Nutricia

Nutrition and Cancer
Objectives

• To highlight the prevalence of cancer and nutrition risks in this patient group
• To discuss the causes and consequences of malnutrition in cancer
• To list the options for nutritional support in patients with cancer
• To discuss the practical use of dietary modification and nutritional supplementation in cancer patients
• To identify the clinical evidence supporting the benefits of oral nutritional support
Outline

• Introduction to cancer
  • What is cancer
  • Prevalence
  • Impact
• Malnutrition in cancer
  • Prevalence
  • Consequences
• Nutritional management of patients with cancer
  • Nutritional requirements
  • Nutritional management
• Evidence for nutritional support in cancer
  • Oral Nutritional Supplements
  • Tube feeding
Introduction
What is Cancer?

- Cancer develops from mutations in the genes that normally regulate cell division.

- These cells have no “brakes” to halt cell division and the abnormal mass of cells can grow into a tumour or neoplasm.

- They can be either isolated or can spread and become ‘secondary’ tumours also known as metastases.

- Cancer can occur in different locations around the body.
Prevalence of Cancer in the UK

- In 2012 there were 338,623 new cases of cancer registered in the UK
- 1 in 2 people will be diagnosed with cancer in their lifetime
- More than 1 person dies from cancer every 4 minutes
- In 2011 cancer caused more than 1 in 4 of all deaths

Impact of Cancer on the NHS and society

- Cancer services cost the NHS £5 billion per year

- The cost to society (including costs for loss of productivity) is £18.3 billion per year

Risk Factors/Causes of Cancer

- 4 in 10 cancer cases are linked to lifestyle factors
- Smoking is the largest cause of cancer each year – approximately 1 in 5 of all cancers are caused by smoking
- Diet is the second largest cause of cancer each year – approximately 1 in 10 cancer cases are linked to diet

Malnutrition in Cancer
Definition of Malnutrition

Malnutrition is defined as:

“A state of nutrition in which a deficiency or excess (or imbalance) of energy, protein and other nutrients causes measureable adverse effects on tissue/body structure and function and clinical outcome”

Cancer Cachexia

“A specific form of cancer associated malnutrition, often occurring in patients with advanced disease. The condition is characterised by progressive, involuntary weight loss with depletion of lean body mass and muscle wasting”

Causes of Cancer Cachexia

- Metabolic effects caused by the presence of the tumor
- Physical symptoms caused by the site of the tumor
- Psychological effects caused by the diagnosis of cancer
- Side effects caused by the therapies used to treat the cancer

Pathophysiology of Cancer Cachexia

- Tumor
- Lipid mobilising factor
- Cytokines
- PBMCs
- Adrenal/B cells
- Proteolysis inducing factor
- Insulin
- Cortisol
- Clucagon

- Fat
- Hypothalamus
- Liver
- Amino acids
- Skeletal muscle

- Fat breakdown
- Anorexia
- Increased energy expenditure
- Acute phase proteins
- Protein breakdown
Prevalence of Malnutrition in Cancer

- The prevalence of malnutrition in cancer ranges from 30-85%
- Malnutrition is the most prevalent in patients with:
  - Gastric cancer
  - Pancreatic cancer
  - Lung cancer
  - Prostate cancer, and
  - Colon cancer

How Common is Malnutrition in Cancer?

<table>
<thead>
<tr>
<th>Ward</th>
<th>Percentage of malnourished patients (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oncology</td>
<td>38</td>
</tr>
<tr>
<td>Care of the elderly</td>
<td>37</td>
</tr>
<tr>
<td>Medical</td>
<td>32</td>
</tr>
<tr>
<td>Surgical</td>
<td>26</td>
</tr>
<tr>
<td>Orthopaedic</td>
<td>17</td>
</tr>
</tbody>
</table>

Malnutrition is higher in patients with cancer, than without:

- Acute hospital:
  - 39% with cancer are malnourished
  - 28% patients without cancer are malnourished

- Care home:
  - 55% with cancer are malnourished
  - 40% without cancer are malnourished

Prevalence of Malnutrition in Cancer

- Weight loss is common in cancer
- The prevalence of malnutrition varies depending on tumour site as illustrated below

<table>
<thead>
<tr>
<th>Tumour Site</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pancreas</td>
<td>Up to 85%</td>
</tr>
<tr>
<td>Head and neck</td>
<td>Up to 67%</td>
</tr>
<tr>
<td>Stomach</td>
<td>Up to 65%</td>
</tr>
<tr>
<td>Oesophagus</td>
<td>57%</td>
</tr>
<tr>
<td>Lung</td>
<td>Up to 46%</td>
</tr>
<tr>
<td>Colon/rectum</td>
<td>Up to 33%</td>
</tr>
<tr>
<td>Gynaecological</td>
<td>Up to 15%</td>
</tr>
<tr>
<td>Urological</td>
<td>9%</td>
</tr>
</tbody>
</table>

