Quality of Life in Cancer Patients undergoing Chemotherapy

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Abstract

Objectives: The objective of this study is to describe the quality of life (QoL) in cancer patients with solid tumors and at different chemotherapy (CT) cycles.

Methods: A total of 200 cancer patients were included. With some modification, the European Organization for Research and Treatment of Cancer QoL Questionnaire (EORTC QLQ-C30) was used to measure QoL in the student patients.

Results: There was no correlation between the QoL and variables such as age, sex, marital status, duration of disease, economic conditions, and occupational function. Furthermore, no correlation was found between QoL and the patients' educational level (literate or illiterate). Nevertheless, a significant difference was found between the level of QoL in patients with ≤ 2 CT cycles and/or with 3-5 cycles ($p < 0.001$).

Conclusion: This study suggests that encouraging cancer patients to complete a CT course plays an important role in the treatment outcome and the QoL in cancer patients undergoing CT.

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Introduction

According to the World Health Organization (WHO), quality of life (QoL) is defined as individual perception of life, values, objectives, standards, and interests in the framework of culture. QoL is increasingly being used as a primary outcome measure in studies to evaluate the effectiveness of treatment.[1-4] Patients generally instead of measuring lipoprotein level, blood pressure, and the electrocardiogram, make decisions about their health care by means of QoL which estimates the effects on outcomes important to themselves.[5]

An increasingly important issue in oncology is to evaluate QoL in cancer patients.[6] The cancer-specific QoL is related to all stages of the disease.[7,8] In fact, for all types of cancer patients general QoL instruments can be used to assess the overall impact of patients' health status on their QoL, however hand cancer-specific instruments assess the impact of a specific cancer on QoL.[6] In some cancer diseases (glioma for instance), QoL has become an important endpoint for treatments comparison in randomized controlled trials so that in these patients clinical studies increasingly incorporate QoL as the endpoint.[9]

The main problems facing long-term cancer survivors are related to social/emotional support, health habits, spiritual/philosophical view of life, and body image concerns.[10-13] Many studies have shown good or adequate overall QoL in these cancer patients. However, among long-term survivors, psychosocial issues and physical symptoms such as pain and lymphedema, particularly the adverse effects of systemic adjuvant therapy (chemotherapy) on QoL still persist.[11-14] The aim of this study is to evaluate the QoL in cancer patients with solid tumors at different chemotherapy cycles.

Methods

A total of 200 cancer patients were included in this present analysis. The study was conducted in Tehran hospital. Before taking part in the study, subjects filled out a QoL questionnaire, and a formal consent was obtained from all of them. Following Chen et al. 2008, if the following criteria met by the patients, then they were invited to participate: (1) diagnosed with solid tumors, (2) planning to receive chemotherapy, (3) no history of other chronic disease such as diabetic or heart disease, and (4) aged 18 years or older.[15] With some modification, the European Organization for Research and Treatment of Cancer QoL Questionnaire (EORTC QLQ-C30) was used to measure QoL in the patients. The test consisted of 56 questions and was arranged into five domains (Table 1): (a) physical, role, cognitive, emotional, and social functioning demographic data as well as cancer/treatment information (b) patient's general conditions (c) patient's physical activities (d) social status and occupational function and (e) sleep pattern.

Table 1: The Scores used to evaluate QoL in Cancer Patients undergoing CT (N=200).

Domain	Scores		
	Non favorable	Fairly favorable	Favorable
Patients general conditions	23-53	54-84	85-115
Physical activities	11-25	26-37	38-55
Social status & Occupational function	14-32	33-51	52-70
Sleep pattern	8-16	17-27	28-40
Quality of life	56-130	131-206	207-280

With the aid of a nurse and/or a medical student, the questionnaires were filled out during interview. Each question had an equal value and the QoL was quantified as the sum of the scores for all domains. The scores were classified into three categories, namely; favorable, fairly favorable, and favorable. The higher scores on this scale represent a better QoL. The χ^2 test was used to find the correlation of the clinical variables and QoL scores using the SPSS software (version 14). The level of significance was set at $p < 0.05$ for all tests.

Results

Demographic and cancer/treatment information of the 200 patients are presented in table 2. The majority of patients (54.5%) were male, aged 18-75 years, with a mean age of 46.2 (650%), unmarried (44%), primary school graduates (65%), and had insufficient income (79.5%). GI (gastrointestinal) cancer at stage III was the most common cancer, accounting for 35-40% in all the patients.

Table 2: Demographic and Cancer/Treatment in Cancer Patients undergoing CT (N=200)

Variable		Value	Variable		Value
Mean age		46.15	Cancer type	GI system	35%
Gender	male	54.5%		Other systems	65%
	female	45.5%	Cancer stage	I	6.5%
Marital status	yes	44%		II	31%
	no	56%		III	35.5%
Education	yes	65%		IV	27%
	no	35%	Knowledge about disease	yes	85%
Job position	yes	46.5%		no	15%
	no	53.5%	Disease acceptance	yes	91%
Sufficient income	yes	20.5%		no	9%
	no	79.5%	Extent of disease	year 1>	61.5%
Support by charity organizations	yes	16%		≥ year 1	39.5%
	no	%48	Number of CT sessions	≤ 2	27.5%
Health insurance	yes	97%		3-5	41.5%
	no	3%		6 ≤	31%

Most of the patients (85%) were aware of their disease. Findings about QoL in the rest of four domains are depicted in table 3. The most common problems in regard to this category were: fear about future (29%), thinking about the disease and its consequences (26.5%), impatience (24%), and depression (17.5%). The QoL was fairly favorable in majority (66%) of the patients. There was no correlation between the QoL and variables such as age, sex, marital status, duration of disease, economic conditions, and occupational function. Furthermore, no correlation was found between QoL and the patients' educational level (literate or illiterate).

