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Food restrictions of patients who are undergoing treatment for oral and oropharyngeal cancer

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A B S T R A C T

Purpose: Oral squamous cell carcinoma and its treatment are associated with facial disfigurement and functional inabilities that may lead to malnutrition or under nourishment. This study assessed the incidence of food restrictions in patients undergoing treatment for oral and oropharyngeal cancer.
Method: We interviewed 120 patients in two hospitals in São Paulo, Brazil, using a structured food frequency questionnaire comprising the most commonly consumed foods in Brazil. This questionnaire was applied twice; the first time to inform dietary patterns prior to the diagnosis of cancer and the second time to assess recent modifications of diet that were associated with the disease and its treatment. Hospital files provided information on clinical status. Multivariate Poisson regression models assessed covariates with prognostic value.
Results: One third of patients suffered major food restrictions (i.e., they reduced substantially the intake of more than 50% of the most commonly consumed food items before the diagnosis); 39% suffered a less severe condition (they could not eat less than 50% of the most commonly consumed food items before the diagnosis, and they needed changes in food preparation). Larger tumour size (adjusted incidence ratio IR = 1.45), posterior location (IR = 1.33), radiotherapy (IR = 1.84), loss of tongue mobility (IR = 1.36) and loss of teeth (IR = 1.25) in the surgery were associated significantly with the study outcome.
Conclusion: This study identified clinical predictors of food restrictions in patients undergoing treatment for oral and oropharyngeal cancer. This knowledge may contribute to improve patient care and management, and to develop interventions aimed at preventing nutritional depletion of these patients.

Introduction

Several factors reduce the quality of life of patients who have oral squamous cell carcinoma. Both the disease and its treatment can lead to different degrees of mutilation, functional inabilities and facial disfigurement. These conditions may be associated with continuous pain, xerostomia, alterations in taste, swallowing disorders, speech impairment, and psychological problems potentially linked to the risk of nutritional impairment and an adverse prognosis for these patients. The prevalence of malnutrition among patients who have head and neck cancer was estimated to range from 65% to 75% (von Meyenfeldt, 2005). Increased healthcare costs, depression, fatigue and malaise have been reported to be consequences of cancer-associated malnutrition (van Cutsem and Arends, 2005).

Quality of life assessments identified different conditions that are associated with food restrictions in patients who have oral cancer. Backstrom et al. (1995) studied the effects of radiotherapy-induced xerostomia on the intake of energy and nutrients in patients who were treated for head and neck tumours in Sweden, and observed a significantly poorer nutritional status in irradiated patients who had dry mouth than patients who were without xerostomia. Irradiated patients had a nearly 300 kcal lower average daily energy intake than their non-irradiated counterparts; and

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their daily consumption of vitamins and minerals did not reach the minimum doses that are recommended by the Swedish Nutrition Recommendations (Bruce and Becker, 1989).

Pauloski et al. (1998) reported a poor evolution of the swallowing function in oral cancer patients at one to six months after surgery, and explained that this observation was a possible effect of postoperative radiotherapy. Bundgaard et al. (1993) studied oral functions of patients during follow-up periods of one and two years after the diagnosis of oral cancer, and identified better speech and tongue mobility in patients who had been treated only with radiotherapy than in those who had been treated by surgery or combined therapy. Patients who received radiotherapy complained more from mucositis, poor dental status and loss of teeth, and patients who experienced tumour recurrence had a poorer quality of life.

Ravasco et al. (2003) stated that malnutrition is a major source of morbidity and mortality associated with tumours of the head and neck, gastro-oesophageal, and colon and rectum cancer. Despite this observation, the author also stated that individually tailored dietary advice may contribute effectively to prevent or at least limit malnutrition in patients who are suffering from cancer (Ravasco, 2005).

This problem has also been acknowledged in Brazil (Toporcov and Antunes, 2006), in a study that assessed factors that are associated with restrictions of food intake in cancer patients. The current study aimed to assess the incidence of food restrictions in treated patients with oral cancer in a Brazilian context, as well as acknowledge covariates with prognostic value that would allow early interventions to prevent nutritional disorders in these patients.

Method

This study assessed recent modifications of dietary patterns in patients who had oral or oropharyngeal cancer. The period of data collection began in January 2008, and ended in December 2008. We considered all patients to be eligible to participate in this study who were admitted to the head and neck surgery centre of two large Brazilian hospitals (Hospital Heliópolis and Hospital do Câncer A. C. Camargo) during the period of January 2007—December 2008, and who were affected by histologically confirmed squamous cell carcinoma in the oral cavity or the oropharynx, as confirmed by hospital files.

