CASE STUDY:
ULCERATIVE COLITIS

Sammi Montag
Dietetic Intern
2013-2014
26 year old female

Chief complaint: bloody diarrhea and abdominal pain

Admitting diagnosis: Ulcerative colitis exacerbation, hyponatremia, leukocytosis, anemia, hypokalemia

Past medical history: Diagnosis of ulcerative colitis in November 2013 at Sharp Hospital
ULCERATIVE COLITIS (UC) OVERVIEW

- Form of Inflammatory Bowel Disease (IBD) which causes chronic inflammation of the colon
  - Can affect a localized area or the entire colon
- Symptoms include:
  - Abdominal cramping
  - Bloody diarrhea
  - Anemia
  - Fatigue
  - Anorexia
  - Pus or mucus discharge between stools
  - Additional complications can include skin rashes, cirrhosis, arthritis, stomatitis, endocarditis, and splenomegaly
UC RISK FACTORS/CAUSES

- Risk factors:
  - Genetics: 5-15% of patients have positive family history
  - Environmental factors (diet, stress, socio-economic factors)
  - Smoking
  - Infectious agents
  - Intestinal flora

- Possible causes:
  - Abnormal immune response that causes a release of cytokines that destroy the intestinal mucosa with excessive and abnormal inflammatory reaction
- Damages the first two layers of tissue (mucosa and superficial submucosa)
- When too thin it can cause ulcerations in the intestinal wall
UC TREATMENT

- Medications
  - Immunosuppressant medications
  - Andrencorticosteroids
  - Anti-inflammatory medications
  - Antidiarrheal
  - Steroids
  - Biologic therapies (genetically engineered medications)
  - Antibiotics

- Surgery (30% of patients)
  - total colectomy
  - subtotal colectomy
  - total proctocolectomy with Brooke ileostomy
  - restorative proctocolectomy with ileal pouch-anus anastomosis
Poor nutritional status is common as a result of:

- Anorexia
- Restrictive diets
- Side effects of medications
- Protein losses from ulcerated mucosal lesions
- Blood loss or wound healing requirements
- Bacterial overgrowth
- Malabsorption
BMI <15: 35-45 kcal/kg
BMI 15-19: 30-35 kcal/kg
BMI 20-29: 25-30 kcal/kg
BMI >30: 15-25 kcal/kg

Additional supplementation need include:
- MVT
- Zinc
- Calcium
- Magnesium
- Copper
- ASPEN recommends 1500mg elemental calcium and 800-1000 IU vitamin D

Nutrition support is often required to correct nutritional status during periods of exacerbation (Evidence does not support the use of enteral nutrition as a primary therapy)
Height: 67”
Weight: 100lbs
IBW: 135lbs
%IBW: 74%
BMI: 15.42
Weight loss: CK reported an unintentional weight loss of 20lbs (17%) over the course of the month leading up to admission
  - r/t diagnosis of UC and constant diarrhea x 3 weeks
Diet Rx: clear liquid (NPO planned after midnight for procedure)
2/25/14 c-diff was negative
Assessed at HIGH nutrition risk given significant weight loss
CK had no history of smoking nor any family history of UC
## INITIAL NUTRITION ASSESSMENT

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
<th>Out of Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium</td>
<td>126 mmol/L</td>
<td>Low</td>
</tr>
<tr>
<td>Potassium</td>
<td>3.1 mmol/L</td>
<td>Low</td>
</tr>
<tr>
<td>Chloride</td>
<td>91 mmol/L</td>
<td>Low</td>
</tr>
<tr>
<td>Calcium (corrected)</td>
<td>8.0 mg/dL</td>
<td>(corrected to 9 within normal limits)</td>
</tr>
<tr>
<td>Albumin</td>
<td>2.8 g/dL</td>
<td>Low</td>
</tr>
<tr>
<td>C-reactive Protein</td>
<td>14.9 mg/dL</td>
<td>High</td>
</tr>
</tbody>
</table>
## NUTRITION INITIAL ASSESSMENT

