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Management of weight loss and anorexia
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introduction
Involuntary weight loss and anorexia are symptoms of cancer cachexia syndrome (CCS). The syndrome causes at least 20% of deaths in people with cancer [1]. Furthermore, weight loss and malnutrition are associated with poorer treatment tolerance and outcomes [2], and poorer quality of life [3]. The challenge for clinicians is to know how best to manage the symptoms of weight loss and anorexia for optimal patient outcomes.

The aim of this article is to examine critically the management of weight loss and anorexia in people with CCS. It will draw on evidence collated from the Macmillan Weight and Eating Studies, to justify a new approach that complements current pharmacological and nutritional management. Implications for clinical practice are discussed.

what is cancer cachexia syndrome?
There is no agreed definition of CCS (see Table 1 for examples of defining characteristics [4, 5]). However, it is agreed that cancer cachexia differs from starvation. It cannot be reversed by food intake alone and causes loss of lean muscle mass in addition to fat, whereas in starvation fat is lost in preference to muscle.

the prevalence of cancer cachexia syndrome
The prevalence of cancer cachexia differs across cancer site and stage of disease. Symptoms can be present at diagnosis and are most commonly seen in those with gastrointestinal and lung malignancies [6]. More than three-quarters of people with advanced cancer live with the symptoms [7,8]. Weight loss and anorexia are important because they have been associated with survival, treatment tolerance and quality of life [1–3,9,10].

what causes cancer cachexia syndrome?
The cause of cancer cachexia is multifaceted and not completely understood. A useful model for understanding the pathways of causation categorizes contributory factors into two groups: primary and secondary cachexia [11,12].

primary cachexia
Primary cachexia is brought about by tumour-induced metabolic change. The cancer itself generates tumour products that disturb normal tissue repair. Catabolism is accelerated, whilst anabolism slows, leading to tissue loss. In addition, the cancer triggers a systemic inflammatory response. This inflammatory response includes an elevated metabolic rate and release of biochemical products that suppress appetite and cause early satiety. The consequence of metabolic abnormalities is anorexia and loss of fat plus muscle mass.

secondary cachexia
Secondary cachexia is caused by factors that compromise dietary intake leading to malnutrition; the obstacle course to eating. The obstacles include nausea and vomiting; localized pain, such as mouth ulcers; taste and smell abnormalities, such as those induced by chemotherapy; diarrhoea or constipation; fatigue; and mechanical obstruction, such as a tumour occluding the oesophagus.

what can we do to manage cancer cachexia syndrome?
Effective treatment of primary cachexia requires antineoplastic therapy. Secondary cachexia is dependent on multiple physical, psychological and social factors that may be amenable to both pharmacological and non-pharmacological intervention.

management of primary cachexia
The solution to metabolic abnormalities is seen to lie in the development of pharmacological agents that can prevent or block the metabolic changes induced by cancer. Yavuzsen et al. [13] conducted a systematic review of randomized controlled trials from 1966 to autumn 2004 and found three groups of pharmacological agent beneficial for people with the anorexia and weight loss of cancer cachexia. The review found the following.

(i) The progestin, megestrol acetate, had been used in 23 studies involving 3436 patients. A dose of 480–800 mg/day can bring about short-term weight gain that is thought to be due to fat and fluid retention, as opposed to lean muscle mass. Side effects include increased risk of embolism, whilst improvements in quality of life are uncertain.
people with unresectable pancreatic cancer [19].

Nutritional supplements have been found to improve weight in people with unresectable pancreatic cancer [19].

Counselling provided by a specialist dietician [16,18].

Approaches that have been demonstrated to be effective are the enrichment of foods [16]; enteral feeding [17]; and nutritional counselling provided by a specialist dietician [16,18].

Nutritional supplements have been found to improve weight in people with unresectable pancreatic cancer [19].

In the future, it is likely that there will be nutraceuticals available to help people manage the anorexia and weight loss that can accompany cancer. Neutraceuticals are nutritional supplements to which a pharmacological agent has been added. An example is ProSure™, which has been found to lead to weight stability in a small group of seven people with pancreatic cancer when taken in a quantity of three 240 ml cartons daily [20]. To date there is no scientific evidence that special diets (e.g. non-dairy) can contribute to controlling the progression of cancer.

