



Original/Cáncer

Evaluation of diet acceptance by patients with haematological cancer during chemotherapeutic treatment

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Abstract

Introduction: a compromised nutritional status is one of the factors that may increase the morbidity and mortality of chemotherapy patients. The goal of this study was to evaluate acceptance of the diet by patients with haematological cancer throughout their hospital stay for chemotherapeutic treatment.

Method: this was a cross-sectional, descriptive, quantitative study, carried out from February to October 2014 in adult patients of both genders diagnosed with lymphoma and leukaemia. Food intake was evaluated on a daily basis through a recording instrument designed by the author. ANOVA test for repeated measurements was employed.

Results: 32 patients were evaluated, with a mean age of 42 ± 11 years, the majority of whom were women (66%). We observed gastrointestinal disturbances in 72% of the patients, most commonly nausea (59%), followed by xerostomia (34%), vomiting (28%) and dysgeusia (25%). The percentage of leftover food was significant, varying from 23% to 35%. Lunch and dinner were the most frequently rejected meals. Light meals were more well-tolerated, having been accepted in 75% to 100% of the offers.

Conclusion: The food records show that during chemotherapy cycles, patients present significant food rejection, specially with larger meals such as lunch and dinner, though light meals are better tolerated. Employing food options chosen by patients may be a strategy to improve dietary acceptance. More studies on this subject are necessary in order to improve nutritional care to this population, aiming to prevent and/or rehabilitate the nutritional status of these patients.

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EVALUACIÓN DE LA ACEPTACIÓN DE LA DIETA POR LOS PACIENTES CON CÁNCER HEMATOLÓGICO DURANTE EL TRATAMIENTO QUIMIOTERAPÉUTICO

Resumen

Introducción: el estado nutricional amenazado es uno de los factores que puede elevar la morbimortalidad de los pacientes sometidos a quimioterapia. El objetivo de este estudio fue evaluar la aceptación de la dieta por parte de pacientes con cáncer hematológico durante la internación para quimioterapia.

Métodos: investigación transversal, descriptiva y cuantitativa llevada a cabo entre febrero y octubre de 2014 con pacientes adultos de ambos sexos diagnosticados de linfoma y leucemia. Se realizó la evaluación diaria del consumo alimentario mediante la utilización de herramientas para colección de datos preparado por el autor. Se utilizó ANOVA para medidas repetidas.

Resultados: fueron evaluados 32 pacientes con edad promedio de 42 ± 11 años, siendo la mayoría mujeres (66%). Observamos trastornos gastrointestinales en el 72% de los pacientes, la mayoría de las molestias fueron náuseas (59%) además de xerostomía (34%), vómitos (28%), inapetencia (28%) y disgeusia (25%). El porcentaje de resto de ingesta alimentaria fue significativo, oscilando entre el 23% y el 35%. El mayor rechazo ocurrió en el almuerzo y la cena. Las meriendas fueron mejor aceptadas, con un porcentaje del 75% al 100%.

Conclusión de la investigación: los registros de alimentos mostraron que durante los ciclos de quimioterapia se produjo un rechazo significativo de alimentos sobre todo en las comidas de mayor volumen, como el almuerzo y la cena, mientras que las comidas pequeñas, tales como aperitivos, son mejor toleradas. El uso de opciones de alimentos enumerados por los pacientes puede ser una estrategia para mejorar el cumplimiento de la dieta. Se necesitan más estudios sobre este tema para mejorar la atención a esta población, con el objetivo de prevenir y/o recuperar el estado nutricional de estos pacientes.

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Palabras clave: Aceptación de la dieta. Estado nutricional. Linfoma. Leucemia. Quimioterapia.

Introduction

Cancer is a disease whose main feature is deranged cell growth, which can lead to the infiltration of adjacent tissues and organs¹. By 2030, an estimated 21 million new cases of cancer are likely to be diagnosed in the world, leading to 13.2 million deaths².

Non-Hodgkin lymphoma and leukemia are the most prevalent types of hematological cancer, happening most frequently in men².

