ORIGINAL ARTICLE

Quality of life measurement in Egyptian patients with laryngeal cancer

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Abstract

Introduction: Quality of life (QOL) reflects the need to assess the patient's overall sense of well-being and how it relates to disease and disease treatment. Setting: Prospective longitudinal case control study. Purpose: To evaluate QOL in Egyptian patients treated for laryngeal cancer in an attempt to describe the degree and areas of affection and improvement with different treatment modalities. Patients and Methods: Newly diagnosed patients with laryngeal cancer were divided into 3 groups according to the primary treatment received: combined surgical and radiotherapy, surgical resection, and radiotherapy only. The European Organization for Research and Treatment of Cancer Quality of Life Questionnaires (EORTC-QLQ) were used. Results: All pretreatment functional scales as well as symptoms scales were lowest in the combined therapy group and were least affected in the surgical group. The functional scales reached their lowest levels in all groups during active treatment with the surgical group having the best scores. Radiotherapy group scales showed persistent slow recovery. There was striking affection of the financial difficulties score in all groups equally and throughout the study period.

Conclusion: QOL measurement can provide information to guide clinical decision making, assess rehabilitation needs, understand patient preferences, policy making and in patient education. It can be adapted to different countries and cultures, elucidating their own peculiar problems.

Key words: Quality of life, EORTC, laryngeal cancer, total laryngectomy, partial laryngectomy, radiotherapy.

Introduction:

The main outcome measure in oncology is traditionally expressed in terms of survival, progression and other disease minded variables. Although these parameters remain essential, there is a general recognition of the need to assess the impact of cancer and its treatment on patient's health-related quality of life (HRQOL) (1,2,3).

Quality of life (QOL) measures seek to obtain a comprehensive, multi-dimensional picture of the patient's "total health related experience." In order to achieve this goal, QOL measures evaluate broad domains including emotional, physical, functional, social, financial and spiritual well-being (4).

Different QOL instruments are being widely used and validated across different countries worldwide. Cancer-specific QOL instrument is responsive to all patients with cancer and to the change in their health status over time. Site-specific cancer instruments are designed to be most sensitive to the functional deficits peculiar to the affected organ (5). Head and neck cancer (HNC) modules allow specific assessment of a patient's ability to eat, swallow and communicate, as well as other sequelae that are unique to this disease and its treatment (6).

The field of HRQOL measure is commonly used in the developed countries, but there are only few studies from developing countries (1). Same questionnaires might be challenged with cultural and ethnical difference across different countries and civilizations. The objective of the present study was to assess the QOL in patients treated for laryngeal cancer, in response to the treatment modality used, at a tertiary care hospital in a developing country, Egypt. Description of the areas of affection and degree of improvement over time was assessed in an attempt to direct supportive treatment for such patients.

In our study we used the European Organization for Research and Treatment of Cancer Quality of Life Questionnaires (EORTC-QLQ). EORTC QLQ-C30 core instrument is a widely used, validated multidimensional measure for cancer patients. This was combined with the QLQ-H&N35 module, which has demonstrated good reliability, validity and responsiveness in studies

of patients with HNC in Europe, United States, India, as well as other countries (1,7,8,9).

Methods:

Patients: (Table 1)

In this prospective longitudinal case control study, 60 patients with newly diagnosed laryngeal cancer who presented to the otolaryngology department of Ain Shams University were included. A control group of 20 patients was chosen of non cancer patients. The patients were divided according to the treatment received into 3 groups. Combined therapy group, included 20 patients with stage III (n=7) or IV (n=13) laryngeal cancer, treated by surgery with postoperative radiotherapy. Total laryngectomy was done in 19 patients, and the last patient underwent supracricoid partial laryngectomy. All patients had different forms of neck dissection. They received postoperative radiotherapy in the form of fractionated irradiation, 50 Gy/25 treatment/5 weeks, and a booster of 10Gy/5 treatment/1 week, to stoma and base of tongue. Surgical group, included 20 patients with stage I (n=18) and stage II (n=2) laryngeal cancer, treated by surgery only. Laser cordectomy was done for 18 patients, supraglottic laryngectomy for one patient and vertical hemilaryngectomy for one patient. Radiotherapy group, included 20 patients with stage I (n=4) and stage II (n=16) laryngeal cancer. The used dose fractionation schedule was 66 Gy for T1 lesions and 70 Gy for T2 lesions, given in 2 Gy fractions over 6-7 weeks respectively. Control group, formed of 20 patients who presented with other diseases than cancer.

