CASE STUDY REPORT: NUTRITIONAL MANAGEMENT OF CROHN’S DISEASE

Lindsey Warren, MS
ARAMARK Dietetic Intern
Providence Medical Center
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# Vitamin and Mineral Supplements

<table>
<thead>
<tr>
<th>Nutrient of Concern</th>
<th>Recommended Supplementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid/Electrolytes</td>
<td>Oral replacement solution</td>
</tr>
<tr>
<td>Iron</td>
<td>Start at 300mg/day → ↑to 300mg three times daily</td>
</tr>
<tr>
<td>Magnesium</td>
<td>Dose varies between 5 and 20mmol/day</td>
</tr>
</tbody>
</table>
| Zinc                | Dose varies between 20 and 40mg/day  
  *Zinc should be provided to all IBD patients with significant diarrhea.* |
| Calcium             | Dose between 1000-1500mg, provided in divided doses. |
| Folic acid          | 1mg/day                     |

Hebuterne et al (2009)
Diet-Related Disease

- Systematic review (19 studies):
  - ↑ intake total fats, PUFAs, omega-6 fatty acids, and meat ➞ ↑ development of CD.
  - ↑ Fiber and fruit intake ➞ ↓ risk of CD.
    - ↑ Fiber: protective affect >22.1gm/day
    - ↑ Fruits: 73-80% decreased risk of CD

Hou et al (2011)
Relapse Prevention with a Semi-Vegetarian Diet

- 2-yr Prospective Clinical Trial
- Remission Rate
  - Semi-Vegetarian Diet
    - 100% 1-year, 92% 2-year
    - Incidence of relapse at 2-years was significantly lower in the SVD group (p=0.0003)
  - Omnivorous Diet
    - 67% 1-year, 25% 2-year

Chiba et al (2010)
Anti-Inflammatory Effect of Probiotic Yogurt

- Single-blinded clinical trial
- Daily supplementation (125gm x 30 days)
  - Increased immune response
    - ↓ TNF-α and IL-12-producing monocytes
    - May play a major role in pathogenesis in CD
- No significant changes with plain yogurt supplementation.

Baroja et al (2007)
Research Limitations

- More research is needed
  - Lack of large, randomized, controlled clinical trials
- Studied only small populations
- Open-label or single blinded
- Studied short-term effects only
Nutrition Prescription for Exacerbations

- Prevent negative nitrogen balance
- Provide adequate fluid and electrolyte replacements
- Diet progression
  - Clear liquids $\rightarrow$ low-fat, low-fiber, high-protein, high-kilocalorie, diet in small frequent meals.
  - Add fiber as tolerated
- Short-term lactose intolerance
Nutrition Prescription for Remission

- **Focus:**
  - Weight management
  - Replenishment of nutrient stores
- **Avoid high-oxalate foods**
- **Increase antioxidant intake**
- **Encourage probiotics and prebiotics**
Case Study Report

- 27-year-old morbidly obese male
- Recent job loss; no insurance
- Bloody diarrhea and abdominal pain x 2-3 months before hospitalization
- Admission #1: Crohn’s Disease diagnosis
  #2: Pan colitis
  #3: Colectomy and Ileostomy placement
Anthropometric Measurements

<table>
<thead>
<tr>
<th>Height</th>
<th>Admission Weight</th>
<th>Ideal Body Weight</th>
<th>Adjusted body weight</th>
<th>BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>6’ 1”</td>
<td>473lbs</td>
<td>184lbs</td>
<td>256lbs</td>
<td>63kg/m²</td>
</tr>
</tbody>
</table>

Estimation of Nutrient Needs

<table>
<thead>
<tr>
<th>Nutrient needs</th>
<th>19 to 22kcal/kg x 116kg = (2200) to (2552) kcal/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein needs</td>
<td>1.5 to 2.0 x 116kg = (174) to (232) gm of Protein/day</td>
</tr>
</tbody>
</table>
Diet Progression

- **Procalamine with lipids @ 75cc/hr**
  - Provided: 52g Pro/day
  - 941kcal/day

- **Custom TPN**
  - Provided: 150g of Pro/day
  - 2120 Kcals/day

- **Clear Liquid Diet**
  - Provided: 0g of Pro/day
  - 350 Kcals/day

- **Soft, Bland Diet**
  - Provided: 80g of Pro/day
  - 2000 Kcals/day
  + Beneprotein
  - 36g of Pro/day
  - 150 kcal/day

- **Regular Diet**
  - Provided: 80g of Pro/day
  - 2000 Kcals/day

Both Soft and Regular Provided:
- 80g of Pro/day
- 2000 Kcals/day
+ Beneprotein
- 36g of Pro/day
- 150 kcal/day
### Pertinent Medications