Causes of Malnutrition in Cancer

- Taste changes
- Nausea
- Early satiety/anorexia
- Dysphagia
- Pain
- Dry mouth
- Constipation
- Lethargy
- Depression & anxiety

As a result of the tumour itself or treatment

Causes of Malnutrition in Cancer

- As a result of a hypermetabolic response to treatment – surgery, chemotherapy or radiotherapy
- As a result of increased resting energy expenditure (REE) – competition between the tumor and host for nutrients, hypermetabolism

Causes of Malnutrition in Cancer

- Vomiting – due to chemotherapy or the tumour itself
- Diarrhoea – due to chemotherapy or radiotherapy
- Malabsorption – can be caused by chemotherapy, radiotherapy, surgery or the tumour itself

Consequences of Malnutrition

**Decreased**
- Response to chemotherapy
- Survival times
- Performance status & muscle function
- Quality of life
- Immune function

**Increased**
- Complications
- Length of hospital stay
- Morbidity & mortality
- Health-care costs

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Nutritional Management of Cancer
Nutritional Requirements

- ESPEN Guidelines - Resting energy expenditure (REE) can be increased, decreased or remain the same in patients with cancer\(^1\)
- Type of cancer and treatment method can affect REE\(^1\)

The Parenteral and Enteral Nutrition Group (PENG) suggests the following stress factors\(^2\):

- Solid tumour: 0-20%
- Leukaemia: 25-34%
- Lymphoma: 0-25%

- Each individuals’ requirements should be estimated on a case by case basis

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Management of Patients with Cancer

• The aims of management need to be established, i.e. are they to:
  – Be curative or supportive
  – Maintain or improve quality of life
  – Minimise further malnutrition and thus its consequences
  – Minimise side effects of treatment

• Respect of the patient and carers’ wishes are essential to achieve a mutually agreeable outcome
Nutritional Management

National Recommendations for Care

- Improving Outcomes: A Strategy for Cancer\(^1\)
- NICE CSG4\(^2\)
- Achieving World-Class Cancer Outcomes: A Strategy for England 2015-2020\(^3\)

- All refer to the essential role of the multi-disciplinary team in providing complete care for patients with cancer

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Nutritional Management

European Guidelines (ESPEN)

• Nutritional assessment should be performed frequently
• Initiate early nutritional intervention when deficits are detected
• Start nutritional therapy if:
  – undernutrition already exists, or
  – it is anticipated that the patients will be unable to eat for >7 days
• Start enteral nutrition if inadequate food intake (<60% of estimated energy expenditure for >10 days) is anticipated – provide difference between actual intake and calculated requirements
• Patients with severe nutritional risk benefit from nutrition support 10-14 days prior to surgery even if surgery has to be delayed
• During radio- or chemotherapy use intensive dietary advice and oral nutritional supplements to increase dietary intake and to prevent therapy-associated weight loss and interruption of radiation therapy

Practical advice

<table>
<thead>
<tr>
<th>Nausea</th>
<th>Taste changes</th>
<th>Sore/dry mouth</th>
<th>Diarrhoea</th>
<th>Constipation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoid strong smelling foods</td>
<td>Use a straw</td>
<td>Use moist, soft foods, add sauces if necessary</td>
<td>Plenty of fluids</td>
<td>Plenty of fluids</td>
</tr>
<tr>
<td>Avoid greasy foods</td>
<td>Good oral hygiene</td>
<td>Use moist, soft foods, add sauces if necessary</td>
<td>Small frequent meals</td>
<td>Increase fibre intake gradually</td>
</tr>
<tr>
<td>Bland, cold foods may be better tolerated</td>
<td>Moist foods</td>
<td>Plenty of fluids, use straw</td>
<td>Avoid spicy or fatty foods</td>
<td>Light exercise</td>
</tr>
<tr>
<td>Review anti-emetic medications</td>
<td>Add flavourings</td>
<td>Avoid very hot or very cold foods</td>
<td>Avoid spicy food</td>
<td>Regular meal pattern</td>
</tr>
<tr>
<td>Get someone else to prepare food if possible</td>
<td>Plastic cutlery may help if experiencing metallic taste</td>
<td>Avoid dry &amp; coarse foods e.g. toast, steak</td>
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<tr>
<td></td>
<td>Use vegetable protein if any aversion to meat</td>
<td>Avoid tart/citrus foods and drink</td>
<td>Avoid tart/citrus foods and drink</td>
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<td></td>
<td></td>
<td>Avoid smoking &amp; alcohol</td>
<td>Avoid high fibre foods (until resolved)</td>
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The Role of Nutritional Support

