Oral Nutrition Support in Cancer—Does it help?

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Agenda

- Why nutrition?
- Objectives of nutrition support
- Assessment
- Oral nutrition supplements - what is the evidence
- Novel supplements
- Summary
- References
Malnutrition

- Affects **40-80%** of cancer patients
- Prevalence factors
  - **46-61%** of patients with lung cancer and mesothelioma experience weight loss before diagnosis and treatment (*Brown and Radke, 1998*)
  - Approx **80%** of patients in advanced stages have cancer cachexia (*Goo and Hill, 2003*)
Why Nutrition?

- Up to **85%** of patients with GI tumours are malnourished (*Stratton et al., 2003*)
- Head and Neck Cancer - the incidence can range from **40 - 58%** (*Connally, 2004; Grobbelaar et al., 2004*)
- Risk increases with multi-modality treatments
- **75-80%** of patients with H&N cancer have significant weight loss (>10% of BW) during treatment period (*Hammerlid et al., 1998; Lopez et al., 1994*)
Consequences

- BMI of <18.5 kg/m² and/or unintentional weight loss of > 10% (over the preceding 3 mths) associated with increased risk of perioperative complications (NICE, 2006)
- Reduced QOL
- Increased length of hospital stay
- Increased risk of death
- Up to 20% of cancer patients die of the effects of malnutrition rather than of the malignancy itself (Ottery, 2004)
Objectives of Nutrition Support

To maintain physical strength and optimise status within the confines of the disease during treatment and in many cases for several months post discharge

- prevent or correct nutritional depletion
- reduce the nutrition-related side effects and complications
- Improve tolerance of, and response to cancer treatment
- maintain strength and energy
- maintain quality of life
- Reduce period of hospital stay
Nutrition Screening

Early identification and intervention can

- Promote recovery
- Improve prognosis
- Cost effective
- Reduces complication rates
- Reduces length of hospital stay
Assessment

- Subjective global assessment (SGA) - simple, reliable and inexpensive

- Assesses nutritional status based on the features of:
  - a history
  - physical examination
Oral Nutrition Supplements

- A simple, non-invasive method of increasing nutrient intake
- Most ONS are nutritionally complete
- Majority contain 1-1.5 kcal/ml, but also available as ‘concentrated’ feed (2kcal/ml)
- Protein content varies from 4 to 10g/100ml
- Available in liquid form, soups, powders, and other consistencies such as puddings
- Compliance is dependent on appetite and taste
Oral Nutrition Supplements

- Appropriate prescription
- Studies limited in cancer patients
- May improve energy and protein intake
- ONS significantly increased dietary intake (381 kcal/day, 95% CI 193 to 569 in 3 RCTs) in patients undergoing radiotherapy (Elia M et al, 2006)
Impact on Nutrition Outcome

- 75 patients with Head and Neck cancer
- Referred for Radiotherapy (RT)

Randomised to:

- Group 1 (n=25) patients who received dietary counseling with regular foods
- Group 2 (n = 25), patients who maintained usual diet plus supplements
- Group 3 (n = 25), patients who maintained intake ad lib

Ravasco et al. 2005 Head and Neck, 27, 659-68.
Methods and study design

- **Inclusion criteria:** Referral for RT and absence of renal disease and/or diabetes mellitus

- **Study design:**

<table>
<thead>
<tr>
<th>Total Patients</th>
<th>Men</th>
<th>Women</th>
<th>Mean Age</th>
<th>Stage I/II</th>
<th>Stage III/IV</th>
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<tbody>
<tr>
<td>75</td>
<td>60</td>
<td>15</td>
<td>60 +/- 11 yrs</td>
<td>30 Patients</td>
<td>45 Patients</td>
</tr>
</tbody>
</table>
Methods and study design

- ONS used were ready-to-use, high protein, energy-dense liquid formulations
- Each 200ml can provided 20 g of protein and 200 kcal
- Amount of ONS - 2 cans/d, which covered the calculated requirement
Study measures

Evaluated the following at baseline, at the end of RT, and at 3 months:

- Nutritional intake
- Nutritional status
- QOL
Results: Nutritional Intake

**Energy**
- Kcalories
- Interventions at Baseline and End RT
- Trends over 3 months

**Protein**
- Grams
- Interventions at Baseline, End RT, and 3 months
- Comparisons with G1, G2, and G3 groups
# Results: Nutritional Status

Table 2. Changes in nutritional status during RT and at 3 months as determined by PG-SGA.

<table>
<thead>
<tr>
<th>Method</th>
<th>G1 End 3 months</th>
<th>G1 RT months</th>
<th>G2 End 3 months</th>
<th>G2 RT months</th>
<th>G3 End 3 months</th>
<th>G3 RT months</th>
<th>p^1</th>
<th>p^2</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG-SGA</td>
<td>5</td>
<td>3</td>
<td>20</td>
<td>22</td>
<td>19</td>
<td>24</td>
<td>6</td>
<td>1</td>
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</tbody>
</table>

Abbreviations: RT, radiotherapy; G1, group 1 (dietary counseling based on regular foods); G2, group 2 (supplements); G3, group 3 (ad lib); PG-SGA, Olter's Patient Generated Subjective Global Assessment.
Results: QOL

At end of RT

- **Group 1** - all function scores improved and proportional to an increase in Energy and Protein intake

- **Group 2** - all function scores improved but proportional to an increase in Protein intake

- **Group 3** - all function scores worsened
Results: QOL

At 3 months follow up

- **Group 1** - all maintained or improved overall QOL
- **Group 2** - all maintained or experienced decline in QOL
- **Group 3** - function scores further deteriorated
Discussion

- Nutrition intervention was central
- ONS not as effective as dietary counselling
- Impact of ONS on energy intake short lived
Novel Supplements

- n-3 fatty acids, arginine, glutamine, nucleic acids, and antioxidants
- Immuno-modulatory effects
- Perioperative supplementation with arginine, ribonucleic acids and n-fatty acid resulted in fewer wound infections than control group in patients with laryngeal and oral cancers

(Casas-Rodera P et al 2008)
Novel Supplements

- ONS containing n-3 PUFA beneficially affected nutritional status of patients with Stage III Non-Small Cell Lung Cancer during Multimodality treatment (*Van der Meij Bs et al., 2010*).

- **Limited evidence** to support the use of fish oils for management of cachexia.

- Fearon KC et al (2006) in their double blind, placebo controlled trial of 518 weight-losing patients with advanced gastrointestinal or lung cancer showed **no statistically significant benefit** from single agent EPA (2g or 4g) in treatment of cancer cachexia.
A Cochrane review

- 5 trials (involving 587 participants) met the inclusion criteria
  - 3 trials compared EPA at different doses with placebo
  - 2 two trials compared different doses of EPA with an active matched control (but without EPA)
- Outcomes measured
  - Primary outcomes - weight gain, body composition, median survival
  - Secondary outcome - functional or performance status, improvement in quality of life, energy expenditure, reduction in fatigue, nutritional status, compliance rates, side effects, adverse events

Conclusion

- Insufficient data.
- No evidence that EPA improves symptoms
- Need to conduct further research
Summary

- Little or no beneficial effects of ONS in terms of weight gain
- Some evidence that ONS can increase total energy intake and improves QOL indices
- Inconsistent results on the effects of EPA
- ONS prescription
- Dietary counseling
References

References