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Quality of life after treatment for early laryngeal carcinoma

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Abstract Radiotherapy and surgery for early laryngeal cancer achieve comparably good results in patient survival, and the choice of treatment between them is being influenced increasingly by the expected voice quality and quality of life (QoL). The superiority of vocal function after radiotherapy has been shown in previous objective voice assessment studies. This study compared the QoL of long-term survivors after endoscopic laser surgery or radiotherapy for early laryngeal carcinoma. QoL was evaluated with two validated questionnaires: the global EORTC QLQ-C30 and the head- and neck-specific EORTC QLQ-H&N35. A total of 62 patients were included. Among 56 patients completing the questionnaires (90% completion rate) 40 were treated by endoscopic CO_2 laser surgery and 16 with radiation therapy. All 56 patients showed a good global QoL with no significant difference between the two treatment modalities. The head- and neck-specific evaluation revealed significantly better scores for surgically treated patients in questions about swallowing of solid food, xerostomia, and tooth problems, but no difference in questions about voice quality. Both treatment modalities achieve good QoL after treatment of early laryngeal tumors. Irradiated patients mainly complain about xerostomia related problems. In contrast to objective measurements long-term survivors after surgery do not rate their voice poorer than irradiated patients. The EORTC questionnaires are validated and useful tools in assessing QoL and should further be used in prospective trials.

Keywords Quality of life · Laryngeal · Carcinoma

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Introduction

The gold standard for the evaluation of the success of a specific cancer treatment is survival analysis. Because treatment of head and neck carcinoma has great impact on important basic functions of daily life such as breathing, verbal communication, and swallowing, not only mere survival but also the survivors' quality of life (QoL) must be addressed as an endpoint of therapy evaluation [7, 14]. Assessment of QoL has proven difficult due to different existing definitions of QoL and varying quality of evaluation instruments [8, 12]. In recent years research on QoL questionnaires has revealed that QoL evaluation must be multidimensional and performed by patient's self-assessment [13]. For this purpose several QoL questionnaires have been developed and validated. The European Organization for Research and Treatment of Cancer (EORTC) released an integrated system for assessment of the health-related QoL of cancer patients. The general EORTC Quality of Life questionnaire core 30 (EORTC QLQ-C30) incorporates five functional scales (physical, role, cognitive, emotional, and social), three symptom scales (fatigue, pain, and nausea and vomiting), a global health status, and a number of single items assessing additional symptoms [1]. The core questionnaire has been supplemented by the head- and neck-specific module EORTC QLQ-H&N35. Both the core questionnaire and the head and neck module have continuously been reevaluated and validated [2, 3].

The aim of our study was to analyze the QoL of long-term survivors after treatment of early laryngeal squamous cell carcinomas using the EORTC questionnaires and to compare the results of patients treated with either endoscopic laser surgery or radiotherapy.

Patients and methods

We retrospectively reviewed the charts of 96 patients treated with a curative intent for an early (T1 and T2) squamous cell carcinoma of the larynx at the Clinic of Otorhinolaryngology, Head

and Neck Surgery, of the University Hospital in Zurich, Switzerland, between January 1990 and December 1995. Ten patients were lost to follow-up. In January 1999 a total of 62 patients were still alive, free of tumor and accessible for the study. The patients were divided into two groups based on the treatment modality, either endoscopic laser surgery (n = 40) or radiotherapy (n = 16).

The EORTC questionnaires QLQ-C30 and QLQ-H&N35 were mailed to a total of 62 patients together with a letter of introduction. Nonresponding patients received one follow-up request and were contacted by phone. Of these, 56 (90%) returned finally responded. The general EORTC QLQ-C30 consists of 30 questions and incorporates five functional domains (physical, role, cognitive, emotional, and social), three symptom scales (fatigue, pain, and nausea/vomiting), a global health status, and a number of single items assessing additional symptoms. The core questionnaire has been supplemented by the head and neck specific module EORTC QLQ-H&N35 consisting of 35 further questions divided into seven multiple-item symptom scales assessing pain, swallowing, senses (taste and smell), speech, social eating, social contact and sexuality and six symptom items (teeth problems, trismus, dry mouth, sticky saliva, cough, and feeling ill). For scoring the principles proposed in the EORTC Scoring Manual [6] were strictly followed. All scales and single-item measures range in score from 0 to 100. A high scale score represents a higher response level. A high score for a functional scale represents a high (healthy) level of functioning, a high score for the global health status/QoL represents a high QoL, but a high score for a symptom scale/item represents a high level of symptoms or problems.

