Nutritional Management and Dietary Guidelines for Cancer Cachexia

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Nutrition is an important factor in the treatment and progression of cancer. The majority of cancer patients experience weight loss as their disease progresses and, in general, weight loss is a major prognostic indicator of poor survival and impaired response to cancer treatment. The incidence of malnutrition among patients with cancer has been estimated at between 40 and 80%; its prevalence depends on the tumour type, location, stage and treatment. The consequences of malnutrition may include an increased risk of complications, decreased response and tolerance to treatment, a lower quality of life, reduced survival and higher healthcare costs. Cancer cachexia has been implicated in the deaths of 30–50% of all cancer patients, as many die from the wasting associated with the condition.

The causes of weight loss in patients with cancer are multifactorial and may be due to symptoms reducing intake, treatment-related or mechanical obstruction or cachexia. Symptoms such as anorexia, depression, anxiety, fatigue, early satiety and pain can result in decreased appetite and food intake. Cancer treatment and its side effects may result in weight loss, for example surgery (malabsorption), radiotherapy (nausea, pain, diarrhoea, mucositis) and chemotherapy (nausea, vomiting, diarrhoea, mucositis). Weight loss may be due to mechanical obstruction caused by the cancer itself, such as obstruction of the oesophagus causing swallowing problems and reduced intake. Several clinical trials have demonstrated that appropriate nutrition care can help to overcome nutrition impact symptoms and help patients to maintain their weight and quality of life. However, if the weight loss is due to cachexia, the success of nutrition intervention may be more limited due to the complex pathogenesis of the condition. Nevertheless, positive outcomes such as decreasing symptoms and improving dietary intake and quality of life can still be achieved.

Evidence-based Nutrition Guidelines

As there are significant nutrition issues facing people with cancer, clinicians are faced with the need to recognise nutrition-related issues and to implement effective strategies that will lead to positive outcomes. Nutrition is one aspect in which people with cancer and their carers feel they can play an active role, and they may actively seek nutrition information from a variety of sources. An increasing number of patients with cancer use complementary or alternative therapies that often have little or no evidence base.

Evidence-based practice guidelines for the nutritional management of cancer cachexia and nutritional management of patients receiving radiotherapy have recently been published. These guidelines help clinicians to access and utilise the best available evidence and nutrition care recommendations in today’s information-rich environment. Appropriate nutrition care can lead to positive patient outcomes.

Key aspects of the nutrition care process include identification of malnutrition, establishing the goals of treatment, determining the nutrition prescription and implementing the nutrition care.

Identifying Malnutrition

Nutrition assessment can be used to determine the nutritional status of patients at diagnosis and at regular intervals during cancer treatment. The scored Patient-generated Subjective Global Assessment (PG-SGA) is a comprehensive method of nutrition assessment specifically developed for use in the cancer population. It determines nutritional status on the basis of a medical history (weight change, dietary intake change, presence of nutrition impact symptoms that have persisted for more than two weeks, functional capacity) and physical assessment (evidence of loss of subcutaneous fat, muscle wasting, oedema or ascites). The features are combined subjectively into a global assessment (well nourished, moderately or suspected of being malnourished or severely malnourished) and a score allocated. Typical scores range from 0 to 47, with a higher score reflecting a greater risk of malnutrition. The PG-SGA score has been correlated with a number of objective parameters (% weight loss, body mass index (BMI)) and measures of morbidity (survival, length of stay, quality of life), and has a high degree of inter-rater reproducibility and high sensitivity and specificity compared with other validated nutritional assessment tools.

An advantage of the scored PG-SGA is that the system allows both patient and family participation and involves the completion of a list of nutrition impact symptoms to identify treatable nutritional symptoms and track outcomes. Although the PG-SGA is a comprehensive nutrition assessment, training is required to implement the tool and it may take 10–15 minutes to complete. This may not be feasible to implement for all patients at regular intervals.