(ii) Corticosteroids have been trialled in six studies involving 647 patients. They improve appetite and quality of life over a limited time of a few weeks.

(iii) The prokinetic, metoclopramide, has been tested for effect on weight and appetite in two studies involving 55 patients. The drug hastens stomach emptying, so can help with early satiety, but does not improve appetite.

Trials of other pharmacological agents are in progress. For example, thalidomide is being trialled for its ability to arrest systemic inflammation and in turn impact on appetite and weight (see Cancer Research UK clinical trials database [14]).

Current debate around the management of cachexia also includes the question of whether pharmacology could be used prophylactically.

**Table 1. Comparison of defining characteristics of cancer cachexia syndrome adopted by two authors**

<table>
<thead>
<tr>
<th>Weight loss (&gt;5%)</th>
<th>Weight loss (&gt;10% pre-illness)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anorexia</td>
<td>Food intake (&lt;1500 kcal/day)</td>
</tr>
<tr>
<td>Muscle wasting</td>
<td>Systemic inflammation (C-reactive protein &gt;10 mg/l)</td>
</tr>
<tr>
<td>Aesthesia</td>
<td>(Fearon et al. 2006 [5])</td>
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<tr>
<td>Anaemia</td>
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<tr>
<td>Oedema</td>
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<td>(Macdonald et al. 2003 [4])</td>
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what is the evidence that psychosocial factors lead to suboptimal dietary intake?

The Macmillan Weight and Eating Studies, since 2000, have sought to understand peoples’ experience of weight loss and anorexia when they have advanced cancer [8,27,28] and to develop interventions that help people live with the symptoms [29]. This work supports the argument that social context contributes to the problems of weight loss and anorexia.

The studies include a mixed methods case study of people under the care of two specialist community palliative care teams working in the South of England. A method of data collection was a brief questionnaire sent to 232 people with advanced cancer. This sample represented 67% of the total caseload of the two community palliative care teams over a 2-week period. Patients were invited to self-report weight loss, loss of appetite and concern about the symptoms.

Of the 199 people (response rate 85%) who returned a completed questionnaire, 79% reported weight loss, 76% reported eating less as compared with before they knew they were unwell, and 52% reported concern about one or both of the symptoms [8]. To establish why people experienced concern, a purposive sample of 30 patients was selected for interview from those who completed the questionnaire. The interview sample was of 14 men and 16 women, aged 43–85 years (median age 70), 16 of whom reported concern about their weight or loss of appetite on the questionnaire.

The findings demonstrate that healthy eating messages and conflict over food within families make a difference to what is eaten by people with advanced cancer. These are examples of socially constructed factors that influence dietary intake.

**Healthy eating messages make a difference to what is eaten**

For people who have lost weight and have a small appetite, an energy- and protein-dense diet is appropriate [30]. Optimizing calorie and protein intake with a small appetite usually requires a change in the type of foods eaten. Full-fat products and calorie-dense foods can enable an adequate nutritional intake. Thus, previously discouraged foods, such as chocolate, cakes and puddings, become important foods to those trying to meet their energy and protein needs.

People taking part in the Macmillan Weight and Eating Study were keen to take a healthy diet. They were exposed to many messages about diet and food via the media, books, and family and friends. They believed that a healthy diet, high in fibre, fruit and vegetables, and low in fat, would contribute to their health and well-being.
The finding that psychosocial factors influence the dietary intake of people living with advanced cancer is important. If social context makes a difference to what people eat, then there is the potential for psychosocial intervention to change dietary intake, and hence play a role in the management of CCS.

The exploratory study described above was of mainly white British people with advanced cancer living in the South of England. It is possible that the findings do not translate to other geographical locations or to people with potentially curable cancer. However, the participants' accounts provided evidence of healthy eating messages and conflict over food influencing their dietary intake prior to learning that they had advanced disease. Furthermore, psychosocial factors, including conflict over food, have been recognized as contributing to problems for people with cancer in other countries: Canada [31]; Sweden [C. Tishelman, personal communication]; Ireland [32]; and Switzerland [26].

tertiary cachexia?

The finding that psychosocial factors influence the dietary intake of people with advanced cancer augments the conceptualization of CCS. The syndrome might usefully be understood as a constellation of problems with primary (metabolic), secondary (physical obstacles to eating) and tertiary (psychosocial) contributory causative factors.