The study groups	Age Mean±SD	Gender	
		Male	Female
Combined therapy N = 20	58.2±4.9	19 (95%)	1 (5%)
Surgical Group N = 20	51.3±9.2	19 (95%)	58.2±4.9
Radiotherapy Group N = 20	54.7±9.1	18 (90%)	2 (10%)
Control group N = 20	49.1±7.0	19 (95%)	58.2±4.9
Significance	F = 1.7 P> 0.05	X2 = 0.66	P > 0.05

Table 1: Age and gender distribution among studied groups

Analysis:

Upon communication with EORTC we were granted the permission to employ both EORTC-C30 version 3.0 and QLQ-H&N 35 module (7,8). QLQ-C30, comprising 30 items related to patients with cancer, was used in conjunction with the QLQ-H and N35, a 35- item measure intended to assess symptoms specific to HNC. An already existing Arabic translation of QLQ-C30 version 3.0 was sent to us to be used, and we translated the QLQ-H&N 35 module using the EORTC instructions for translation. The questionnaires were applied to patients by interview in the following phases of treatment: (1) Prior to treatment once the patient was diagnosed as having laryngeal cancer, (2) while the patient was still in the hospital post operatively or after 3 weeks from start of radiotherapy, (3) after 3 months of completing treatment, (4) more than 6 months after completing treatment. Only patients who completed the 4 questionnaires were included in the study. The study was approved by the ethical committee of Ain Shams University hospitals. Written consent was taken from patients who agreed to participate in the study. The format and type of the questions and responses were first explained to them. The patients were interviewed by directly reading the questions without change in the wording of the Arabic translation, avoiding any personal interference or suggestions.

Analysis of data was done using statistical program for social science (SPSS version 10.0) for Windows. Quantitative variables were expressed as mean ± SD and range.

Qualitative variables were expressed as number and percentage. The different tests were used as follows: Chi square test to compare qualitative variables, Paired t-test to compare quantitative variables in the same group before and after intervention, Willcoxon sign test to compare data in the same group instead of paired t test in non parametric data (SD > 50% mean), One way ANOVA test to compare more than two groups as regard a quantitative variable, and Kruskall Wallis test was used instead of ANOVA test in non parametric data. Results were considered significant at $p<0.05$ and highly significant if $p< 0.01$ or <0.001.

Results:

Longitudinal changes in the global health status and functional scales of QLQ-C30 (Figure 1):

All pretreatment functional scales were lowest in the combined therapy group. The global health status scale (QL2) as well as the physical scale (PF2) were highly significantly diminished ($p<0.001$), while the emotional function scale was significantly lower ($p <0.01$), and the role scale (RF2) and social scale (SF) were lower than other groups but without significant difference. On the other hand, pretreatment scores were quite high in the surgical and radiotherapy groups, with scores in the former one very close to the control group. The mostly affected functional scale in these 2 groups was the social functioning (SF).

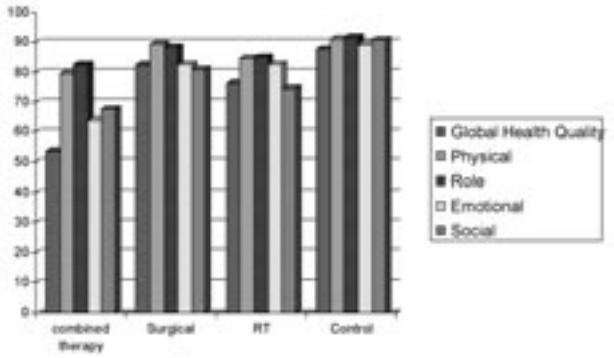

Figure 1: Functional scales in all study groups pretreatment.

The functional scales reached their lowest levels in all groups during active treatment with the surgical group having the best scores.

At 3 months after treatment, the surgical group showed the best improvement significantly than other groups regarding the QL2, RF2, EF and SF ($p<0.01$), while radiotherapy group showed the lowest scores in QL2, PF2 ($p<0.05$), EF, CF. Combined therapy group showed lowest scores in RF2 and SF.

At 6 months from treatment, the combined therapy group still had the lowest scores in QL2 ($p<0.01$), PF2, RF2 ($p<0.05$), EF and SF ($p<0.01$).

Longitudinal changes in the symptom scales and the individual items of QLQ-C30 (Figure 2):

Most of the symptoms were higher in the combined therapy group, either before during or after treatment, namely fatigue, pain, insomnia and appetite. On the other hand, these symptoms were the least affected in the surgical group throughout the study. Radiotherapy group scales showed persistent slow recovery. Diarrhea was not considered an issue to such patient's cohort. There was striking affection of the financial difficulties score in all groups even in the pretreatment period. This score was higher during active treatment in all groups and persisted throughout the study period.

