Case Discussion

Nutrition in IBD

Crohn’s disease

Ulcerative colitis

Rémy Meier MD
Case Presentation

- 30 years old female, with diarrhea for 3 months
- Shool frequency 3-4 loose stools/day with no visual blood
- 10 kg weight loss in 3 months (>5%)
- Since two weeks abdominal pain and stool frequency decreased to 1-0/day
- Since two weeks the has eaten only soups, rice and pasta
- Admitted to the hospital because of fever (38.5°C), nausea and emesis
- 178cm height, 70 kg body weight
- BMI= 22
Clinical findings

- Local peritonitis in the right lower abdomen
- Rare abdominal sounds
- Laboratory data:
  - CRP: 120 mg/l
  - Leucocyte counts: 18.0x10^9/l
  - Haemoglobin: 11.0 g/dl
  - MCV: 70 fl
  - Thrombocytes: 600x10^9/l
  - Iron: < 5 µmol/l
  - Ferritin: 450 ng/ml
  - Albumin: 28 g/l
Imaging

Ultrasound: inflammatory stenosis of the terminal ileum; increased bowel wall thickness with hypervascularisation in the terminal ileum and the colon
Abdominal X-ray
Colonoscopy

Crohn’s disease (Ileum)
Histology

Crohn’s disease
Diagnosis

Crohn’s disease
- Ileitis terminalis
Questions 1

1.1. Has this patient signs of malnutrition (NRS 2002)?

1.2. What do you suggest as initial treatment?
   - Medical?
   - Surgery?
   - Nutrition?

1.3. Should iron infusions started immediately?
## Nutritional Risk Screening (NRS-2002)
### Final Screening

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Absent</td>
<td>Normal nutritional status</td>
</tr>
<tr>
<td>1</td>
<td>Mild</td>
<td>Wt loss &gt;5% in 3 months or Food intake below 50-75% normal requirement in preceding week</td>
</tr>
<tr>
<td>2</td>
<td>Moderate</td>
<td>Wt loss &gt;5% in 2 months or BMI 18.5 – 20.5 + impaired general condition or Food intake 25-50% normal requirement in preceding week</td>
</tr>
<tr>
<td>3</td>
<td>Severe (3 mo)</td>
<td>Wt loss &gt;5% in 1 mo (&gt;15% in BMI &lt;18.5 or impaired general condition or Food intake 0-25% normal requirement in preceding week</td>
</tr>
</tbody>
</table>

*Kondrup et al, Clin Nutr 2003*
Nutritional Risk Screening (NRS-2002) Final Screening

(Severity of disease)

Absent Score 0 Normal nutritional requirements

Mild Score 1 Hip fracture, chronic patients, in particular with acute complications: cirrhosis, COPD, chronic hemodialysis, diabetes, oncology

Moderate Score 2 Major abdominal surgery, stroke. Severe pneumonia, hematologic malignancy

Severe Score 3 Head injury, bone marrow transplantation, Intensive care patients (APACHE>10).

Kondrup et al, Clin Nutr 2003
Answer 1.1.

Has this patient signs of malnutrition (NRS 2002)?

- Yes
- Score 4!
With 60 mg prednisolon per day and Mesalazine (4x800 mg per day) the clinical and laboratory situation improved.

**Answer 1.2.**

What do you suggest as initial treatment?

- **Medical**?
- Surgery?
- Nutrition?
Answer 1.3.

Should iron infusions started immediately?

In principle yes, but the patients is not at severe risk

Iron treatment was avoided in the past in acute inflammatory states, but it was now demonstrated that there are no adverse events!
Is there a need for specific nutritional support?

**If yes, what form?**

- If a nutritional intervention is necessary, to what body weight do you refer for calculating the calories and proteins?

- What kind of feeding do you recommend?

- Parenteral nutrition, enteral nutrition, combination or an oral diet?
Answer 2

Yes
Oral nutrition may be with oral supplements,
The amount should be calculated on the basis of her actual BW (70kg)
- How many calories and proteins?

BW 3 months ago: 80kg
ABW : 70kg
ABW x 25-30kcal/day
70kg x 30kcal=2100kcal/day
70kg x 1.5g proteins
Enteral nutrition as primary treatment in IBD

Proposed benefits

• Trophic effect for the intestinal mucosa
• Prevention of bacterial translocation (?)
• Preserve gastrointestinal function
• Lower complications
• Lower costs
EN vs corticosteroids

In adults EN is effective as primary therapy but not as effective as corticosteroids. They should be used as sole therapy mainly when treatment with corticosteroids is not feasible (Grade A).

Zachos M et al., Cochrane Review 2008
# Standard vs. peptide based formulae in acute Crohn’s Disease

