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Relationship between nutritional status and quality of life in patients with cancer

A. Nourissat^{a,*}, M.P. Vasson^b, Y. Merrouche^a, C. Bouteloup^c, M. Goutte^b, D. Mille^a, J.P. Jacquin^a, O. Collard^a, P. Michaud^a, F. Chauvin^a

^aInstitut de Cancérologie de la Loire, Saint Priest en Jarez, France

^bCRNH Auvergne, Faculté de Pharmacie, Clermont Ferrand, France

^cService d'Hépatogastro-Entérologie, CHU de Clermont Ferrand, France

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ABSTRACT

Patients with cancer frequently suffer a deteriorated quality of life and this is an important factor in the therapeutic decision. The correlation between quality of life and malnutrition seems obvious and bidirectional. The aim of our study was to describe the global quality of life and its various dimensions in patients with cancer, as a function of the nutritional status.

A transversal observational study was performed in wards in hospitals in Clermont Ferrand and Saint Etienne on 907 patients. The EORTC questionnaire, QLQ-C30, was used to assess the quality of life.

The mean global quality of life score was 48.8 for patients who had a weight loss of more than 10% since the beginning of their illness, compared with 62.8 for the other patients ($p < 0.001$). A significant association with weight was observed for the main dimensions of the quality of life: physical, functional, cognitive, social, fatigue, nausea, pain, loss of appetite, constipation and diarrhoea. This strong relation between quality of life and weight loss shows the importance of dietary management in patients with cancer.

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1. Introduction

In patients with cancer, it is important to take into consideration the patients' general state of health and their quality of life in the therapeutic decision. The first tool for measuring the impact of cancer on the functional status and autonomy in patients undergoing chemotherapy was developed in 1947.¹ The concept of quality of life appeared about 20 years later.² Quality of life is a multidimensional concept reflecting the patients' physical capacity, their emotional, cognitive and social functions and the presence of symptoms due to the disease or the treatment.³

Patients with cancer often suffer from malnutrition due to several factors, related to the localisation of the tumour, the disease stage, the presence of symptoms (e.g. pain, vomiting, constipation,) and type of anti-cancer treatment.⁴ We previously reported that there were five factors predictive of malnutrition (gender (male), digestive or ENT localisation of the tumour, chemotherapy, depressive syndrome and socio-professional category).⁵ These factors can be identified as soon as the cancer has been diagnosed so as to identify patients at risk as early as possible. Malnutrition is also an independent factor for the deterioration of the quality of life.^{6,7} Although cancer stage is the major determinant of patients' quality of

* Corresponding author: Address. Département de Santé Publique, Institut de Cancérologie de la Loire, 108 bis avenue Albert Raimond, 42270 Saint Priest en Jarez, France. Tel.: +33 4 77 91 70 00; fax: +33 4 77 91 71 99.

E-mail address: alice.nourissat@icloire.fr (A. Nourissat).

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life globally, there were some diagnoses for which the impact of nutritional deterioration combined with deficiencies in nutritional intake may be more important than the stage of the disease process.⁸ Some reports have shown that the implementation of a nutritional intervention could have an impact on the quality of life and suggest that this should be integrated into the global management of the patient.^{9,10}

The objective of this study was to assess the global quality of life and its different dimensions as a function of the nutritional status of patients with cancer.

2. Patients and methods

A transversal observational epidemiological study was performed over 2 weeks in 23 departments and wards in six university-hospitals in Clermont Ferrand and Saint Etienne, France. The departments and wards included radiotherapy, oncology, pneumology, gynaecology, hepato-gastroenterology, ENT, urology, chest and digestive surgery, as well as day hospital and oncology outpatient departments.

The patients included in the study were 18 years old or more, with an evolving cancer at different management stages. Patients with a primary skin, ocular, or CNS tumour, or with a malignant haemopathy, and those who had not been treated in the last 2 years or who had not been informed about their diagnosis or were unable to answer the questionnaire, were not included.

Trained medical students spent 2 weeks in each department or ward collecting data from the patients' medical files, and questioning and examining the patients. The patients gave informed written consent. The protocol was approved by the local ethics committee.

The nutritional status was measured using several indicators: weight loss since the start of illness or onset of initial symptoms (primary outcome); weight loss over the last week, month and 6 months; body mass index (BMI = weight/height²); Nutrition Risk Index and subjective classification based on the categories defined in Worksheet 5 of the Patient-Generated Subjective Global Assessment (PG-SGA).^{11,12}

For each patient we collected the following socio-demographic data and information about the primary tumour and the clinical management: gender, age, profession, living conditions, localisation of the primary tumour, stage of the tumour at diagnosis, current episode, treatment (current or previously administered), functional capacity using the WHO Performance Status and other factors impacting the nutritional status (depression, diet, current infection...).

Quality of life was evaluated with the European Organisation for Research and Treatment of Cancer questionnaire (EORTC-QLQ C30).^{13,14} This is a questionnaire specifically developed for patients with cancer that is composed of 30 items assessing six functional areas (physical, activities, emotional, cognitive, social and the global quality of life) and scales for nine symptoms (tiredness, nausea and vomiting, pain, dyspnoea, sleeplessness, loss of appetite, constipation, diarrhoea and financial difficulties). A low score for the functional areas indicates impaired functional capacity and a low score for the symptom scales indicates absence of or low impact from the symptoms. A linear transformation was applied

to each score, as recommended by the EORTC, to obtain a value between 0 and 100.

The statistical analyses were performed using SPSS® version 12 software. The qualitative data were summarised as frequencies and percentages. Binary data were compared using a Chi² or Fisher exact test. Quantitative data were summarised as means, standard deviations, medians and minimums and maximums. Independent t-test was used to compare the means. The threshold of statistical significance was set at 5%.

3. Results

A total of 907 patients were included: 459 women (51.0%) and 441 men (49.0%). The mean age was 62.3 years ± 11.6 years (range: 18 to 90 years) (Table 1). We observed that, overall, 8.6% of the patients had a BMI under 18.5, and among those aged over 75 years, the BMI was 21. The weight loss occurred over the 2 weeks prior to the study for 21.9%. A weight loss of more than 5% of their usual weight in the month preceding the study or more than 10% in the 6 months preceding the

Table 1 – Study population characteristics (n = 907)

Characteristic	n	%
Gender (n = 900)		
Male	441	49.0
Female	459	51.0
Age (in groups) (n = 906)		
≤50 years	129	14.2
[50–60] years	269	29.7
[60–70] years	252	27.8
>70 years	256	28.3
Living conditions (n = 883)		
With a family	702	79.5
Alone	181	20.5
Profession (n = 891)		
Blue or white collar worker	578	64.9
Manager	313	35.1
Tumour localisation (n = 889)		
Breast	197	22.2
Colorectal	164	18.5
Lung	138	15.5
Tumour localisation in males (n = 434)		
Lung	105	24.2
Colorectal	84	19.4
Prostate	67	15.4
Tumour localisation in women (n = 449)		
Breast	194	42.2
Colorectal	79	17.6
Ovary	33	7.4
Digestive tumour (colorectal, stomach, liver, oesophageal, pancreas) or ENT (n = 889)		
Yes	344	61.3
No	545	38.7
Tumour stage at diagnosis (n = 888)		
Local	327	36.8
Locoregional	314	35.4
Metastatic	247	27.8
Delay since diagnosis (n = 828)		
≤1 year	517	62.4
>1 year	311	37.6

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