Tertiary cachexia has not previously been differentiated from other causes. When it is conceptualized as distinct from primary and secondary, new possibilities for the management of CCS emerge: psychosocial interventions for the management of weight loss and anorexia.

psychosocial interventions for cancer cachexia syndrome

The Macmillan Weight and Eating Studies have established that for people living with CCS there are no existing psychosocial interventions that have been tested for effectiveness (unpublished literature review—contact first author for details). The studies are based on the assumption that the management of eating-related problems may need to differentiate between potentially curable and advanced cancers. This perspective is informed by evidence that nutritional counselling can arrest weight loss and improve quality of life in people receiving treatment for potentially curable gastrointestinal cancers [16,19]. Yet, in contrast, there is currently no evidence that people with advanced cancer can improve their survival or quality of life [8,21] by changing what they eat. Therefore, the goal of psychosocial intervention may need to change from optimizing nutritional intake to mitigating weight- and eating-related distress when the focus of treatment and care shifts from achieving cure to optimizing quality of life. However, for many patients, mitigation of distress is likely to be achieved by supporting them in optimizing their nutritional intake within the confines of their small appetite and other obstacles to eating.
implications for practice: management of tertiary cachexia

clinical assessment

To date, responsibility for dietary management has rested largely with patients and their families. People affected by cancer have low expectations of help with weight loss and anorexia from healthcare professionals [27]. However, there is growing recognition that information might help people optimize their nutritional intake from the point of diagnosis [33–35]. In the UK, the National Institute for Health and Clinical Excellence [36] has issued guidance recommending that everyone receiving primary or secondary services has a nutritional assessment.

Nutritional screening tools validated in cancer populations assess nutritional status or risk of malnutrition. An example is the Patient-Generated Subjective Global Assessment (PG-SGA) [37,38]. Such screening tools enable the identification of patients who have lost weight and are experiencing physical problems that act as obstacles to eating loss. However, none of these tools covers the range of psychosocial factors that can contribute to the malnutrition component of CCS. To identify these factors it is necessary to ask questions about the experience of food intake.

intervention

The multidisciplinary team has an important role to play in supporting people with CCS who have weight loss and difficulty eating. Whilst dieticians are the professional group with expertise in nutritional support, doctors and nurses have contact with all patients, so are in a prime position to offer first-line assessment and intervention or referral to specialist dietetic services.

There is little evidence to guide intervention for the socially constructed obstacles to eating well with CCS. However, psychosocial interventions have been demonstrated to be effective in bringing about dietary behavioural change in other contexts, such as eating disorders [39] and heart disease [40, 41]. Work is currently in progress testing the effect of a complex psychosocial intervention on outcomes for patients with advanced cancer living with CCS [29].

Clinical assessment that reveals psychosocial obstacles to eating, such as suboptimal food intake due to the influence of healthy eating messages and conflict over food can, in part, be addressed through the provision of information, such as: (i) a healthy diet (i.e. low fat, high fibre, five portions of fruit and vegetables daily) has no proven benefit for someone with advanced cancer; (ii) people eat more of the things they enjoy/find easiest to eat; (iii) people with a small appetite typically find nutritious fluids and soft foods easiest; (iv) cold foods, soft foods and fluids can be as nutritious as cooked meals; (v) cancer causes metabolic change that suppresses appetite, making it difficult to eat—difficulty eating is not an indication of not trying to eat, emotional weakness or giving up; and (vi) disagreements over food are common in families managing CCS and it can be helpful for each family member to explain to the others what is troubling them.

resources to support clinical practice

There is limited information available on eating well with CCS. One source of information, based on evidence from the Macmillan Weight and Eating Studies, is a set of eight information leaflets to help patients with advanced cancer and their carers live with weight loss and eating-related problems (published by Macmillan Cancer Support, London, 2007 and available from www.be.macmillan.org.uk/Order).

conclusions

Understandings of CCS have been informed by the biomedical model of disease, leading to interventions that change the balance of biochemicals and/or nutrients within the body with the purpose of managing symptoms. This conceptualization can be augmented by considering psychosocial factors that contribute to the development of the syndrome. Psychosocial support may improve outcomes for people living with cancer, anorexia and weight loss.

disclosures

No significant relationships.

references


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