pain, malaise and bloody stools.
2. Diet order
 - A the time of CK's initial assessment she had just been advanced to soft low residue diet for lunch and was previously ordered a clear liquid diet. The patient tolerated lunch well but experienced one episode of emesis at dinner after consuming lasagna. Education was provided for the patient on the importance of a low residue diet, low fat and bland food options to help improve GI symptoms. Also discussed the possible options for lunch at the time of education.

- At the time of CK's follow up assessment the nutrition diagnosis during initial assessment remained appropriate. Patient was advanced to a soft diet. Per mother, patient had emesis before lunch and dinner the day before and was given zofran after second emesis. Patient tolerated dinner well and experienced emesis again before breakfast and was not able to consume breakfast. Patient's experience of emesis possibly not related to food intake given emesis was before meals. Offered patient medical food supplement given patient was not meeting 100% of estimated needs through po diet. Patient was willing to try Boost to help improve po intake. This provides 10kcal/kg and 0.4 gm/kg of protein.
3. Age: 15 3/12 years old.
 - Corrected age- N/A patient is 15 years old (>2 years of age).
 - Justify use of corrected age- N/A patient is 15 years old.
 4. Weight – 69.7 kg
 - Percentile- 90th. Patient was >95th percentile on previous admission
 - Corrected weight percentile- N/A
 - Weight age- N/A
 5. Height – 168 cm
 - Percentile- 75 – 90th, Patient was at 50-75th percentile during previous admission
 - Corrected height percentile- N/A patient is within 75-90th percentile
 - Height age- N/A
 6. Head Circumference- N/A patient is >2 years of age.
 7. Weight/ Height Percentile- N/A, greater than 2 years of age.
 8. Body Mass Index/Percentile- 24.70, 85-90th percentile
 9. Plot patient on growth chart
 - Justify choice of growth chart- According to the CDC, the WHO growth charts are used to monitor growth for infants and children from 0-2 years of age in the United States. The CDC growth charts are used for children 2-20 years old. The CDC growth charts were used given patient is currently 15 years old.
 - Evaluate patient's growth- During previous admission, 1/31/12, patient was 160cm (50-75th percentile), 71.8 kg (>95th percentile), BMI 28 (>85 percentile). Although patient experienced weight loss at the time of assessment it is considered acceptable weight loss given patient was previously classified as obese (>95th percentile). Patient experienced on average of 0.25 kg/month
 10. Estimated Requirements
 - Kcals/kg- 25 kcal/kg/day
 - Grams protein/kg- 0.85 gm/kg/day
 - mL/day to meet maintenance fluid needs- 2,500 mL/day
 - Justify how you determined these numbers
 - Kcal/kg/day– Based on DRI for girls between the age of 14-16

- Grams Protein/kg- Based on DRI for girls between the age of 14-16
- Fluid needs are based on the Holliday Segar Method for maintenance fluids.

11. Nutrition related Medications reviewed

- Lansoprazole (Prevacid): a proton pump inhibitor used to decrease the amount of acid produced in the stomach. Prevacid is used to treat/prevent stomach and intestinal ulcers, damage of the esophagus and other issues that may cause excessive stomach acid. Prevacid may decrease the absorption of iron and Vitamin B12. Some side effects include: nausea, vomiting, abdominal pain and diarrhea.
- Prednisone is an anti-inflammatory and immunosuppressant medication that may be used to treat arthritis, blood disorders, allergies, cancer, eye problems and immune system disorders. In addition, this medication causes hyperglycemia. Prolonged use of prednisone may cause osteoporosis and increase risks of fractures. Calcium and vitamin D supplementation is recommended with prolonged use of prednisone.
- Omeprazole: an anti-gerd medication used to treat symptoms of GERD and prevent damage to the esophagus. It may decrease the absorption of iron and vitamin B12.
- Zofran: a medication used to prevent nausea and vomiting. Some side effects include: dry mouth, abdominal pain, constipation and diarrhea.
- Calcium carbonate: an antacid, mineral supplement, phosphate binder that may also be used for anti diarrhea.
- Cholecalciferol (Vitamin D3) : a vitamin used to increase calcium absorption. Excessive vitamin A intake may decrease vitamin D effect on calcium absorption. It may cause dry mouth, metallic taste, nausea, vomiting, constipation or diarrhea.
- Miralax: a laxative used to prevent constipation. It may cause nausea, bloating, cramps, flatulence, diarrhea and increased stool output.
- Mesalamine (Lialda): an anti-inflammatory medication used to treat ulcerative colitis. Some side effects include: nausea, vomiting, dyspepsia, abdominal cramps, diarrhea, constipation and flatulence.
- Protonix: An antigerd medication used to treat symptoms of GERD. It may decrease the absorption of iron and vitamin B12.
- Nalbuphine: a painkiller used to relieve pain. Some side effects include: vomiting, stomach cramps, dry mouth, bitter taste and drowsiness.⁴
- Multivitamin with minerals
- Multivitamin with iron

12. Pertinent Labs Reviewed

- Include labs available when assessing this patient
- | Labs | 1/23/13 | Normal Range |
|------|---------|--------------|
|------|---------|--------------|

Na	134	133-143
K+	4.1	3.3-4.7
Cl	105	97-107
CO2	23	16-25
BUN	2 (L)	7-21
Cr	0.6	0.5-1.1
Glucose	102	65-115
Ca(corrected)	9.28 (L)	9.3-10.7
Mg	1.9	1.6-2.5
PO4	3.7	3.1-5.5
Vitamin D	20	>30
Albumin	2.93	3.8-5.6
CRP (1/25/13)	2.47	0.6-0.81

- Note labs deemed nutritionally significant and justify why
 - Electrolytes should be monitored to assess hydration status to ensure that patient is meeting estimated fluid needs through PO diet and IV fluids.
 - Calcium levels should be monitored since one of the side effects to prednisone is osteoporosis and increase risk of fracture with prolonged use. IBD patients have increased loss of bone mass that may potentially result in osteoporosis and osteopenia. Some studies show that patient s with IBD have an increased risk of fractures by up to 40-60%. ⁷
 - Low BUN levels may be an indicator for malabsorption
 - Glucose levels must be monitored given prednisone may induce hyperglycemia.
 - C-reactive protein is an inflammatory marker that increases when there is inflammation throughout the body. Albumin levels are another inflammatory marker that is low when inflammation is present.

