Patients with cancer are one of the diagnostic groups at greatest nutritional risk. A recent observational study in 191 oncology patients receiving cancer services at a public Australian hospital found that almost one half of patients were malnourished. Common symptoms impacting on dietary intake included taste changes, poor appetite and nausea. Inadequate dietary intake and unintentional weight loss may be directly related to the tumour (e.g., obstruction) or as a side-effect of treatment. Strong evidence supports the prevention and early detection of malnutrition, as nutrition intervention can significantly improve patient and clinical outcomes.

Nutrition intervention has been shown to be beneficial

Evidence-based practice guidelines for the nutritional management of patients receiving radiotherapy presents strong evidence that nutrition support improves outcomes in patients receiving radiotherapy to the gastrointestinal or head and neck region. Dietary counselling by a dietitian and/or use of supplements are effective methods of nutrition intervention and have been found to improve dietary intake, nutritional status and quality of life in patients receiving radiotherapy (National Health and Medical Research Council grade of recommendation A). However, due to a lack of quality studies, there is currently insufficient evidence to routinely recommend dietary counselling in oncology patients receiving chemotherapy. Further research needs to be conducted in this area. The goals and outcomes of nutrition intervention will be dependent on the diagnosis, the clinical need and prognosis of the patient. The type of nutrition intervention will therefore range from intensive nutrition support for patients with a long-term prognosis, to patients with end-stage disease where the focus should be on comfort and quality of life. Patients with minimal dietary intake may require tube feeding (depending on prognosis and in consultation with the patient and multidisciplinary team).

Many patients are interested in nutrition and seek advice external to the cancer centre. It has been reported that 40% of cancer patients are seeking extra nutrition resources and would like further information regarding dietary tips for managing side-effects and the use of supplements. Therefore it is important that health professionals feel comfortable answering common nutritional queries using an evidence-based approach, have access to appropriate resources eg. Cancer Council brochures, or can refer to a dietitian. The World Cancer Research Report recommends that all cancer survivors receive nutritional care from an appropriately trained professional (physician and/or qualified nutrition professional eg. dietitian) if able to do so, and unless otherwise advised, aim to follow the recommendations for diet, healthy weight and physical activity.

Early identification of nutritionally at risk patients

Firstly, in order for patients with cancer to be appropriately identified and referred to the dietitian, nutrition screening
should be routinely used in healthcare settings. The Malnutrition Screening Tool (MST) is a valid and reliable tool in the oncology setting and is therefore the most appropriate nutrition screening tool for this patient group. It is a very simple tool which consists of two questions enquiring about unintentional weight loss and poor intake and can be administered by nursing or administration staff or by the patient.

In absence of a formal screening system, malnourished patients can be overlooked, especially if they appear normal or overweight. Patients identified as at nutritional risk by the MST can then be referred to the dietitian for a comprehensive nutrition assessment, eg, using the Patient Generated – Subjective Global Assessment (PG-SGA) which is the preferred nutrition assessment tool in oncology patients. Regular nutrition screening, early and appropriate referral and assessment and intervention by the dietitian, as part of the multidisciplinary team, offers the best nutritional care for patients.

Cancer cachexia

The complex clinical syndrome known as cancer cachexia differs from malnutrition in that it is characterised by a negative protein and energy balance, progressive loss of skeletal body mass (sarcopenia), anorexia and metabolic derangements. The weight loss seen in patients with cachexia is from both muscle and fat, which is distinct to that seen in patients with starvation or anorexia, where weight loss is predominantly from fat. This variation is due to the metabolic alterations and inflammatory state that occurs in cachexia. Cancer cachexia is a “multifactorial syndrome defined by an ongoing loss of skeletal muscle mass (with or without loss of fat mass) that cannot be fully reversed by conventional nutritional support and leads to progressive functional impairment”. Cancer cachexia is most commonly exhibited in patients with advanced disease, particularly in solid tumours such as pancreatic, lung, gastric and colorectal cancer. Symptoms may include severe weight loss, anorexia and early satiety, with associated fatigue and weakness. Cancer cachexia has a significant impact upon patient morbidity, reduced quality of life and is implicated in 30-50% of all cancer deaths. The mechanism of cancer cachexia is not particularly well understood. Therefore, finding an objective definition and classification system for diagnostic criteria for this syndrome is of growing interest. The most recent published international consensus of agreed diagnostic criterion of cancer cachexia is: weight loss > 5%; weight loss >2% in those already showing depletion (with body mass index (BMI) <20kg/m²); or sarcopenia, with the degree of energy and protein store depletion and weight loss determining the severity. However, without validated diagnostic criteria currently available, clinical judgement must be considered in order to effectively manage a patient with cancer cachexia. The nutritional goals and outcomes of patients, particularly those with advanced cancer, need to be realistic, individualised and synonymous with the overall goals for the patient. The patient’s prognosis and own wishes must be considered, with the nutrition intervention adjusted accordingly for those requiring palliative supportive care. Evidence-based practice guidelines for nutritional management of cancer cachexia provides a clear and evidence-based framework to effectively guide nutritional intervention in patients with cachexia.

