Crohn’s Disease

Inflammatory Bowel Disease

Presented by: Lubna Qureshi
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UT Health Science Center, San Antonio, TX
Learning Objectives

The participant will be able to:

- Illustrate the characteristics of Crohn’s disease (CD)
- Demonstrate a clear understanding of pathophysiology, treatment and nutrition implications/interventions related to CD
- Apply appropriate nutrition interventions to patients suffering from IBD/CD
An autoimmune Inflammatory condition of the gastrointestinal tract

IBD leads to two major diagnosis
1. Crohn’s Disease
2. Ulcerative Colitis
Inflammatory damage of gastrointestinal mucosa caused by abnormal immune response.

**Predisposition**
- Genetic susceptibility
- People from Eastern European (Ashkenazi) Jewish heritage
- Some association with cigarette smoking
Localized inflammation in bowel mucosa progresses through bowel wall and ultimately destroys mucosa

Usually localized in terminal ileum and colon but can attack any portion of the GI tract (skipping pattern)
Signs and symptoms

- Chronic diarrhea
- Abdominal pain and cramping
- Blood/mucus in stool
- Malnutrition
- Anorexia
- Tenesmus
- Weight loss
- Fever
- Delayed growth in adolescents
<table>
<thead>
<tr>
<th>NUTRITIONAL</th>
<th>CLINICAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malabsorption</td>
<td>Abdominal fistula</td>
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<tr>
<td>Malnutrition</td>
<td>Intestinal obstruction</td>
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<tr>
<td>Anorexia</td>
<td>Bacterial overgrowth</td>
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<tr>
<td>Deficiencies</td>
<td>Gallstone</td>
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<tr>
<td>PEM</td>
<td>Kidney stone</td>
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<tr>
<td>Drug-nutrient interaction</td>
<td>UTI</td>
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<tr>
<td>Anemia</td>
<td>Perianal disease</td>
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<tr>
<td></td>
<td>Poor wound healing</td>
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<tr>
<td></td>
<td>Osteoporosis</td>
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<td></td>
<td>Compromised Immune system</td>
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</tbody>
</table>
Diagnostic Measures

- CDAI score
- Antiglycan antibodies
- Calprotectin, lactoferrin
- Barium enema with air contrast
- Mucosal biopsies
- Abdominal ultrasound
- MRI
- CT scan
- Endoscopy
## Diagnosis: CDAI score

<table>
<thead>
<tr>
<th>Stage</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>CDAI (150-220)</td>
<td>Ambulatory individuals can tolerate oral alimentation without the development of dehydration, toxicity, abdominal tenderness, painful mass, obstruction, &gt;10% weight loss</td>
</tr>
<tr>
<td>Mild – moderate disease</td>
<td></td>
</tr>
<tr>
<td>CDAI (220-450)</td>
<td>Individuals who fail to respond to tx for mild-moderate disease or have major symptoms of fever, significant weight loss, abdominal pain, tenderness, intermittent N/V, significant anemia</td>
</tr>
<tr>
<td>Moderate-severe disease</td>
<td></td>
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<tr>
<td>CDAI (&gt;450)</td>
<td>Individuals with persistent symptoms in spite of medication use or have high fever, persistent vomiting, evidence of intestinal obstruction, rebound tenderness, cachexia, evidence of an abscess</td>
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<tr>
<td>Severe-Fulminant disease</td>
<td></td>
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<tr>
<td>Remission</td>
<td>Asymptomatic individuals or those without inflammatory sequelae, those responded to acute medical intervention or surgical resection without gross evidence of residual disease.</td>
</tr>
</tbody>
</table>
Treatment

- (Mesalamine, sulfasalazine)
- Aminosalicylate medications
- Immunosuppressive medications
- Immunomodulators
- Corticosteroids
- Antibiotics
- Biologic therapies
- Surgical intervention
35 YOM, Caucasian
Married, father of a 5yo son, high school math teacher.
Non smoker, non drinker
No family hx of disease
C/O “unbearable abdominal pain, constant diarrhea and current fever”
Dx of IBD 3 yrs ago
Dx of Crohn’s disease 2 ½ yrs ago
Initially acute disease within last 5-7 cm of jejunum and first 5 cm of ileum
Tx with corticosteroids, Azulfidine, recently 6-mercaptopurine
Hospitalized with abscess and acute exacerbation of Crohn’s disease, 4 months ago
Allergy: possibly milk
Vitals
Temp 101.5°F, BP 125/82 mm/Hg

Ct scan indicated bowel obstruction
Crohn’s disease classified as severe fulminant
Diarrhea, abdominal pain, weight loss and fever consistent with the Dx
Patient Information: Anthropometric Assessments

- Ht-5’9”
- Wt- 63.6kg (140#)
- BMI- 20.7 (normal)
- UBW- 167# (84% UBW)
- IBW- 160# (88% IBW)
- 16% wt →
# Patient Information: Labs