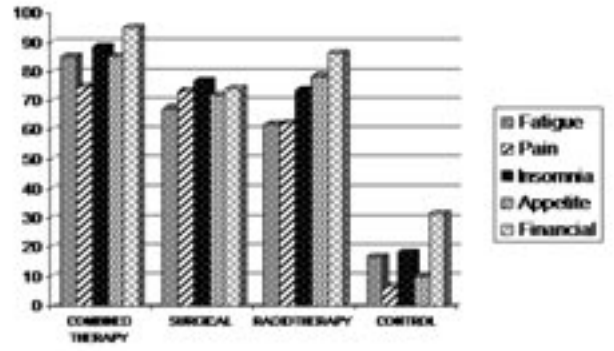

Figure 2: Affected scales and symptoms of QLQ-C30 during treatment in different study groups

Longitudinal changes in single and multiple items of QLQ-H and N35questionnaire (Figure 3):

The most affected pretreatment scales in the combined therapy group were weight loss, use of pain killers and speech. This was followed by the feeling ill scale, cough and sexuality. This group retained the worst score during all stages of the study in pain, swallowing, senses, speech, social eating, social contact, sexuality, felt ill and nutritional support. On the other hand, the surgical group had the best scores during all stages of the study notably regarding pain, felt ill, dry mouth, sticky saliva. Long term scores of this group at 6 months were also the best in swallowing, senses, teeth, dry mouth, cough, and felt ill.

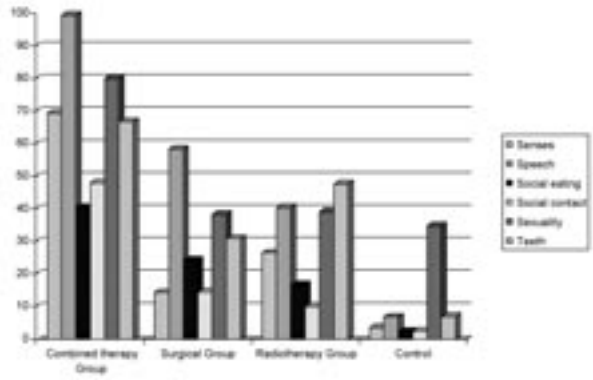

Figure 3: Affected items of QLQ-H and N35 questionnaire at 3 months follow-up in all study groups.

Radiotherapy group had the best scores during treatment regarding swallowing, speech, social contact, and cough. However, deterioration of teething and dry mouth, occurred in this group after treatment. The elevated scales of pain, dry mouth, sticky saliva, cough, pain killer use, teeth problems persisted at 3 months post-treatment. They then started to decline at 6 months but persisted higher than those of the surgical group.

On the other hand, social eating, social contact as well as speech scales at 6 months were relatively better than the surgical group.

Discussion:

Laryngeal cancer is considered the most common head and neck cancer in Egypt. Cigarette smoking, an indisputable risk factor, is in rise in all developing countries.

EORTC-QLQ, with a core instrument QLQ-C30 that has been validated in diverse cancer patients, and a site-specific EORTC-H&N35, for more comprehensive assessment of H&N patients' difficulties follow a modular approach for general and site-specific evaluation (9,10,11).

Although the questionnaire was originally constructed to be self-administered, it was administered verbally in our patients due to the high rate of illiteracy. The questionnaire was well accepted by the patients and the compliance was high when asked to answer the questionnaires repeatedly.

The patients in the surgical group had very close scores to the control group, which might indicate that early symptoms do not severely affect QOL of the patients. In a developing country, patients might skip medical advice until the disease is quite advanced. High

suspicion index for the early symptoms of laryngeal cancer in training primary care doctors should be stressed, for early detection of these cases.

The global health score as well as the functional scales reached their lowest levels in all groups during active treatment. This reflects the short-term effects of different types of treatment. Higher stage and combination treatment have a more negative influence on QOL (12,13,14). This underlines the need for maximum supportive care during the early treatment periods and in more advanced stages.

In the surgical group patients, at 3 months follow up, all the scores were approaching pretreatment scores. In the radiotherapy group however, all functional scales scores did not reach the pretreatment levels, except at 6 months. This indicates that functional scales are affected longer after treatment with radiotherapy than with surgery. The cost of treatment therefore might be higher by a prolonged time of worse functional QOL.