Weight stabilisation is an appropriate nutrition intervention goal for patients with cancer cachexia, as it has been shown this can lead to improved quality of life and prolonged survival compared to patients who lose weight. In order to accomplish weight maintenance in patients with cancer cachexia, it is important to ensure that patients have optimal symptom control and can achieve adequate energy and protein intakes. It has been estimated that an energy intake of approximately 120kJ/kg/day and protein intake of approximately 1.4g/kg/day should be prescribed to patients with...
cancer cachexia, in order to maintain weight. Frequent nutrition counselling (weekly to fortnightly) by a dietitian has shown to improve nutritional and clinical outcomes in cancer patients and although commonly thought, the consumption of high protein energy supplements does not appear to negatively impact upon the amount of food consumed. In addition, a multidisciplinary approach in order to effectively manage patients with cancer cachexia, has shown to be beneficial and further investigation into novel service delivery models is warranted. The supplemental use of an omega-3 polyunsaturated fatty acid, eicosapentaenoic acid (EPA), in order to improve patient outcomes in patients affected with cancer cachexia, has been a topic of interest for many years. A 2007 Cochrane review aimed to determine the effectiveness and safety of EPA to alleviate cachexia and related symptoms in patients with incurable or advanced cancer. This group concluded that there was insufficient evidence to support the routine use of EPA for the management of cancer cachexia in patients with advanced cancer, specifically that an EPA nutritional supplement held no benefit over a non-EPA nutritional supplement. However, given the challenges of conducting high quality research in patients with cancer cachexia and advanced disease, the favourable results seen in other studies may still offer important conclusions regarding EPA use. It will be interesting to see if the National Health and Medical Research Council grade of C (some evidence to support the use of EPA for cachexia, but care must be taken in its application) will change upon updating of the cachexia guidelines.

Immunonutrition

For many cancer types, surgery is the best treatment option available. However, there is morbidity associated with this procedure. Surgical outcomes are negatively impacted by pre-existing malnutrition, as well as by a patient’s immune response to surgery; with surgical patients experiencing greater rates of infectious complications as well as extended hospital stays. These poor surgical outcomes can then lead to poor oncological and quality of life outcomes.

There is good evidence from the European Society of Parenteral and Enteral Nutrition that optimising nutrition prior to surgery, through nutrition support, can improve a patient’s surgical outcome. To assist further with improving a patient’s surgical outcome there are now novel nutrition formulae available to modulate the immune response. These formulae, commonly known as immunonutrition, can modulate the immune and inflammatory responses, as well as gut function, and may contain any combination of modulating nutrients, including arginine, omega-3 fatty acids, RNA and glutamine.

Immunonutrition has been studied for over 25 years, predominantly in the gastrointestinal cancer patient population, however it has been difficult to draw conclusions from these studies due to the poor quality of many of the studies. There have been issues with the use of inappropriate control groups, different nutrition formula and volume of formula prescribed, small study samples, as well as heterogeneity within the study groups. This has meant that despite many studies finding immunonutrition to be beneficial, its use has not become standard practice.

A number of meta-analyses have been conducted to attempt to overcome the issues with individual studies to determine if immunonutrition is beneficial and provides better surgical outcomes. Zheng and Waitzberg found that the use of immunonutrition produced a reduction in post operative infectious complications and length of hospital stay, but had no effect on mortality. These meta-analyses, despite improving on the individual studies, still have issues due to inadequate control groups, the possibility of duplicated data, as well as small numbers for the mortality data. More recent meta-analyses conducted by Marick and Cerantola have attempted to overcome these flaws, in particular only including studies that had used an appropriate control group, along with more recently published randomised control trials. They too found that the use of immunonutrition significantly decreases post-operative infectious complications and length of stay, but has no effect on mortality, again due to small mortality rates. They both conclude that immunonutrition use should be considered for surgical patients.

Despite the recommendation for use of immunonutrition in surgical patients, the recommendations for the volume and timing of administration remain relatively unclear. Varying formulations of immunonutrition have been studied, with some formulations containing only one immune modulating nutrient and others containing four, and all in different compositions, making it difficult to make a general recommendation regarding the volume of immunonutrition required. Many studies have used either 1000mL per day or 25kcal per kg per day, however the actual amount of immunonutrients per day will differ depending on the formulation used. There is currently no firm recommendation for the most appropriate time to administer immunonutrition with pre, post and peri-operative all being considered. Recent meta-analyses suggest that the pre-operative administration is the most important, but also that peri-operative administration, where possible, may be optimal.

Implications for practice

In order to provide early and appropriate nutrition intervention, practitioners are recommended to consider:

- Regular nutrition screening using a validated, quick and easy tool which can be administered by any staff or patient themselves eg. MST
- Follow-up nutrition assessment by a nutrition professional eg. Accredited Practising Dietitian using a validated nutrition assessment tool eg. PG-SGA
Providing appropriate nutrition support for those identified as having nutritional problems eg. dietary counselling to modify diet, nutrition supplements

Specialised nutrition products such as EPA or immunonutrition may provide patient benefits in some groups

Ongoing multidisciplinary review for best patient care.

There is high level evidence to support the benefits of nutrition counselling, with or without nutrition supplements, in improving nutritional status and quality of life in patients receiving radiotherapy. There is some evidence to support nutritional management in patients with cancer cachexia, or using specialised nutritional support such as immunonutrition. Further research is required to demonstrate the benefits of dietary counselling in patients receiving chemotherapy. All cancer treatment centres should include access to a specialised dietitian for best patient care. This highlights the importance of early identification and management of nutrition-impact symptoms with adequate follow-up, in order to provide optimal care for people with cancer.

References