<table>
<thead>
<tr>
<th>Medication</th>
<th>Use/side effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zofran</td>
<td>Antiemetic Side effect: constipation, diarrhea, abdominal pain</td>
</tr>
<tr>
<td>Dextrose 5%</td>
<td>Hydration</td>
</tr>
<tr>
<td>Methyl-Prednisone</td>
<td>Anti-inflammatory/immunosuppressant Side effects: nausea, vomiting, anorexia</td>
</tr>
<tr>
<td>Flagyl</td>
<td>Antibiotic Side effects: nausea, vomiting, diarrhea, taste changes</td>
</tr>
<tr>
<td>Golytely</td>
<td>Clean out intestines</td>
</tr>
<tr>
<td>Normal Saline</td>
<td>Hydration</td>
</tr>
<tr>
<td>Potassium chloride</td>
<td>Replete low potassium Side effects: GI irritation, nausea, vomiting, diarrhea</td>
</tr>
</tbody>
</table>
Estimated energy needs: (using Mifflin based on 45.4kg) 1356-1695 kcal/day (30-37 kcal/kg)

Estimated protein needs: 46-55 g/day (1-1.2 g/kg)

Estimated fluid needs: 1.4-1.7 L/day (1 ml/kcal)

Dx statement: Altered GI function related to compromised GI tract function as evidenced by bloody diarrhea and diagnosis of UC.

Goal: receive >75% of nutritional needs with acceptable tolerance
1. Advance diet per MD: Suggest clear liquids → full liquids → low residue (low fiber) diet
   - Given diagnosis of UC
2. Check prealbumin to better assess nutritional status
   - CK at risk for malnutrition given weight loss and diarrhea
3. Daily weights to trend
   - To ensure no additional weight loss
   - Goal to maintain or to gain
4. Consider adding daily multivitamin with minerals
   - Given poor appetite and constant diarrhea
5. Consider adding zinc sulfate due to persistent diarrhea
   - Deficiency common with UC patients and with long-term diarrhea
Flexible sigmoidoscopy performed on HD#1 with biopsies taken

Formal UC education provided

On regular diet with improving appetite

First round of Remicade started

Recommendations:

1. Continue regular diet and encouraged small, frequent meals.
2. Will send snacks TID and Gatorade TID
3. Daily weights to trend
4. Consider adding daily multivitamin with minerals
5. Consider adding zinc sulfate due to constant diarrhea.
SECOND FOLLOW-UP (HD#6)

- PICC line placed with plans to initiate TPN
- Not responding well to IV steroids – 5 BMs x 24hrs (per MD)
- Improved PO however quickly satiated

Recommendations:

1. Continue regular diet with snacks and Gatorade TID
2. Begin TPN per MD once PICC line placed: Recommend D15% AA5% @ 60ml/hr x 24hrs + 240ml lipids (@ 20ml/hr x 12hrs) to provide 1502 calories and 72g protein, 3.3mg dextrose/kg/min GIR, and 1.05 g/kg fat load
   - Check triglycerides for baseline and then weekly to trend
   - Start @ 40ml/hr for first day then increase to goal of 60ml/hr
3. Check prealbumin and CRP level weekly to trend
4. Daily weights to trend.
Received nutrition consult for enteral nutrition with hopes to wean TPN

TPN infusing at time of visit

Recommendations:

1. Continue regular diet with snacks and Gatorade TID
2. Will start resource breeze supplement TID with meals (each resource breeze = 250 calories and 9g protein)
3. Will continue high calorie/high protein dense snacks between meals
4. Continue current D15% AA5% @ 60ml/hr x 24hrs + 240ml lipids (@ 20ml/hr x 12hrs) to provide 1502 calories and 72g protein, 3.3mg dextrose/kg/min GIR, and 1.05 g/kg fat load
   ▪ Check triglycerides baseline then weekly to trend
   ▪ If able to tolerate meals and meet at least 75% of nutritional needs via PO intake of meals and maintain/gain weight, then can D/C TPN
5. Check prealbumin and CRP level weekly to trend
6. Daily weights to trend.
Received nutrition consult requesting recommendation for 12-hour infusion schedule of TPN