Malnutrition is one of the most common problems in cancer patients. Its development and the degree in which it endangers the patient will depend on several factors, such as the type of cancer, the stage of the disease and the therapy chosen for treatment. In cases of hematologic cancer, chemotherapy is the most commonly prescribed treatment, although it can be combined with radiotherapy and/or surgery depending on the compromise of other organs and systems^{4,5}. Patients under chemotherapeutic treatment may present side effects such as gastrointestinal disturbances, which happen due to drug toxicity and their impact on the patients general health status. The most frequent complaints are nausea, vomiting, distortion of the sense of taste, mucositis, constipation and diarrhoea, all of which contribute to low diet acceptance^{6,7}.

Inadequate acceptance of the proposed diet has been reported in the literature and may be related to changes in eating habits, dissatisfaction with the offered preparations and the influence of hospitalization itself, factors which may result in impairment of the nutritional status^{8,9,10}.

Cancer patients whose nutritional status is compromised are at increased risk for clinical and surgical morbidity and mortality³, as well as diminished response and tolerance to treatment and lower quality of life. In these cases, appropriate nutritional therapy may modify nutritional status, thereby reducing complication rates and hospital stay^{11,12}.

Individualising these patients nutritional therapy requires adequate assessment of the diet acceptance, as a means of ascertaining early and effective intervention. In order to do so, dietary parameters may be evaluated through several tools. Food records are one of the most commonly employed methods, since ingested food is registered at the moment of consumption, eliminating memory bias¹³.

Within this context, the goal of the present study was to evaluate diet acceptance by patients with haematological cancer throughout their hospital stay for chemotherapeutic treatment, aiming to guide interventions for more effective diet therapy.

Method

This was a cross-sectional, descriptive, quantitative study, carried out between February and October 2014. The study sample consisted of adult patients

of both genders with diagnoses of lymphoma or leukaemia, admitted to the Internal Medicine ward of a teaching hospital in Santa Catarina for chemotherapeutic treatment. The patient was evaluated at every readmission, according to the chemotherapy regimen adopted. Patients with Lymphoma and Leukaemia were evaluated for being the most incidental types of hematologic cancer in this ward. Individuals in enteral and/or parenteral nutrition therapy, bedridden patients, adolescents and elderly were not included in the study. The study was approved by the Ethics Committee of Universidade Federal de Santa Catarina (Protocol No. 830.004) and all the participants signed a written consent form.

The data collection was performed by the researcher nutritionist. Identification data was collected from patient charts, such as name, age, hospital number, medical diagnosis, time of diagnosis, comorbidities, chemotherapy protocol prescribed and time of initiation of chemotherapy.

From the moment of initiation of chemotherapy, patients were approached daily in order to assess the occurrence of side effects during the infusion period of that cycle. The following symptoms were queried: inappetence, anorexia, dysgeusia, dysosmia, nausea, vomiting, diarrhoea, constipation, xerostomia, mucositis, early satiety, dysphagia, odynophagia and oesophagitis.

In order to evaluate diet acceptance, all the food and drink offered to these patients was recorded at the Nutrition Division of the hospital and, after that, the food record proposed by Fisberg et al.¹³ was adapted accordingly so that patients or their next of kin could mark what was consumed during each meal. Each food record consisted of six meals, which in turn comprised a series of options made available by the Nutrition Division: breakfast (17 options), collation (6 options), lunch (19 options), afternoon snack (17 options), dinner (17 options) and supper (10 options). The food record categorised consumption of the meal as a whole and the consumption of individual items in percentages of acceptance: 100%, 75%, 50%, 25% and 0%. There was also a place for patients to record any ingested items that were not on the standard chart of options.

The food record was completed daily during the infusion of a cycle of chemotherapy in order to enable assessment of diet acceptance during this period. Every morning the food record of the previous day was collected and verified with the patient. A manual was developed and handed out to aid patients in filling out the food records.

Recordings were numbered 1 to 7, representing the minimum and maximum number of measurements, according to the number of days during which chemotherapy was administered.