Statistical analysis was performed using t test for comparison of means of large groups and Student's t test for comparison of means of small groups.

Results

The general EORTC QLQ-C30 revealed a good level of QoL in all patients of both treatment groups. The mean functional domains were between 80% and 90% and the mean global health status was 71.9 and 73.9%, respectively. No statistically significant differences were found in any of the domains and symptom scales between the two treatment modalities, with the exception of significantly fewer financial difficulties in the radiation therapy group (Table 1). The evaluation by the head- and neck-specific module EORTC QLQ-H&N35 showed low symptom scales for most items. Only speech related and some eating related symptoms were evaluated as troublesome in both groups. Significantly better scores for the surgically treated patients were found in the single items swallowing solid food, dry mouth, and tooth problems. All other symptoms, including hoarseness, were judged equally by the two treatment groups (Table 2).

Table 1 EORTC QLQ-C30: radiotherapy versus surgery in early laryngeal carcinomas

EORTC QLQ C-30	Surgery	Radiotherapy	P
Functional scales			
Physical	89.8 ± 16.3	83.1 ± 22.4	n.s.
Role	85.8 ± 27.1	82.3 ± 27.5	n.s.
Emotional	80.8 ± 22.1	85.6 ± 16.2	n.s.
Cognitive	86.7 ± 18.6	86.5 ± 19.5	n.s.
Social	85.0 ± 25.8	84.4 ± 20.4	n.s.
Global health status	71.9 ± 24.6	73.9 ± 21.8	n.s.
Symptom scales/items			
Fatigue	20.5 ± 27.2	25.7 ± 25.2	n.s.
Nausea and vomiting	3.8 ± 12.8	4.4 ± 13.3	n.s.
Pain	8.3 ± 21.4	22.2 ± 31.9	n.s.
Dyspnea	15.8 ± 25.0	15.6 ± 30.5	n.s.
Insomnia	12.5 ± 23.5	31.3 ± 37.5	n.s.
Appetite loss	5.0 ± 16.1	17.8 ± 30.5	n.s.
Constipation	5.8 ± 16.7	11.1 ± 30.0	n.s.
Diarrhea	5.8 ± 19.8	8.9 ± 19.8	n.s.
Financial difficulties	19.2 ± 30.1	4.8 ± 17.8	< 0.05

Discussion

Irrespective of the treatment modality – radiotherapy or surgery – the global QoL was considered as good, with a mean global health status in both groups around 70%. Functional domains such as physical functioning, role functioning, emotional functioning, cognitive functioning, and social functioning revealed nearly normal mean scores between 83% and 96% after both treatment regimens. These results are in good agreement with previous reports in the literature [9, 10, 16]. The surgically treated patients complained significantly more of financial difficulties. The reason for this is unclear and probably not relevant. The financial situation was not a factor influencing the choice of treatment modality.

The evaluation by the head-and neck-specific questionnaire H&N35 yielded low symptom scores for most items in all patients, indicating that long-term survivors do not suffer anymore from tumor- or treatment-related symptoms. As expected, the items asking for speech- and eating-related symptoms showed elevated scores after treatment in both groups. Both radiotherapy and surgery adversely affected the ability to talk, but there was no statistically significant difference between the two modalities. Patients treated by endolaryngeal laser surgery did not rate their voice as poorer than those after radiotherapy. This stands in contrast with most objective voice evaluations comparing these treatment modalities [5, 11, 15, 17]. The negative impact of radiotherapy on the ability of swallowing solid food and xerostomia was significant. These xerostomia related long-term effects of radiation are often underestimated, but, as shown in our study, have substantially more detrimental effect on QoL than voice function, which is generally considered to be more important.