Recommendations:
- run 40ml/hr x 30mins
- 80ml/hr x 30min
- 132ml/hr x 10hrs
- 80ml/hr x 30mins
- 40ml/hr x 30mins then stop
## LAB TRENDS THROUGHOUT ADMISSION

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium</td>
<td>126 (L)</td>
<td>134 (L)</td>
<td>WNL</td>
<td>WNL</td>
</tr>
<tr>
<td>Potassium</td>
<td>3.1 (L)</td>
<td>WNL</td>
<td>3.3 (L)</td>
<td>WNL</td>
</tr>
<tr>
<td>Chloride</td>
<td>91 (L)</td>
<td>WNL</td>
<td>WNL</td>
<td>WNL</td>
</tr>
<tr>
<td>Calcium</td>
<td>8 (C-9)</td>
<td>8 (L)</td>
<td>8 (L)</td>
<td>8.2 (C-9.3)</td>
</tr>
<tr>
<td>Albumin</td>
<td>2.8 (L)</td>
<td>--</td>
<td>--</td>
<td>2.6 (L)</td>
</tr>
<tr>
<td>CRP</td>
<td>14.9 (H)</td>
<td>5.4 (H)</td>
<td>3.5 (H)</td>
<td>1 (H)</td>
</tr>
<tr>
<td>Glucose</td>
<td>WNL</td>
<td>118 (H)</td>
<td>143 (H)</td>
<td>132 (H)</td>
</tr>
<tr>
<td>Prealbumin</td>
<td>--</td>
<td>--</td>
<td>17 (L)</td>
<td>19 (L)</td>
</tr>
</tbody>
</table>
## WEIGHT TRENDS THROUGHOUT ADMISSION

<table>
<thead>
<tr>
<th>Date</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/5/14</td>
<td>100lbs</td>
</tr>
<tr>
<td>3/7/14</td>
<td>106lbs</td>
</tr>
<tr>
<td>3/12/14</td>
<td>100lbs</td>
</tr>
<tr>
<td>3/12/14</td>
<td>100lbs</td>
</tr>
</tbody>
</table>
- Met goals of decreased bowel movement frequency, stool having a more formed consistency, and the sensation of abdominal fullness subsided
  - At discharge CK was eating 62% of meals + foods provided by family from outside + TPN infusing at goal
- Tx for anemia: blood transfusion and going home on iron supplements
- s/p 2 rounds of remicade and going home on prednisone
  - Planned to taper down over the following two-weeks
- Tx for malnutrition: sent home on TPN (12-hour regimen) + MVT
<table>
<thead>
<tr>
<th>Visit</th>
<th>Significant Events</th>
<th>Nutrition Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day of admission</td>
<td>Nutrition consult</td>
<td>Initial assessment</td>
</tr>
<tr>
<td>HD#2</td>
<td>s/p flexible sigmoidoscopy</td>
<td>Provided IBD education</td>
</tr>
<tr>
<td>HD#6</td>
<td>Placement of PICC line</td>
<td>TPN recommendations</td>
</tr>
<tr>
<td>HD#8</td>
<td>Nutrition consult for weaning TPN</td>
<td>Snacks and supplements added</td>
</tr>
<tr>
<td>HD#9</td>
<td>Nutrition consult for home TPN</td>
<td>12 hour TPN recommendations provided</td>
</tr>
</tbody>
</table>
Outpatient follow up 3 days post-discharge

Weight: 100#

Additional medications: caltrate

Plans:
  - Taper off prednisone
  - Flexible sigmoidoscopy in 4 months
  - Taper TPN
Depending on the severity of the disease, UC patients may experience multiple hospitalizations, multiple procedures, and multiple surgeries.

It is the job of clinical nutrition to understand how to best treat these patients in order to maintain positive nutritional status.

In the case of CK, early nutrition support interventions were provided with the help of clinical nutrition and gastroenterology services which led to an improved nutritional status.