Assessment

1. Nutrition risk level: High risk
 - a. This patient is at a high-risk nutrition risk given patient was recently advanced to a soft low residue diet, consuming less than 50% of meals and had a history of emesis and frequent bowel movements during UC flare. It is important to monitor and determine whether or not patient is tolerating a PO diet.
2. Pertinent lab values: Reviewed
 - a. BUN levels were low and may be an indicator of over hydration or malabsorption
 - b. Corrected calcium levels were borderline low and should be monitored. Prolonged use of prednisone increases risk of osteoporosis and fractures.

- c. Electrolytes were within normal limits indicating adequate fluid hydration.
3. IV Fluids
 - a. D5+ ½ NS + KCl 20 mEq/L @ 60 ml/hr providing a total of 1440 ml/day (20 ml/kg). CK is meeting 57% of estimated fluid needs through IV fluids and the remaining via PO diet.
4. Growth
 - a. Rate of weight change: 0.25 kg/month in the past 12 months. Patient's previous admission weight was 71.9 kg.
 - b. Appropriateness of growth: Appropriate in terms of height, weight and BMI.
 - c. Patient is at the 90th percentile for weight which may seem high but patient was >95th percentile one year ago. Patient's height is trending up and is currently the 75 – 90th percentile. Patient was at 50-75th percentile during previous admission. Patient's current BMI is 24.7 and is at the 85-90th percentile. Patient experienced weight loss but patient is a competitive swimmer and exercises 4 times per week. Hence, weight loss that patient experienced is considered appropriate weight loss.
5. Diet prior to admission
 - a. Adequacy of macronutrients and micronutrients: Adequate macronutrient intake through PO diet. Patient reports of good appetite prior to admission and normally consumes three meals per day plus snacks. During the patient's previous admission Vitamin D levels were low and per the history and physical the patient is poorly compliant with Multivitamin with Iron and Viactiv.
 - b. Adequacy of fluid- Adequate, patient was on a regular diet with no food restrictions.
 - c. Appropriateness of supplements – Patient was poorly compliant with prescribed multivitamin and Viactiv.
 - d. Contribution of supplements to overall intake- Addition of multivitamin + Iron and Viactiv to meet estimated needs.
 - e. Justify your assessment
Patient reports of good appetite prior to admission and is consuming three meals per day plus snacks. Patient previously had vitamin D levels were within normal limits but last lab value was one year ago. During diet history patient report that she consumes yogurt at least two times per day. Hence, I recommended rechecking vitamin D levels since last lab value was approximately one year ago (1/31/12).
6. Diet order- Soft low residue diet
 - a. Adequacy of macro and micronutrients- Patient report that she consumed less than 50% of meal for lunch at the time of initial assessment. Per chart, patient with loose blood tinge stool in the morning. Patient is not meeting 100% of estimated nutrition needs.
 - b. Adequacy of fluid- Patient is receiving 57% of estimated fluid needs through IV fluids and the remaining through PO diet.

- c. Appropriateness of supplements- Patient continues home medications including multivitamin with iron, calcium and vitamin D supplements.
 - d. Contribution of supplements to overall intake - Addition of multivitamin + Iron and Viactiv to meet estimated needs.
 - e. Appropriateness of administration- N/A patient is currently on a PO diet.
 - f. Justify your assessment
Patient was not meeting 100% of estimated needs through PO diet at the time of initial assessment given patient was recently advanced from a clear liquid diet and patient consumed less than 50% of meal at lunch time. Patient's goal is to consume about 1742 kcal/day (25 kcal/kg/day) to meet estimated nutrition needs.
7. Accuracy of data available: Data is accurate from labs. There were labs available at the time of assessment from and labs were drawn on the same day of initial assessment. However, recommended to check vitamin D levels since the last lab value was from one year ago

Plan/Goals:

1. Oral nutrition- Patient to tolerate soft diet and meet 100% of estimated nutrition needs through PO diet. Continue with soft diet and advance to low residue diet as tolerated. Continue with vitamin D, Multivitamin with iron and calcium supplements as ordered.
2. Enteral nutrition- N/A patient currently on PO diet.
3. Parenteral nutrition – N/A patient currently on PO diet
4. Labs/ Studies- Recommend to check 25(OH) Vitamin D level (last vitamin D checked on 1/31/12)
5. Growth- Monitor daily weights and goal is weight maintenance at this time.
6. Additional information needed- none.
7. Follow up in three days 1/25/13 to ensure that patient is tolerating PO diet given patient is currently consuming less than 50% of meals.
8. Justify your plan/goal: Will follow up in three days to ensure that patient is tolerating PO diet without nausea, vomiting or diarrhea. Patient was recently advanced from clear liquid diet. Provide education if needed and offer medical food supplements if patient continues with poor PO intake.

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