Statistical analysis was performed on the STATA® software, version 11.0 for Windows®. Continuous variables were expressed in mean and standard deviation

when the distribution was symmetrical, and median and interquartile interval when the distribution was asymmetric. ANOVA for repeated measurements was employed to analyse differences. For all statistical tests, the confidence intervals were calculated and the chosen level of significance was 95% ($p < 0.05$).

Results

32 patients were evaluated, with a mean age of 42 ± 11 years, the majority of whom were women (66%). 56% of the patients had been diagnosed with leukaemia. The majority of patients (75%) had had their diagnoses up to 6 months prior. Regarding comorbidities, 34% of the patients were carriers of the Human Immunodeficiency Virus (HIV), 12.5% had type 2 Diabetes Mellitus (DM), 12.5% had Systemic Arterial Hypertension (SAH) and 6% had liver disease (Table I).

Initiation of chemotherapy infusion occurred at dinner time for the majority of patients (75%). The number of days of chemotherapy varied from 1 to 7, the majority of cycles having a duration of 5 days (50%). 72% of the evaluated patients showed isolated or combined gastrointestinal disturbances during the period of chemotherapy infusion. The most commonly reported symptoms were nausea (59%), xerostomia (34%), vomiting (28%), inappetence (28%) and dysgeusia (25%).

Regarding the consistency of the prescribed diet, all patients had been prescribed a normal diet and only 12.5% of them had saccharose-restricted diets for having diabetes or showing high serum levels of glucose due to other prescribed medications.

Mean total acceptance of the prescribed diet, through analysis of food records, varied from 65% to 86%, distributed as follows: food record 1: 77%; food record 2: 73%; food record 3: 73%; food record 4: 75%; food record 5: 73%; food record 6: 86% and food record 7: 65%. The percentage of rejection varied between 23% and 35%.

We also noted that, out of 157 food records that were filled out, only 57 included all 6 meals, representing a mere 36%. Reasons for patients not having had the meal included the presence of gastrointestinal disturbances and absence from the ward in order to do further exams.

We aimed to identify whether any subgroup had shown a higher rate of rejection through analysis of the difference in means of consumption. There was no statistically significant difference ($p > 0.41$).

Breakfast, collation, afternoon snacks and supper were associated with higher rates of acceptance, since out of all the food records, 64% ($n=100$) of the breakfast records, 56% ($n=88$) of collation records, 59% ($n=92$) of afternoon snacks records and 68% ($n=106$) of supper records showed percentages of acceptance between 100 and 75%. Lunch and dinner, on the other hand, were associated with the lowest acceptan-

ce levels. Only 39% ($n=62$) of lunch records and 48% ($n=75$) of dinner records had acceptance levels of 75-100%.

Analysing the mean consumption of the most frequently offered items on the main meal, which is lunch (meat, hard boiled egg, omelet, rice, pasta, polenta, sweetcorn puree, mashed potatoes, pumpkin puree, boiled potatoes, boiled cassava, beans, lentils, vegetable soup, chicken soup, salad, fruit, pudding and gelatine), we noted that some items were rejected more frequently, such as meat, rice, pasta, polenta, sweetcorn puree, boiled cassava, beans, vegetable soup and salad. These items had a mean acceptance of 41.67%-72.22%. Meat (beef, poultry, pork and fish) had a mean acceptance of 63.16%, representing the protein sources in this meal with the highest rate of rejection. Considering that these items composed one of the most rejected meals, their mean acceptance levels in all food records were compared, however there was still no statistically significant difference ($p=0.41$). The remaining items offered in this meal were more well-tolerated, with a mean acceptance of 75-100%.

Table II shows that, throughout the period of chemotherapy, some foods and/or preparations were better tolerated, especially items inherent to light meals (breakfast, collation, afternoon snack and supper).

As well as the standardised items that composed each meal, we identified other foods that were requested by patients. Among these, we highlight bread and fruit for breakfast and fruit smoothies for afternoon snacks. Toasted manioc flour mixtures and industrialised juices were requested for lunch. All items requested by patients had 100% of consumption.