An alternative approach to a complete nutrition assessment for all patients is the implementation of a nutrition screening programme that includes an action plan. The aim of nutrition screening is to quickly identify patients who are malnourished or at risk of developing malnutrition. Although a number of reliable and valid nutrition...
screening tools have been published, only the Malnutrition Screening Tool (MST) has been validated for identifying nutrition risk in patients with cancer.20,21 It consists of two questions related to weight loss and appetite and can be completed by patients, carers, clinic staff or clinicians in minimal time (see Table 1). A malnutrition action plan has been developed to assist clinicians in guiding nutrition care in patients with cancer following nutrition screening (see Figure 1).

**Nutrition Treatment Goals**

When discussing nutrition goals and intervention options with patients and carers, it is important to present realistic potential outcomes that will be dependent on the patient’s diagnosis and prognosis.

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Traditionally, treatment has focused on weight gain as the goal of nutrition intervention; however, weight maintenance is a more suitable goal. Several studies have demonstrated that patients with cancer who stabilised their weight had longer survival and improved quality of life compared with those who continued to lose weight.22–24

**Nutrition Prescription**

Energy expenditure of patients with cancer has been shown to vary greatly.25 Treatment and disease stage may alter metabolic requirements over time. Protein intake is often reduced as the result of taste alterations, poor appetite and fatigue. Energy intake in excess of 120kJ/kg/day and protein intake in excess of 1.4g/kg/day have been needed for weight maintenance in some studies of cancer patients.23,26

**Eicosapentaenoic Acid**

A novel approach to nutrition intervention in patients with cancer cachexia has been the prescription of pharmacological doses of eicosapentaenoic acid (EPA), an omega-3 polyunsaturated fat. Studies in both animals and humans have indicated that EPA supplementation reduces production of pro-inflammatory cytokines such as interleukin-6, interleukin-1 and tumour necrosis factor, and in cultured cancer cell lines increases cell death rate.27–30 The results of studies of supplementation with EPA in the form of either capsules or high-protein energy supplements enriched with EPA are inconsistent.31

Although positive changes have been demonstrated in outcomes (improving energy and protein intake, body composition, performance status, quality of life) in patients with cancer cachexia receiving high-protein energy supplements enriched with EPA in open trials, in general these results have not been confirmed in randomised trials. It is important to consider issues such as compliance with the prescription,32
Current Issues

Future therapy for cancer cachexia is likely to be multimodal (both nutritional and pharmacological) and address both the reduction in food intake and metabolic alterations of the cancer patient.

Counselling, especially in conjunction with high-protein energy supplements, has been shown to increase intake and attenuate weight loss in a range of cancer patients. A concern expressed by many patients is that consumption of high-protein energy supplements may reduce their meal intake; however, in patients with cancer, high-protein energy supplements have been shown to increase intake with no negative impact on spontaneous food intake. Prognosis, economic circumstances and client preferences need to be considered in decisions regarding supplement usage.

Nutrition counselling is effective during phases of both active treatment (chemotherapy and radiotherapy) and supportive care. Recent studies in patients with cancer have demonstrated effective clinical outcomes with weekly to fortnightly nutrition intervention. A concern expressed by many patients is that consumption of high-protein energy supplements may reduce their meal intake; however, in patients with cancer, high-protein energy supplements have been shown to increase intake with no negative impact on spontaneous food intake.

Summary and Conclusions

Cancer cachexia is a complex metabolic syndrome. Evidence-based practice guidelines for the nutritional management of cancer cachexia have recently been published and can guide appropriate nutrition care. Key aspects of the nutrition care process include identification of malnutrition, setting of appropriate goals, the nutrition prescription and implementation. Several recent randomised controlled studies have demonstrated positive clinical outcomes such as improvement in quality of life with nutrition care. Further research is required to determine the optimal therapeutic approach for cancer-induced weight loss. Future therapy for cancer cachexia is likely to be multimodal (both nutritional and pharmacological) and address both the reduction in food intake and metabolic alterations of the cancer patient.

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*EPA = eicosapentaenoic acid, an omega-3 fatty acid derived from fish oil