Table 3: Frequency and Percentages of Cases in Different Domains regarding QoL in Cancer Patients undergoing CT (N=200)

Domains	Number of patients		
	Non favorable	Fairly favorable	Favorable
Patients general conditions	(1%) 2	(45%) 90	(54%) 108
Physical activities	(3%) 6	(74.5%) 149	(22.5%) 45
Social status & Occupational function	(2%) 4	(19.5%) 39	(78.5%) 157
Sleep pattern	(13.5%) 27	(28.5%) 57	(58%) 116
Quality of life	(11%) 22	(66%) 132	(23%) 46

The relationship between QoL and the number of CT cycles is demonstrated in Table 4. As shown, majority (66%) of the patients had fairly favorable QoL. A strong correlation was found between QoL and number of CT cycles. Nevertheless, a significant difference was found between the level of QoL in patients with ≤ 2 CT cycles and/or with 3-5 cycles ($p< 0.001$). This was also the case for the level of QoL in patients with ≥ 6 cycles ($p< 0.001$).

Table 4: Frequency of CT Cycles regarding QoL in Cancer patients undergoing CT (N=200); In Each Case $p<0.001$

Number of CT cycles	Quality of life			Sum
	Non-favorable	fairly favorable	favorable	
≤2	(16.4%) 9	(67.2%) 37	(16.4%) 9	(27.5%) 55
3-5	(9.6%) 8	(77.1%) 64	(13.3%) 11	(41.5%) 83
6 ≤	(8.1%) 5	(50%) 31	(41.9%) 26	(31%) 62
Total	(11%) 22	(66%) 132	(23%) 46	(100%) 200

Discussion

QoL refers to "global well-being," including physical, emotional, mental, social, and behavioral components. In the last few years, a number of informative and valid QoL tools have become available to measure health-related QoL.[6] The most widely applicable instrument to measure the QoL in cancer patients is the EORTC QLQ-C30. Using this method, the current study assessed the QoL in cancer patients undergoing CT. Several studies also support these findings on the influence of CT on good or adequate QoL among the cancer patients undergoing CT.

For instance, Nematollahi showed in patients suffering from lymphatic tumors that there was a positive correlation between CT and QoL. Likewise, the QoL of African American women with breast cancer was found to be relatively high; cancer recurrence and metastasis to the lymphatic glands had significant effect on the QoL.[17] It has also been shown that CT had a measurable adverse effect on QoL in women with node-positive operable breast cancer.[18] The results from this current study indicate that CT may improve the QoL in cancer patients.

Currently, QoL has been introduced as an endpoint for treatment comparisons in many cancer types, particularly in advanced stages.[19] QoL also, as an early indicator of disease progression could help the physician in daily practice to closely monitor the patients.[20] QoL may be considered to be the effect of an illness and its treatment as perceived by patients and is modified by factors such as impairments, functional stress, perceptions and social opportunities.[3, 4]

As reducing mortality and ensuring optimal health-related QoL are perhaps the main objectives of medical care, this study showed that improvement of QoL in cancer patient can be carried out by means of CT. [10] In fact, improving QoL is as important as the survival benefit that a pharmacological treatment may provide. However, this is not always the case. For example, Nemati et al. reported that the level of QoL in patients with leukemia was 87.5% lower than that in the control group.[21] The differences may be due to different patients' population (sample size or patient age), or cancer types. The current study selected patients (aged ≥ 18 years) with various solid tumors while Nemati et al sampled 40 adolescence patients (aged < 18 years) with leukemia.[21]

In this study, the majority of the patients (68%) who had completed 3 or more cycles of CT reported a fairly favorable or favorable level of QoL (Table 4). This may show that QoL is directly related to cancer treatment procedure, i.e. CT. Likewise, except for a small group (13.3%) of the patients reported that their sleep pattern was not favorable, the others had good QoL. This implies that CT can lead to the better sleep pattern in cancer patients. The results are consistent with other studies. For instance, Chen et al. found that QoL in lung cancer patients during the fourth cycles of CT improved slightly over the baseline values; the patients perceived more sleep disturbances during the early cycles of CT.[15] Similar results have been found in patients suffering from advanced cancer by Mystakidou and from breast cancer by Fortner.[2,22]

The findings of the present study showed that there was no correlation between QoL and age, gender, social status, marriage, and job. Similar results have been reported by Nematollahi, Vedat et al. and Rustøen studies.[25,16,2] Furthermore, there was no correlation between the extent of the disease and QoL. In contrast, Rustøen and Holzner in two separate studies found that the extent to which QoL of cancer patients depends on the time elapsed since initial treatment; with an increase in the extent of the disease, a decrease in the QoL was observed. The difference may be due to the duration of the disease; the extent of the disease, in 87% of the patients from the current study was less than two years whilst it was more than 2 years in Rustøenand Holzner studies. [25,26]

Conclusion

Cancer is an important health issue influencing QoL. An appropriate treatment which may provide care to the cancer patients is CT. The obtained results here indicate a strong correlation between QoL and number of CT cycles in cancer patients. Since CT is socially stigmatized in some countries e.g. Iran, encouraging patients to complete a CT course may play an important role in the treatment outcome and the QoL of cancer patients.

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