Table I
Demographics of the study sample regarding age, gender, diagnosis, time of diagnosis and comorbidities

Variables	N	Mean (SD)	CI95%
Age (years)		42.09 (11.43)	21.00-58.00
Gender			
Female	21	65.62	48.22-83.02
Male	11	34.37	16.97-51.77
Diagnosis			
Leukaemias	18	56.25	38.07-74.42
Lymphomas	14	43.75	25.57-61.92
Time of diagnosis			
0-6 months	24	75.00	59.13-90.86
7-12 months	4	12.50	03.85-24.61
13 months or more	4	12.50	03.85-24.61
Comorbidities			
HIV	11	34.37	16.97-51.77
Type DM 2	4	12.50	03.85-24.61
SAH	4	12.50	03.85-24.61
Liver disease	2	06.25	02.61-15.11

*Median [interquartile interval]; SD = standard deviation; CI95%= Confidence Interval of 95%.

Table II
Most well-tolerated foods during chemotherapy

<i>Foods</i>	<i>Mean Acceptance (%)</i>	<i>Foods</i>	<i>Mean Acceptance (%)</i>
<i>Served in Light Meals</i>		<i>Served in Main Meals</i>	
Black coffee	86.60	Hard boiled eggs	85.75
Coffee with milk	93.33	Omelet	95.31
Milk	100.00	Polenta	78.13
Porridge	96.29	Mashed potatoes	81.25
Fruit smoothie	81.25	Pumpkin puree	75.00
Tea	100.00	Boiled potatoes	85.47
Juice	97.61	Boiled cassava	76.25
Coconut water	100.00	Lentils	75.00
Laxative drink	91.67	Chicken soup	91.66
Bread (sliced, wheat, wholegrain)	93.05	Fruit	75.44
Cookies	97.50	Pudding	79.51
Fruit	86.66	Gelatine	85.20
Sweets	100.00		
Jam	77.56		
Honey	93.75		
Margarine	85.59		

Discussion

The analysis of table I, which shows demographic characteristics of the study sample, shows a notable prevalence of female patients, unlike other studies^{14,7} where the majority of patients were male. With respect to diagnosis, a predominance of leukaemia became apparent in this sample, which corroborates the findings of other studies of patients with haematological cancer¹⁴.

The assessment of comorbidities evidenced a high percentage of patients infected with HIV, which is one of the risk factors for the development of lymphomas^{15,16}.

The majority of patients (72%) presented one or more gastrointestinal symptoms during the infusion period of chemotherapy. In an analysis carried out with inpatients with a similar diagnostic, the incidence of gastrointestinal symptoms was even higher, present in 95% of patients, with nausea being the most frequent¹⁷. Another study of 20 elderly patients with cancer showed that 70% of them had some gastrointestinal disruption, in isolated or combined fashion¹⁸. It is clear that chemotherapy triggers several gastrointestinal disturbances that affect food intake, consequently leading to compromise of the nutritional status of these individuals^{17,3}.

When the dietary acceptance was evaluated, the result verified was very significant in relation to the

percentage of rejection of the foods and preparations offered during the chemotherapy cycles, remaining between 23% and 35%. A study conducted in the same ward, although, including patients with other pathologies, registered an even higher rate of rejection, 36.09%¹⁹. In a study conducted by Ferreira et al, in another hospital, the percentage of rejection, verified by the rate of rest-intake of lunch, were also high (37%)²⁰. The disease process itself and its associated symptoms may contribute to low food intake^{21,22}. A multicenter study showed that the majority of lymphoma and leukaemia patients reported diminished food intake in relation to their previous food habits²³. As well as aspects related to gastrointestinal disturbances, Ravasco et al. associated inadequacies in diet planning and menu execution as factors that influence the low acceptance of proposed diets²⁴.