<table>
<thead>
<tr>
<th>Medication</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zofran</td>
<td>Anti-nausea</td>
</tr>
<tr>
<td>Prednisone</td>
<td>Reduces swelling and redness</td>
</tr>
<tr>
<td>Insulin</td>
<td>Used to treat hyperglycemia secondary to steroid treatment</td>
</tr>
<tr>
<td>Remicade</td>
<td>Anti-inflammatory</td>
</tr>
<tr>
<td>Protonix</td>
<td>Decreases stomach acid production</td>
</tr>
<tr>
<td>Mesalamine</td>
<td>Anti-inflammatory</td>
</tr>
<tr>
<td>Propofol</td>
<td>Short-acting sedation for surgery and intubation</td>
</tr>
<tr>
<td>Albumin</td>
<td>To replete albumin</td>
</tr>
<tr>
<td>Zosyn</td>
<td>Fights infection</td>
</tr>
<tr>
<td>Flagyl</td>
<td>Fights infection</td>
</tr>
<tr>
<td>Magnesium</td>
<td>To treat hypomagnesemia</td>
</tr>
<tr>
<td>Laboratory</td>
<td>Reference Range</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Albumin</td>
<td>3.4 – 4.7 gm/dL</td>
</tr>
<tr>
<td>PreAlbumin</td>
<td>18 – 36mg/dL</td>
</tr>
<tr>
<td>Glucose</td>
<td>70 – 99mg/dL</td>
</tr>
<tr>
<td>Magnesium</td>
<td>1.5 – 2.5mg/dL</td>
</tr>
<tr>
<td>Calcium</td>
<td>8.4 – 10.2mg/dL</td>
</tr>
<tr>
<td>Creatinine</td>
<td>0.7 – 1.3mg/dL</td>
</tr>
</tbody>
</table>
ARAMARK Nutrition Classification

- Nutrition History – 3
- Feeding Modality – 0
- Unintentional Weight loss – 3
- Weight Status – 4
- Serum Albumin – 4
- Diagnosis – 3
- Total = 17 Severely Compromised
# Nutrition Diagnoses

<table>
<thead>
<tr>
<th>Domain</th>
<th>Problem</th>
<th>Related To</th>
<th>Etiology</th>
<th>As Evidence By</th>
<th>Signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical NC-1.4</td>
<td>#1 Altered Gastrointestinal Function</td>
<td>R/T</td>
<td>Crohn’s Disease</td>
<td>A/E/B</td>
<td>6% Wt ↓ x 3 mo, abdominal pain, N/V, and bloody diarrhea</td>
</tr>
<tr>
<td>Oral Intake NI-2.1</td>
<td>#2 Inadequate Oral Intake</td>
<td>R/T</td>
<td>N/V Abdominal pain</td>
<td>A/E/B</td>
<td>Pt stated poor intake, Alb 0.9gm/dL, and 6% wt loss x 3 mo</td>
</tr>
<tr>
<td>Nutrient NI-5.1</td>
<td>#3 Increased Protein needs</td>
<td>R/T</td>
<td>Total Colectomy, Ileostomy placement, and malabsorption</td>
<td>A/E/B</td>
<td>Alb 1.4gm/dL and pt only receiving 57% of est. needs</td>
</tr>
</tbody>
</table>
Recommended Interventions

Parenteral Nutrition
- Initiating Procalamine with lipids @ 100ml/hr

Parenteral Nutrition
- Initiating Custom TPN

Meals and Snacks
- Advance to low-fiber, bland diet when medically appropriate

Medical Food Supplements
- Two Scoops of Beneprotein TID with meals

Nutrition Education-Content
- Nutrition education regarding nutrition relationship to health/disease and diet modifications for Crohn’s Disease and Ileosotomy
Nutrition Goals

- Short-term
  - TPN Tolerance
  - Diet Advancement
  - Adequate po intake
  - Hyperglycemia management during steroid treatment

- Long-term
  - Gradual weight loss to a healthy weight
  - Understands disease impact on health and nutrition modifications.
Discussion

- Diet-related disease
- Probiotics may have anti-inflammatory benefits
- Malnutrition
  - Primary concern for CD patients
  - Independent of weight status
Discussion Continued...

- Case Study Patient
  - Achieved remission with wt ↓ (76lbs, 16% of BW)
  - Short-term goals at discharge
    - Symptoms had resolved
    - Laboratory data had improved
    - Extremity weakness was improving
  - Discharged to rehabilitation center
References