Four trained examiners interviewed 120 patients. Overall, patients were collaborative and willing to answer questions by the hospital staff on their diet and personal issues. Patients who preferred not to stay after their clinical consult were reassessed on their next visit to the hospital's outpatient unit. At the end of the period of data collection, only two eligible patients had not been interviewed, due to their repeated refusal to participate.

With regard to the primary location of the neoplasm, four patients had tumour in the cheek mucosa, 23 patients in the floor of the mouth, seven in the gum, 14 in the palate, five in the retromolar area, 39 in the tongue, and 28 in the oropharynx. Specific information on cancer location was reordered for classifying tumours as anterior (those affecting the gum, floor of mouth, cheek mucosa, hard palate and anterior two-thirds of tongue) or posterior (base of tongue, soft palate, retromolar area, and oropharynx).

The majority of patients (89) had already been subjected to surgical resection of the tumour when interviewed; the remaining patients were preparing for surgery (8), or being treated either with radiotherapy (4), chemotherapy (1) or both (18). The sample comprised patients with different TNM classification at diagnosis; 77 of them had T3 or T4 tumours, and 64 presented with regional lymph node metastasis. Three patients presented with distant metastasis when they were diagnosed with oral cancer; this number is too small to permit any comparative analysis.

All patients were interviewed immediately after their clinical consult in a separate room of each hospital. The study observed Brazilian and international regulations on ethics in research involving human beings. Ethical clearance was given by the research committees of the participating institutions. The assessment of current dietary patterns used a structured food frequency questionnaire (FFQ), which was prepared as a simplified version (i.e., we only assessed how many times the patient ate each food item per week, thus allowing an easy recollection of items that are not commonly eaten on a daily basis, and we excluded any information on serving sizes) of an already validated assessment tool that had been specifically devised for patients with oral cancer (Matarazzo et al., 2006). The FFQ comprised an extensive assessment of the usual components of Brazilian dietary patterns for breakfast, lunch, dinner and inter-meal snacks. The FFQ was applied twice; the first time to inform dietary patterns prior to the diagnosis of cancer and the second time to assess recent modifications of diet that were associated with the disease and its treatment.

Participants were asked to provide the weekly frequency of eating for each item. This information subsequently allowed the classification of subjects according to the following levels of food restriction: (i) total restriction (sole source of nutrition is provided by a nasogastric tube); (ii) major restriction (the patients cannot eat or reduced substantially the intake of more than 50% of the most commonly consumed food items before the questionnaire); (iii) restriction (the patients cannot eat less than 50% of the most commonly consumed food items before the diagnosis, and they need changes in food preparation (referring to the form of cooking, maceration and spice addition)); and (iv) no restriction, without changes in food preparation. For the comparative analysis, the three former categories were considered to be incidences of food restriction.

The questionnaire also included a socio-demographic section, with information on sex, age and family income. Age was separated into two categories: less than 56 (median age), and 56 years old or more. Income was measured in terms of the Brazilian minimum wage, a unit of measurement roughly corresponding to US$ 250 during the period of data collection. Hospital records were used to obtain clinical information about the patients: tumour location, TNM stage, and type of treatment. The questionnaire also provided additional information on sequelae, such as a report of xerostomia, loss of appetite, pain while eating, loss of taste sensation, gastrointestinal disorders, loss of tongue mobility, loss of teeth in the surgery, and other complaints (referring mostly to fear, trismus, numbness and choking).

The statistical analysis used Poisson regression (Barros and Hirakata, 2003). The appraisal of associations between food restrictions and covariates on socio-demographic and clinical characteristics used point and interval crude estimates of the incidence ratio – IR. The subsequent multivariate model observed a conceptual framework (Victora et al., 1997) that considered three levels of covariates: clinical characteristics of the tumour (distal level), type of treatment (intermediary level), and symptoms reported by the patients (proximal level). Associations in the multivariate model were adjusted for covariates classified at the same level and at more distal levels. Clinical characteristics (size and location) were adjusted by themselves, although they were not adjusted for any mediating variable. The associations between the outcome and treatments were adjusted by clinical characteristics of the tumour. Finally, the associations between food restrictions and symptoms were adjusted by the full set of variables fitted into the model.

The statistical analysis used the Stata 10.0 2007 software (Stata Corporation, College Station, TX, USA).