Nutritional Assessment of a Bilateral Amputee in End Stage Renal Disease 2° Diabetes Mellitus

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Case Study

- 75 year old white female
- Lives with daughter
- Does not smoke, drink or use drugs
Medical / Surgical Data

PMH:
- Renal insufficiency
- Hypertension
- Diabetes Type 2
- Peripheral Vascular Disease
- Coronary Artery Disease

PSH:
- Bilateral below knee amputation (1993 and 2001)
- Coronary artery bypass graft
History of Present Illness

- Outpatient labs:
  - Creatinine – 6
  - Bicarb – 14
- 24 hour Urinalysis:
  - Creatinine Clearance - <15mm/min
- 12/16/06 - Admitted for catheter placement to initiate hemodialysis
Hospital Course

- Catheter placement – 12/17
  - Fistula placement
- Hemodialysis
  - 12/17, 12/18, 12/20
- Outpatient placement for hemodialysis prior to discharge
- Diabetic Education
  - Insulin and Blood Glucose monitoring – 12/17
Laboratory Data
12/16/03
<table>
<thead>
<tr>
<th></th>
<th>Result</th>
<th>High/Low</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BUN</strong></td>
<td>96</td>
<td>↑</td>
<td>5-25 mg/dl</td>
</tr>
<tr>
<td><strong>Sodium</strong></td>
<td>133</td>
<td>↓</td>
<td>135-146 mmols/L</td>
</tr>
<tr>
<td><strong>Potassium</strong></td>
<td>4.4</td>
<td>WNL</td>
<td>3.2-5.0 mmols/L</td>
</tr>
<tr>
<td><strong>Glucose</strong></td>
<td>173</td>
<td>↑</td>
<td>70-115 mg/dl</td>
</tr>
<tr>
<td><strong>Creatinine</strong></td>
<td>4.2</td>
<td>↑</td>
<td>0.5-1.5 mg/dl</td>
</tr>
<tr>
<td><strong>Calcium</strong></td>
<td>8.3</td>
<td>WNL</td>
<td>8.1-10.2 mg/dl</td>
</tr>
<tr>
<td><strong>Phosphorus</strong></td>
<td>7.0</td>
<td>↑</td>
<td>2.0 – 4.8 mg/dl</td>
</tr>
<tr>
<td><strong>Albumin</strong></td>
<td>3.4</td>
<td>WNL</td>
<td>3.2-5.0 gm/dl</td>
</tr>
<tr>
<td><strong>CO²</strong></td>
<td>16</td>
<td>↓</td>
<td>18-32 mmols/L</td>
</tr>
</tbody>
</table>
Nutritional Treatment
Diet History

- Patient is compliant with Diabetic diet at home.
- Supplements
  - Prescription vitamin
- Lantus Insulin Therapy

Physical Activity

- Ambulates in home
  - prosthetic devices and walker
- Limited mobility in home
  - stairs
Weight History

- 1993 – 150# after first amputation, 5’8”
- 2001 – Second amputation – gradual weight gain began
- 2003 – 175# on admission
Nutrition Assessment
Considerations

- Bilateral BKA
- Diabetes Mellitus – Type 2
- Hemodialysis
- Current Diet
  - 1800 Calorie – ADA/Renal
    - Appropriate?
Body Weight Assessment

- Determine Ideal Body Weight (IBW)
  - Height prior to amputation (5’8)
  - Hamwi Method
    - 100# plus 5# for each inch over 5’0
    - 100 + 40 = 140#
  - Determine Adjusted Ideal Body Weight (AIBW)
    - Segmental weight
Segmental Weight

- \( (\text{AIBW}) \)
  - \( 140 - 11.8\% = 123\# \)

- \( \%\text{AIBW} \)
  - \( \left(\frac{175}{123}\right) \times 100 = 142\% \)

- Adjust for obesity
  - \( \left(\frac{175 - 123}{4} + (123)\right) = 136\# \) (61.81kg)

- New IBW
  - amputation and obesity
## Diet Recommendations

<table>
<thead>
<tr>
<th>Energy</th>
<th>Protein</th>
<th>Fluid</th>
<th>Sodium</th>
<th>Potassium</th>
<th>Phosphorus</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-30 kcal/kg*</td>
<td>1.1 – 1.4 g/kg*</td>
<td>Urine output + 500 – 750mL/day</td>
<td>2-3 g/d (based on urine output)</td>
<td>1.5 – 3g/day or 40 mg/kg*</td>
<td>12mg/kg* liberalize to meet protein needs</td>
</tr>
<tr>
<td>monitor nutrient adequacy</td>
<td>&gt;50% HBV</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* based on IBW

**Other Considerations:**

- consistent CHO intake
My Recommendations

- 25 kcal/kg IBW - ~1500 kcal/day
  - Current diet exceeds needs but is appropriate due to decreased intake
- 1.2 g pro/kg - >75 g/day
- Low Potassium diet
  - Avoid high potassium foods
  - Limit medium potassium foods to one serving per day
  - Remainder from low potassium food choices
- Incorporate exercise in to daily routine
  - Hand weights during TV commercials throughout the day
- Follow diet plan until meet with Renal RD
- Will follow up after the holidays
Medical Considerations
Anemia

- Decrease in production of erythropoietin
  - Hormone responsible for stimulating bone marrow to produce RBC’s
- Epogen therapy
- Iron Supplements
Nutritional Considerations

- Diet is very restrictive
  - Substandard with regard to vitamins and minerals
    - Supplement
      - Thiamine
      - Riboflavin
      - Biotin
      - Pantothenic acid
      - Niacin
      - Pyridoxine
      - B12
      - Vitamin C
Psychological Considerations

- Progression of disease
  - Dependent on a machine for renal function
    - Therapy 3 times week
    - 3-5 hours per session
- Restrictive diet
- Previous issues
  - Changes in physical appearance
    - Limited mobility
  - Medication dependence
Implications to the Findings to the Practice of Dietetics
Role of the Dietitian

- Apply critical thinking and clinical judgment in assessing a poorly defined patient population
  - Diabetic, amputee, dialysis
- Support and maintain the nutritional status of the patient
- Educate patient to an attractive, palatable diet that meets their lifestyle
Questions ?