• Nutritional support may be beneficial in helping to¹:
  – Prevent or attenuate deterioration of the patient’s nutritional status, and
  – Thus reduce the risk of complications associated with malnutrition, and
  – In some cases, improve outcome due to improved response to treatment therapies
  – Improve quality of life

• This will depend in part on:
  – Duration of support
  – Biological aggressiveness of tumour
  – Efficacy of cancer therapy

Types of Nutritional support

Oral Nutritional Supplements (ONS)
- Can be given where food fortification is not adequate and/or if the patient is struggling to eat
- Wide variety available e.g. milk-, juice-, yogurt-, pudding styles in a variety of flavours
- Can be added to food or taken directly
- Number required determined by dietitian or doctor

Tube feeding
- Usually via nasogastric tube or gastrostomy
- Decision on individual patient basis, depending on prognosis, quality of life etc.

Parenteral nutrition
- Only indicated when feeding into digestive system is not possible
- High risk method of feeding
Methods of Nutritional Support

Can the gastrointestinal tract be used safely and effectively?

Yes

Can nutritional needs be met orally?

Yes

DIETARY MODIFICATION

No

PARENTERAL NUTRITION

For longer than 4-6 weeks?

Yes

GASTROSTOMY TUBE FEEDING

No

NASOGASTRIC TUBE FEEDING

NUTRITIONAL SUPPLEMENTS
Nutritional Supplementation

• Oral Nutritional supplements (ONS) are a convenient and easy way of taking a concentrated source of both macro- and micro-nutrients, for those who are unable to meet their nutritional requirements by modification of the normal diet alone

• ONS served ice-cold are often more palatable and soothing if the patient’s mouth is sore and help if the patient is nauseous

• ONS are available as milkshake-, juice-, yoghurt- and dessert styles in a variety of flavours

• Yogurt style ONS often appeal to those with taste changes

• ONS can be heated, frozen or incorporated into recipes
Evidence for Nutrition Support in Cancer
ONS - ESPEN Guidelines on Enteral Nutrition: Non-surgical oncology

• ESPEN guidelines\(^1\) report that the use of ONS:
  – Results in either significant weight gain or significantly less weight loss than those not receiving ONS\(^2\)
  – Significantly increased total energy intake, protein intake & quality of life in patients undergoing radiotherapy\(^3\)
  – Could stop ongoing weight loss in:
    • Lung, breast and ovarian cancer\(^4\)
    • Pancreatic cancer (enriched with fish oil)\(^5\)

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ONS - Stratton & Elia 2007

• Review showed that in cancer patients ONS:
  – Significantly increased total energy intakes in patients undergoing radiotherapy
  – Improved in protein intake
  – Did not substantially reduce voluntary food intake

Tube Feeding - ESPEN Guidelines on Enteral Nutrition: Non-surgical oncology

- ESPEN guidelines suggest tube feeding should be used:
  - If an obstructing head and neck or oesophageal cancer interferes with swallowing
  - If severe local mucositis is expected
- Tube feeding can be via the nasogastric or percutaneous routes
- PEG may be feed route of choice when radiation induced oral and oesophageal mucositis present
- Tube feeding is not indicated in radiation therapy of other body regions

Appropriate use of ONS

ONS have an important role to play in the management of undernutrition but are only effective when used appropriately

Ways to achieve appropriate use of ONS:

• Any ONS must be used in conjunction with encouraging oral intake and food fortification
• ONS are not intended to be meal replacements
• ONS are best used between meals along with other snacks if the individual can manage these
• ONS must only be given to the individual for whom they are prescribed and should always be used under medical supervision
Summary

- Prevalence of malnutrition in cancer ranges from 30-85%1
- Malnutrition results due to decreased intake, increased needs and/or increased losses as a result of the cancer itself, or it’s treatment2
- ESPEN recommends to start nutritional therapy if3:
  - Undernutrition already exists, or
  - It is anticipated that the patients will be unable to eat for >7 days
- ESPEN recommends to start enteral nutrition if inadequate food intake (<60% of estimated energy expenditure for >10 days) is anticipated – provide difference between actual intake and calculated requirements3
- Nutrition support in cancer patients can improve energy and protein intake and stop ongoing weight loss3,4

References


References