A study conducted with 78 women with breast cancer, before and after treatment, verified that after the disease was diagnosed, there was a global change in the quality of the diet, that may be related to the treatment, physical and mental health, in which the authors encourage the investigation of factors related to this process, in order for there to be an improvement in the quality of the diet during treatment¹⁰. Another study conducted with 86 adults and elderly verified that the intake of macro-and micronutrients was inadequate for this population, in that the elderly had an inferior intake in relation to the adults, as well as an inferior

nutritional status²⁵. Although these studies have evaluated different neoplasias, in different moments, we were able to identify data similar to that found in our research, such as the change in the quality and quantity of food consumed by the population in question.

We also observed that, on top of a significant percentage of leftover food, not all patients ate all the 6 meals that were offered, and that main meals (lunch and dinner) were the most frequently rejected ones. Also noteworthy are the food items on table II, which shows that nearly 100% of the items served in light meals were more well-tolerated during chemotherapy. This is in keeping with another study conducted on children with leukaemia, which showed low acceptance of main meals and preference for light meals. The authors emphasised the importance of employing hospital gastronomy techniques in order to develop specialised and more well-tolerated menus, since serving food at room temperature can minimise the odours that hot meals usually emit and which may worsen nausea and inappetence²⁶.

The analysis of lunch evidenced that 9 out of 19 items/preparations that were offered in this meal were consumed at a rate less than 73%, especially meats (63.16%), which were the protein sources most commonly rejected. The remaining items in this meal were more well-tolerated (75-100%). Similar results were reported by a study of 100 patients with cancer, who rejected lunch at a high rate, meats also being the most rejected protein source among malnourished patients²⁰. Beef was also reported as the most frequently rejected food during chemotherapy by de Silva et al²⁷. A potential explanation for this aversion to protein sources, especially meat, is that some chemotherapy agents induce dysgeusia, which may manifest as a feeling of a metallic taste in the mouth, leading patients to reject certain types of food^{28,29}. This fact may be one of the explanations for the rejection of meats observed in our research, since dysgeusia was one of the most reported gastrointestinal disorders. The reduction of food intake, in particular those which are sources of protein, may cause an aggravation of the disease and worsen the response to the treatment employed, resulting in an important depletion of the nutritional status with the consequent appearance of symptoms such as asthenia and fatigue³⁰.

Oncohaematology patients that have been identified as having low diet acceptance and consequently being at nutritional risk are offered, as well as the standardised hospital meals, the option of tailoring the diet to patients' personal tastes. A survey of 111 patients with colorectal cancer identified that individualised dietary counselling, during and up to 3 months after treatment, resulted in increased food intake, diminished symptoms, better nutritional status and quality of life³¹.

The present study has the advantage of data collection having been done entirely by one researcher, therefore diminishing the margin for error. We

believe that the rapport between researcher and patient allowed for more precise data regarding diet acceptance and the side effects of chemotherapy. In relation to the limitations of the study, it is important to consider that food intake is influenced by several factors, including the fact of being evaluated itself. Keeping food records requires from patients considerable levels of motivation and cooperation, since they were often indisposed due to the symptoms inherent to treatment and would eventually fill out the food records at the end of the day, instead of at the time of the meal.

Conclusion

The food records show that during chemotherapy cycles, patients present significant food rejection, specially with larger meals such as lunch and dinner, though light meals are better tolerated.

The results presented in this study are evidence to the impact of the disease and of its treatment on diet acceptance. This reinforces the importance of individualised nutritional counselling with a view to developing strategies for increasing the nutritional value of the most well-tolerated meals, and to modify the nutritional value of light meals once they represent the meals with the highest acceptance, and moreover, to seek culinary and dietary resources that impact on the menu, causing better acceptance of the other meals.

Serving patients' individual choices of food and preparation has shown to be very effective with regards to the acceptance of the diet. Furthermore, the oral enteral support is also a good strategy to increase the intake of calories and nutrients, not requiring necessarily the use of industrialized supplements. In this regard, a wide variety of food options chosen by the patients may be used to improve acceptance of the diet.

More studies on this subject are necessary in order to improve nutritional care to this population, aiming to prevent and/or rehabilitate the nutritional status of these patients.

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