## Table of Study Results

<table>
<thead>
<tr>
<th>Study</th>
<th>Elemental n/N</th>
<th>Nonelemental n/N</th>
<th>Odds Ratio (Fixed) 95% CI</th>
<th>Weight (%)</th>
<th>Odds Ratio (Fixed) 95% CI</th>
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<tbody>
<tr>
<td>A: Giaffer 1990</td>
<td>12/16</td>
<td>5/14</td>
<td></td>
<td>4.0</td>
<td>5.40 [1.12, 26.04]</td>
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<td>A: Kobayashi 1998</td>
<td>7/10</td>
<td>6/9</td>
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<td>5.7</td>
<td>1.17 [0.17, 8.09]</td>
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<td>A: Mansfield 1995</td>
<td>8/22</td>
<td>8/22</td>
<td></td>
<td>15.2</td>
<td>1.00 [0.29, 3.42]</td>
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<tr>
<td>A: Middleton 1995</td>
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<td>13/18</td>
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<td>22.5</td>
<td>0.63 [0.20, 2.01]</td>
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<tr>
<td>A: Park 1991</td>
<td>2/7</td>
<td>5/7</td>
<td></td>
<td>10.7</td>
<td>0.16 [0.02, 1.63]</td>
</tr>
<tr>
<td>A: Raouf 1991</td>
<td>9/13</td>
<td>8/11</td>
<td></td>
<td>8.0</td>
<td>0.84 [0.14, 4.97]</td>
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<tr>
<td>A: Rigsud 1991</td>
<td>10/15</td>
<td>11/15</td>
<td></td>
<td>11.0</td>
<td>0.73 [0.15, 3.49]</td>
</tr>
<tr>
<td>A: Royall 1994</td>
<td>16/19</td>
<td>15/21</td>
<td></td>
<td>6.7</td>
<td>2.13 [0.45, 10.10]</td>
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<td>A: Sakurai 2002</td>
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<td>13/18</td>
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<td>12.9</td>
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<td>A: Verma 2000</td>
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<td>6/11</td>
<td></td>
<td>3.4</td>
<td>3.33 [0.47, 23.47]</td>
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</tbody>
</table>

**Total (95% CI)**

<table>
<thead>
<tr>
<th>Elemental</th>
<th>Nonelemental</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/N: 188</td>
<td>n/N: 146</td>
</tr>
<tr>
<td>Odds Ratio (Fixed) 95% CI: 100.0</td>
<td>1.10 [0.69, 1.75]</td>
</tr>
</tbody>
</table>

**Total events:** 120 (Elemental), 90 (Nonelemental)

**Test for heterogeneity chi-square:** 10.03 df=9 p=0.35 I² =10.3%

**Test for overall effect** z=0.38 p=0.7

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Cochrane Review 2008
How Much?

- Energy expenditure 25 – 35kcal/kg
- Protein 1.2 – 1.5g/kg
- Dietitian estimate requirements
- Introduce gradually as necessary in malnourished / metabolically stressed
- More is not always better
- Overfeeding in bed rest
  - ↑muscle loss ↑inflammation

ESPEN 06, Stokes JPEN 1993 17(1):3-7
Biolo Am J Clin Nut 2008:88;950-8)
Is 30 kcal/kg bw/d enough?

Resting energy expenditure in kcal/kg BW/d, Valentini L, 2004

<table>
<thead>
<tr>
<th>BMI → Alter ↓</th>
<th>&lt;14</th>
<th>14-16.4</th>
<th>16.5-18.4</th>
<th>18.5-19.9</th>
<th>20-24.9</th>
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<td>40–49</td>
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<td>60–69</td>
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<td>19,8</td>
<td>16,6</td>
<td>14,6</td>
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<td>70–79</td>
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<td>80–100</td>
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<td>20,2</td>
<td>19,6</td>
<td>19,0</td>
<td>18,3</td>
<td>15,2</td>
<td>14,0</td>
</tr>
</tbody>
</table>

\( \times 1,3 = 30.7 \text{ kcal/d (total energy expenditure)} \)
Questions 3

Would you recommend antibiotic treatment for this patient?
Answer 3

No
10 days later, the patient became febrile again (39.2°C). The CRP was elevating again to 180 mg/l.
Question 4

• What would be reasons for her fever and increasing CRP levels?

• What steps for diagnosis procedures you suggest now?
Answer 4

Radiology: US, (CT-scan or MRI)
Blood culture

A CT-scan showed in the ileo-cecal region and an intra-abdominal fistula
The blood culture were negative
CT-Scan
Questions 5

5.1. How would you treat this patient now?
5.2. Would you suggest to operate this patient now?
5.3. Would you change the initial nutritional treatment?
   - Would you recommend TPN in this patient?
Answer 5.1.

How would you treat this patient now?

The initial standard treatment was continued. Intravenous antibiotic treatment (Ciproxin/Metronidazol) was started.
Would you suggest to operate this patients now?

Surgery should be planned only if the patient will get a complication!
If the abscess is big enough radiological drainage!!!
Answer 5.3.

Would you change the initial nutritional treatment?
Would you recommend in this patient TPN?

If the patients tolerates oral nutrition with supplements we can go on.
If she can not reach the caloric goal tube feeding can be an option.
If tube feeding is not tolerated TPN can be given (e.g. before operation)
Two weeks later the patient had to be operated because of ileus.

Intraoperatively the surgeon found a substenosis and a severe inflammation in the ileocecal region and an small abscess. A resection of about 40 cm of the ileum and the right colon was necessary.
Questions 6

6.1. What are your suggestions for medical treatment in this patient?

6.2. What are your suggestions for postoperative nutritional support in this patient?
   - Total parenteral nutrition?
   - Enteral nutrition by a nasojejunal tube?
   - Combination of both?
   - Oral diet?

6.3. What have you to monitor in the future?
What are your suggestions for medical treatment in this patient now?

Tappering the steroids
Start with Azathioprine (2.5g/kg BW) for maintaining remission
A second option (but more costly) could be a TNF-antibody!
What are your suggestions for postoperative nutritional support in this patient?
- Total parenteral nutrition?
- Enteral nutrition by a nasojejunal tube?
- Combination of both?
- Oral diet?

Usually postoperatively this patients recover fast and start normal oral food soon.
What have you to monitor in the future?

Vitamine B-12!