<table>
<thead>
<tr>
<th>Lab</th>
<th>Normal Range</th>
<th>Admit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albumin</td>
<td>3.5-5 g/dL</td>
<td>3.2 g/dL</td>
</tr>
<tr>
<td>Total Protein</td>
<td>6-8 g/dL</td>
<td>5.5 g/dL</td>
</tr>
<tr>
<td>Prealbumin</td>
<td>16-35 mg/dL</td>
<td>11 mg/dL</td>
</tr>
<tr>
<td>Transferrin</td>
<td>215-365 mg/dL</td>
<td>180 mg/dL</td>
</tr>
<tr>
<td>C-Reactive protein</td>
<td>&lt;1.0 mg/dL</td>
<td>2.8 mg/dL</td>
</tr>
<tr>
<td>Ferritin</td>
<td>20-300 mg/mL</td>
<td>16 mg/mL</td>
</tr>
<tr>
<td>ASCA</td>
<td>neg</td>
<td>+</td>
</tr>
</tbody>
</table>
Pt states consuming “fairly normal diet”
- Low fiber
- Used Boost between meals
- Purposefully avoided milk but consumed cheese
- Daily multivitamin
- Home cooked food by wife/self
# Nutritional History

## Recent Dietary Intake

<table>
<thead>
<tr>
<th>Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>Cereal, skim milk, toast, bagel, juice</td>
</tr>
<tr>
<td>AM Snack</td>
<td>Cola, sometimes crackers/pastry</td>
</tr>
<tr>
<td>Lunch</td>
<td>Sandwich (ham or turkey) from home, fruit, chips, cola</td>
</tr>
<tr>
<td>Dinner</td>
<td>Meat, pasta or rice, some type of bread, rarely eats vegetables</td>
</tr>
<tr>
<td>Bedtime snack</td>
<td>Cheese and crackers, cookies, cola</td>
</tr>
</tbody>
</table>
Surgical Intervention

- Dx: bowel obstruction
- 200 cm resection of jejunum and proximal ileum with placement of jejunostomy
- Ileocecal valve preserved
- Intact colon
- SBS
Nutritional Outcome After Surgical Intervention

- Nutrition support consult
- Immediately postoperative Parenteral Nutrition
- Jejunum-Absorption site of macronutrients and most micronutrients
  - Amino acids
  - Small Peptides
  - Lipids
  - Monosaccharides
  - Ca, Fe, Po4, Mg, Vitamins A, D, E, K, Vitamin C, vit B6
Nutritional Diagnosis

- **PES:**
  Altered GI function (NC, 1.4) R/T severe fulminant Crohn’s disease AEB diarrhea, fever and severe abdominal pain.

- **Ideal Goal:**
  Initiate PN to provide 127g protein, 254g CHO, 60g of 3% lipid to meet energy demands related to CD

- **Intervention**
  - Initiate PN post operative
  - Multidisciplinary team meeting to reassess for enteral nutrition eligibility
  - Monitor basic metabolic panel
  - Monitor weight change
Estimation of Energy Requirement

- **Harris-Benedict:**
  
  \[ \text{REE} = 1579 \text{ kcal} \]

- **Mifflin St. Jeor:**
  
  \[ \text{REE} = 1658 \text{ kcal} \]

- **Ireton Jones:**
  
  \[ \text{REE} = 3246 \text{ kcal} \]

- **TEE:**
  
  \[ \text{TEE} = 2285 \text{ kcal} \]
Estimated Nutritional Needs

- Energy needs: 1818-2180 kcal/d
- Protein needs: 109g-127 g (436-509 kcal/d)
- Lipid needs: 60 g (657 kcal/d)
- CHO needs: 254g (1014 kcal)
- Fluid needs: 1 mL /kcal=2180mL/d
Post operative Nutrient Prescription

- 200g Dextrose/L
- 42.5g AA/L
- 30g Lipid/L

Parenteral nutrition initiated at 50cc/hr with goal rate of 85cc/hr
## Post operative Nutrient Prescription Comparison

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Ordered</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>2600 kcal</td>
<td>2180 kcal</td>
</tr>
<tr>
<td>Protein</td>
<td>85g</td>
<td>127g</td>
</tr>
<tr>
<td>Lipids</td>
<td>60g</td>
<td>60g</td>
</tr>
<tr>
<td>CHO</td>
<td>400g</td>
<td>254g</td>
</tr>
</tbody>
</table>
PN to provide 127g protein, 254g CHO, 60 g of 3% lipid with electrolytes and trace elements per consult with the multidisciplinary team.
Pt C/O “unbearable abdominal pain, constant diarrhea and current fever”. Previously dx with acute crohn’s disease within 5-7 cm of jejunum and first 5 cm of ileum. Pt reports losing >20# wt during past four months after hospitalization due to abscess and acute exacerbation of CD.

35 YOM, Dx: Crohn’s disease classified; severe fulminant

Ht-5’9”, Wt- 63.6kg (140#), UBW 167#, BMI-20.7
Lab: Albumin:3.2 g/dL, Total Protein: 5.5g/Dl CRP: 2.8mg/dL; Pre albumin: 11 mg/Dl
EER: 1818-2180 kcal/d, EPR: 109g-127 g (436-509 kcal/d)
Altered GI function (NC, 1.4) R/T severe fulminant Crohn’s disease AEB diarrhea, fever and severe abdominal pain.

Increased protein needs (NI, 5.1) R/T altered GI function AEB diarrhea and recent weight loss of more than 20#. 
Initiate PN post operative to provide 127g protein, 254g CHO, 60 g of 3% lipid

Multidisciplinary team meeting to reassess for enteral nutrition eligibility
ADIME: Monitoring and Evaluate

- Monitor basic metabolic panel
- Monitor for transition to EN
- Evaluate if any weight change occurs
- Referral for rehabilitation after discharge
References

4. http://www.ccfa.org/info/about/crohns