The striking finding in QLQ-C30 questionnaire is the affection of the financial difficulties (FI) score in all groups even in the pretreatment period. In the combined treatment group, this might be related to the delayed time of presentation. As our hospitals are tertiary care centers, usually we receive patients from all over the country and from remote places, lacking the specialized care facilities, making their diagnosis late. This, of course, is also explained by the socioeconomic status of our patients in an underdeveloped country in contradiction to the European countries. The FI score was even higher during active treatment in all groups, especially for patients who received radiotherapy sessions over about 6 weeks. As the patient is not hospitalized, and is usually living in remote areas, this adds to the financial burden of transportation or accommodation for himself as well as accompanying family members during the total period of radiotherapy sessions. This was stated as “hidden costs” by Smith et al, 2003, and was found to be much higher in patients with early cancer larynx treated by radiotherapy when compared to endoscopic excision (15). These hidden costs were least in our patients who received surgical endoscopic treatment at 3 months, as they were already discharged from the hospital and actively resuming their work.

Cancer and its treatment are among the most frequent diseases associated with work losses. Consequently, this is a high risk group for work related disability and causes potentially devastating socioeconomic effects (16,17). Vartanian et al, 2006, conducting QOL survey for HNC in Brazil (18), a developing country, similar to Egypt, reported that the socioeconomic status is one of the important variables affecting HRQOL and an important predictor of disease morbidity and mortality.

During treatment, both the surgical and radiotherapy groups had similar scores in most of the Head and Neck module. This matches well with the similar stage of the disease in both groups.

Surgical removal of the larynx should basically affect all aspects of a patient's life (19). Strangely enough, a permanent stoma and loss of speech caused by total laryngectomy in the combined therapy group patients were not the critical factors that determine patients' QOL after surgery. Llatas, 2003, reported that voice handicap is not the most important dimension affecting QOL after treatment for laryngeal cancer (20). A reasonable explanation is that nowadays, there are several potential techniques for successful voice rehabilitation (6, 21). In another explanation, the self-regulation model proposes that in response to a health threat, such as the diagnosis of cancer, people develop their own beliefs and emotional responses about their illness and treatment, which then influence the coping procedures that they adopt. As this is a constant process of reappraisal, patients' beliefs and coping strategies may change over time (19, 22).

In general, functional scores of the core part of the questionnaire, except for advanced stage group, were less reliable than individual symptoms and items, to differentiate between patients and control group. This might seems in contradiction with the results found by Sherman et al, 2000, as the functional scores in their study were significantly affected in cancer patients, while symptoms scales did not distinguish between cancer patients and control group (9). This might be explained by the cohort of patients in their study, which included only advanced stages. However, individual scales in our study could differentiate between cancer patients and control group at presentation, specially the appetite loss, dyspnea, pain, insomnia and fatigue scales, not only in advanced cases but also in early cases. This differentiation adds to the construct validity of the questionnaire, which is the ability of the instrument to differentiate between HNC and a comparison group of otolaryngology patients with non malignant disease (9). Actually, it seems reasonable for the early cases to have more organ directed symptoms if directly and properly addressed, before affecting the general functions of the patients, while in advanced stages, functions and specific symptoms are all affected.

It is best to follow patients’ progress longitudinally from the time of diagnosis so that later outcomes can be viewed in the context of patients’ initial status (6). The longitudinal type of our study, with baseline values, together with the presence of a comparison control group added to the reliability of the obtained results in evaluating the effects of the disease on QOL.

The apparent inconsistencies in QOL research in HNC patients in the literature are probably related to different factors, such as study methodology, patient case mix, available social support, cultural and ethnic beliefs (6). In this study, we have included only cases of laryngeal cancer, making the patient population more homogenous. In the same time, as this is the first evaluation in Egypt of QOL in such patients,

comparison between different stages of the disease and different treatment modalities, was warranted. On the other hand, we have deliberately excluded patients with recurrence from our study, which might have some kind of positive selection bias. The results of our study are therefore only applicable to recurrence free survivors.

Standardized questionnaires measuring patients' QOL offer a means of revealing unexpected treatments impacts. Most of our patients are socioeconomically backward and would accept the treatment decided by the physician. Most of them are too scared to report emotional, mental and physical problems. QOL questionnaires are a practical, efficient and cost-effective method of obtaining patient-based outcome data [23]. This can help physicians detect problems with significant impact on QOL that develop during treatment (4).

Most importantly, QOL measurement can provide information to guide clinical decision making, assess rehabilitation needs, understand patient preferences, policy making and in patient education (24). However, relationship between symptoms and the domains of QOL should be further clarified.

The socioeconomic effects of the disease and its treatment need to be understood better because they possibly are more substantial in the developing countries.

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