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Role of Nutrition and Dietetics in Palliative Cancer Care: A Special Perspective

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Abstract

This article is aimed to provide a descriptive overview on nutritional and dietetic evaluation and intervention in palliative cancer patients, for whom appropriate identification, initiation and implementation of nutritional strategies are warranted to prevent complications secondary to anorexia and cachexia. Growing evidence from evaluation studies on diet and nutrition in palliative cancer patients suggested routine use of home parenteral nutrition, a thorough routine measurement of nutritional status was indicated to appropriately identify anorexia and cachexia, usefulness of Mini nutritional assessment score for bedside screening, and an inter-relationship between energy density and energy intake. Evidence from studies on nutritional interventions point out therapeutic benefits of involving family and caregivers into decision-making, better nutritional status resulted in lesser prevalence of complications, and European association for palliative care recommended a three-step approach to providing artificial nutrition and hydration in palliative cancer patients which deserve individualized application along a multidisciplinary biopsychosocial model.

Keywords: Palliative dietetics; Palliative nutrition; Dietetic oncology; Nutritional oncology.

This article is aimed to provide a descriptive overview on nutritional and dietetic evaluation and intervention in palliative cancer patients, for whom appropriate identification, initiation and implementation of nutritional strategies are warranted to prevent complications secondary to anorexia and cachexia.

Bovio *et al* studied anthropometric measurements, food and nutritional intake, and plasma levels of few serum proteins in 144 patients and calculated the basal metabolic rate (BMR). Low BMI, weight loss, lesser arm muscle area (AMA), lesser arm fat area (AFA) lesser daily calorie intake below the BMR in more females than in males, with subnormal plasma levels of prealbumin, transferrin, and albumin were found in both sexes.[1]

Fouladiun *et al* evaluated time course changes in body composition (dual-energy X-ray absorptiometry) with measurements of whole body and regional distribution of fat and lean tissue and its relationship to food and dietary intake, host metabolism (indirect calorimetry), maximum exercise capacity (walking test), and circulating hormones in 311 cancer patients who were receiving palliative care during 4-62 months of follow-up. "The study results demonstrated that body fat was lost more rapidly than lean tissue in progressive cancer cachexia, a phenomenon that was related highly to alterations in the levels of circulating classic hormones and food intake, including both caloric amount and diet composition."[2]

Holder explained that nursing professionals can combat the threat of cancer cachexia through methods that include nursing comfort strategies, the use of recommended pharmacological agents and dietary interventions such as experimenting with

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different foods, textures, portion sizes and nutritional supplements (fish oil-enhanced nutritional supplements and artificial nutritional support).[3]

Kwang and Kandiah evaluated the nutritional status (anthropometric measurements, weight loss at 1/6 months, and the scored patient-generated subjective global assessment (PG-SGA)) of patients with cancer in palliative care and examined the interrelationship between objective and subjective nutritional assessment measures. Moderate-to-severe malnutrition was common, with nutritional symptoms of pain, xerostomia, and anorexia. PG-SGA scores were correlated well with anthropometric measurements.[3]

Orrevall *et al* conducted a national survey to investigate the prevalence, indications for, and perceived benefit of enteral/parenteral nutrition and intravenous glucose in 32 palliative care units throughout Sweden, representing 1083 patients with gastrointestinal and gynecological malignancies. The survey had following findings; "Thirteen percent of the patients received enteral/parenteral nutrition or intravenous glucose. Parenteral nutrition (PN) was significantly more common in home care units serving the urban Stockholm region (11%) than in other parts of the country (4%). Weight and appetite loss were the predominant indications for PN, with this treatment deemed beneficial for 75% of the palliative patients."[5]

Orrevall *et al* investigated patients' views and experiences of using home artificial nutrition, and factors associated with use of home parenteral nutrition (HPN) using structured telephone interviews with 620 cancer patients enrolled in 21 palliative home care services. The study had important findings; "HPN was more common than home enteral tube feeding. Home artificial nutrition was usually introduced more than four months before death. Three of four HPN recipients also had oral food intake. HPN use was associated with eating difficulties, nausea/vomiting, and fatigue rather than gastrointestinal problems per se. HETF was generally used for patients with problems related to oesophagus and head and neck tumours."[6]