From our findings we can conclude that for the treatment of early laryngeal cancer endoscopic laser surgery and radiotherapy achieve comparably good results regarding QoL. The QoL should be routinely and prospectively assessed in all cancer patients as an endpoint of therapy evaluation. For this purpose the questionnaires proposed by the EORTC have proved to be very useful.

Table 2 EORTC QLQ H&N35: radiotherapy versus surgery in early laryngeal carcinomas

EORTC QLQ H&N35	Surgery	Radiotherapy	*P*
Pain	7.7 ± 21.3	13.5 ± 29.3	n.s.
Pain in the mouth	4.2 ± 13.5	8.9 ± 19.8	n.s.
Pain in the jaw	2.5 ± 8.9	2.2 ± 8.6	n.s.
Soreness in the mouth	5.8 ± 14.9	4.4 ± 11.7	n.s.
Painful throat	10.8 ± 20.5	20.8 ± 29.5	n.s.
Use of pain killers	15.0 ± 36.2	31.3 ± 47.9	n.s.
Swallowing	6.0 ± 17.9	12.7 ± 26.5	n.s.
Problems with liquids	6.7 ± 20.3	11.9 ± 28.1	n.s.
Problems swallowing purreed food	0.8 ± 5.3	9.5 ± 27.5	n.s.
Problems swallowing solid food	5.0 ± 16.1	24.4 ± 32.0	< 0.05
Choked when swallowing	11.7 ± 23.3	4.8 ± 12.1	n.s.
Social eating	10.2 ± 24.0	23.4 ± 34.8	n.s.
Trouble eating	5.8 ± 18.3	20.0 ± 32.9	n.s.
Trouble eating in front of family	2.5 ± 11.7	6.7 ± 18.7	n.s.
Trouble eating in front of other persons	5.0 ± 19.3	15.6 ± 33.0	n.s.
Trouble enjoying meals	5.0 ± 16.1	13.3 ± 27.6	n.s.
Dry mouth	30.0 ± 32.8	56.3 ± 39.8	< 0.05
Sticky saliva	19.2 ± 32.8	40.0 ± 40.2	n.s.
Problems with teeth	8.3 ± 21.0	28.9 ± 33.0	< 0.05
Problems opening the mouth wide	5.8 ± 19.8	6.7 ± 18.7	n.s.
Senses	9.9 ± 23.7	19.4 ± 35.3	n.s.
Problems with sense of smell	8.3 ± 18.1	24.4 ± 38.8	n.s.
Problems with sense of taste	5.0 ± 14.2	19.0 ± 38.6	n.s.
Feeling ill	13.3 ± 21.1	26.2 ± 32.5	n.s.
Use of nutritional supplements	2.5 ± 15.8	7.1 ± 26.7	n.s.
Use of feeding tube	0.0 ± 0.0	0.0 ± 0.0	n.s.
Weight loss	5.0 ± 22.1	28.6 ± 46.9	n.s.
Weight gain	17.5 ± 38.5	14.3 ± 36.3	n.s.
Coughing	27.5 ± 28.1	35.4 ± 35.4	n.s.
Speech	32.8 ± 34.8	21.4 ± 33.9	n.s.
Hoarseness	41.7 ± 32.7	37.5 ± 34.2	n.s.
Trouble talking to other persons	30.8 ± 34.9	13.3 ± 30.3	n.s.
Trouble talking on the phone	25.8 ± 35.8	13.3 ± 32.9	n.s.
Social contact	5.0 ± 16.2	8.0 ± 25.0	n.s.
Bothered by appearance	5.0 ± 16.1	11.1 ± 30.0	n.s.
Trouble having physical contact	6.7 ± 20.3	6.7 ± 18.7	n.s.
With family	7.5 ± 22.0	6.7 ± 25.8	n.s.
With friends	10.8 ± 24.3	6.7 ± 25.8	n.s.
Trouble going out in public	11.7 ± 23.3	8.9 ± 26.6	n.s.
Sexuality	25.6 ± 33.5	31.1 ± 38.1	n.s.
Less interest in sex	24.8 ± 33.1	31.1 ± 36.7	n.s.
Less sexual enjoyment	26.5 ± 34.3	31.1 ± 40.8	n.s.

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