Orrevall *et al* investigated the nutritional risk status and use of nutritional support among 621 cancer patients enrolled in 21 palliative home care services, and the differences in the use of nutritional support in relation to nutritional, social and clinical factors, as well as survival rates. The study found the following; "Nutritional support was used by 55% of the patients, with oral nutritional supplements most common and 14% using artificial nutrition. Use of nutritional support was related to low BMI and severe weight loss and was more common in patients with shorter survival times."[7]

Slaviero *et al* investigated the use of assessment tools applied to the routine clinical evaluation of nutritional status in patients with advanced solid malignancies before treatment with palliative chemotherapy by investigating the interrelationships between biochemical indices, anthropometric measures, and a nutritional screening tool, the Mini-Nutritional Assessment, in 73 patients. The baseline history of weight loss in these patients was found to be strongly correlated to the Mini-Nutritional Assessment (MNA) score, and to serum C-reactive protein (a marker of acute-phase response).[8]

Wallengren *et al* calculated energy balance from the change in body energy content by repeated dual-energy X-ray scans in 107 patients and investigated relationships between diet energy density (kcal/g), energy intake (kcal/day) and energy balance with systemic inflammation and survival as influencing factors. The energy density of solid food and energy intake were found to be positive predictors of energy balance which was positively associated with survival and negatively with systemic inflammation.[9]

Wallengren *et al* studied the relationship between ED (kcal/g) and EI (kcal/kg body weight per day), through dietary intake obtained from 251 food records (995 days) in a group of unselected palliative care cancer

patients. Age, BMI, fatigue, survival, and hypermetabolism were found to be associated with EI, but did not substantially influence the association between ED and EI in palliative care cancer patients.[10]

Wallengren *et al* studied energy density and energy intake in a group of palliative cancer patients and explored which method of energy density calculation yielded the highest determination coefficient of energy intake from 259 food records using four methods, differing in the types of food and beverages included in the analysis. The authors found a positive association between diet energy density and energy intake. The method used when calculating energy density had limited impact on this association. The authors also suggested that when calculating energy density all food and beverages should be included in the analysis.[11]

Growing evidence from evaluation studies on diet and nutrition in palliative cancer patients suggested routine use of home parenteral nutrition, a thorough routine measurement of nutritional status was indicated to appropriately identify anorexia and cachexia, usefulness of Mini nutritional assessment score for bedside screening, and an inter-relationship between energy density and energy intake.

Treatment

Amano *et al* studied the role of nutritional support on 63 terminally ill patients with cancer in a palliative care unit through a retrospective chart review of those patients who received individualized nutritional support (NS) and were compared to the others. Lower prevalence of pressure sores, edema, antibiotics use were noted in those patients who received NS.[12]

Prevost and Grach conducted a literature search of PubMed to review methods of measuring QoL, and modalities of nutritional intervention and their influence on QoL of cancer patients in palliative care. The authors gave following recommendations; "Nutritional status should be assessed early and regularly during treatment using appropriate tools. In the particularly acute context of palliative care, optimal patient management requires adequate education and counseling to patients and families. Meaningful interactions between the patient, caregivers and medical team would also increase the chance of resolving nutrition-related issues and help to fulfil each patient's specific nutritional needs and thus improve the QoL."[13]

European Association for Palliative Care (EAPC) Guidelines

Bozzetti *et al* proposed a three-step process for artificial nutrition and hydration: "Step 1: define the eight key elements necessary to reach a decision; Step II: make the decision; and Step III: reevaluate the patient and the proposed treatment at specified intervals. Step I involves assessing the patient concerning the following: 1) oncological/clinical condition; 2) symptoms; 3) expected length of survival; 4) hydration and nutritional status; 5) spontaneous or voluntary nutrient intake; 6) psychological profile; 7) gut function and potential route of administration; and 8) need for special services based on type of nutritional support prescribed. Step II involves the overall assessment of pros and cons, based on information determined in Step I, in order to reach an appropriate decision based on a well-defined end point (i.e., improvement of quality of life; maintaining patient survival; attaining rehydration). Step III involves the periodic reevaluation of the decision made in Step II based on the proposed goal and the attained result."[14]

Evidence from studies on nutritional interventions point out therapeutic benefits of involving family and caregivers into decision-making, better nutritional status resulted in lesser prevalence of complications, and European association for palliative care recommended a three-step approach to providing artificial nutrition and hydration in palliative cancer patients which deserve individualized application along a

multidisciplinary biopsychosocial model.

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