Quality of Life in Patients Submitted to Total Laryngectomy

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Summary: Background. Laryngeal carcinoma accounts for about 80 000 deaths annually worldwide. Despite its aggressiveness, total laryngectomy (TL) is a treatment option with curative intent. This article aims to evaluate its impact on these patients quality of life (QoL).

Material and Methods. Thirty-four patients who underwent TL with bilateral neck dissection between 2003 and 2012 responded to the European Organization for Research and Treatment of Cancer QoL Core Questionnaire, the Self-Evaluation of Communication Experiences after Laryngeal Cancer Questionnaire, and the Hospital Anxiety and Depression Scale.

Results. Data revealed that QoL is lower in these patients compared with general population. Regarding alaryngeal speech modalities, esophageal speech is associated with a significantly higher physical functional capacity.

Conclusions. TL results in a permanent disability with decreased functional capacity and psychological distress. Close monitoring of these patients and investing in speech rehabilitation are essential to preserve their QoL.

Key Words: Laryngectomy–Quality of life–Alaryngeal speech.

INTRODUCTION

Worldwide incidence of laryngeal carcinoma is estimated in 130 000 new cases per year, and it is responsible for about 80 000 deaths annually.[1] Glottic, supraglottic, and subglottic cancers represent approximately two-thirds, one-third, and 2% of laryngeal cancers, respectively.[2] Hypopharyngeal carcinoma with laryngeal involvement is less common, with about a quarter of the incidence, but usually has a worse prognosis.[3]

The major risk factor for the development of the larynx or hypopharynx carcinoma is tobacco use and, when associated with the intake of alcohol, a strong synergistic effect is created.[4] Other identified potential risk factors include infection with human papillomavirus and continuous exposure to paint, diesel, fumes, asbestos, or radiation, which can be responsible for a small part of these carcinomas.

The larynx is responsible for three vital functions: the maintenance of airway patency, occlusion of the airway during the pharyngeal phase of swallowing and voice production. Laryngeal and hypopharyngeal malignant tumors may affect the different physiological functions of the larynx, depending on their size and location. Patients with tumors of the glottic larynx commonly present with hoarseness and thereby can be diagnosed at an early stage. Conversely, patients with hypopharyngeal and supraglottic or subglottic laryngeal tumors, due to later symptom onset, are usually diagnosed with locally advanced disease and a higher incidence of lymph node metastases.

The primary aim of treatment was survival of the patients with the best possible functional outcome. This may include single modality therapy or various combinations of surgery, radiation therapy, and/or chemotherapy. In early stage disease, both radiation therapy and laryngeal preservation surgery can cure a high proportion of patients with laryngeal carcinoma.[5] Observational studies showed that the 5-year disease-specific survival rate was 90% for stage I disease and 80% for stage II disease.[6]

In patients with locoregionally advanced disease, despite chemoradiotherapy's wide use, surgery still retains a role as an alternative approach to functional organ preservation. Total laryngectomy (TL) may be more appropriate for selected patients with advanced laryngeal and hypopharyngeal cancer and in patients who are not candidates for chemoradiotherapy.[7,8] This surgery is also frequently necessary as a salvage procedure in relapsing or persistent disease after chemoradiotherapy.[9]

Although TL is a straightforward surgical procedure that can eradicate tumors confined to the cartilaginous boundaries of the larynx, it results in physical and functional changes. The loss of the natural voice and the stigma of a permanent stoma can affect these patients emotional well-being and some of the most basic functions of life, including breathing, swallowing, and communication.[10,11]

Speech alteration is a major contributor to reduced quality of life (QoL) after TL. Options for rehabilitation of speech communication include esophageal speech (ES), tracheoesophageal speech (TES), and the use of an electrolarynx.[12] ES production requires the injection of air into an esophageal reservoir and its release through the vibratory pharyngoesophageal segment, a skill often difficult to acquire. In TES, the use of a tracheoesophageal prosthesis placed through the tracheoesophageal wall allows pulmonary air to be shunted into the esophagus where it can be released through the pharyngoesophageal segment. The electrolarynx is a battery-powered device that provides a mechanical vibration source that is transmitted through the external tissues of the neck or cheek or delivered intraorally via a plastic tube.[12]

QoL was defined by the World Health Organization as the "individual's perceptions of their position in life, in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards, and concerns."[13] It is generally agreed that there is no ideal measure to assess QoL and that this is a dynamic concept with many variables involving objective and subjective characteristics.

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The use of questionnaires is widely spread because they are easy to apply, reproducible, and can be validated for different populations.[14,15]

The major purposes of this study were to evaluate the impact of TL in patients' QoL and how it is affected by the type of alaryngeal speech rehabilitation.

MATERIALS AND METHODS

This study included patients submitted to TL or pharingolaryngectomy with bilateral neck dissection at Centro Hospitalar do Porto between 2003 and 2012 and that were observed in follow-up consultations held in 2012 and early 2013.

Demographic and medical history data, such as histologic diagnosis, tumor stage, type of provided treatment, surgery date, and type of alaryngeal speech rehabilitation, were recorded.

These patients were asked to answer three QoL questionnaires validated to Portuguese language: the European Organization for Research and Treatment of Cancer (EORTC) QoL Core Questionnaire (QLQ-C30), the Portuguese Self-Evaluation of Communication Experiences after Laryngeal Cancer questionnaire (P-SECEL), and the Hospital Anxiety and Depression Scale (HADS). An informed consent was signed by all patients included in the study.

The EORTC QLQ-C30 questionnaire is a 30-item core questionnaire that assesses the physical and psychosocial functioning and symptom experiences of cancer patients in general.[16,17]

The SECEL is a psychometrically valid and reliable questionnaire specifically designed for patients with laryngeal cancer.[18] This questionnaire consists of 35 items addressing communication experiences and dysfunction, 34 of the items are aggregated into three subscales: general, environmental, and attitudinal.[19]

The HADS is a 14-item scale created for the detection of anxiety and depression in somatically ill patients and has frequently been used in cancer studies. Seven of the items relate to anxiety and seven relate to depression.[20]

Data were analyzed using IBM® *SPSS*® Statistics version 20.0 (SPSS Inc, Chicago, IL) and *Microsoft Excel*® 2010. Statistical analysis was carried out using the Levene test for variance equality and *t* test for means equality evaluations. Level of significance was set at 5% throughout.

RESULTS AND ANALYSIS

Thirty-six patients met the criteria for inclusion in this study and 34 of these responded entirely to the three questionnaires.

There were 32 male and two female respondents, and the mean age of the patients was 62 years (range: 37–78 years). The average time from surgery until completion of the questionnaires was 37.18 months, and there was not a statistical correlation between the time since surgery and the overall QoL evaluated by the EORTC QLQ-C30 scores (Figure 1).

All patients had a squamous cell carcinoma of the larynx or hypopharynx, except one patient who was diagnosed with an adenoid cystic carcinoma. The majority of patients (76.47%) had extensive disease, stage III or IV, at the time of diagnosis.[21]

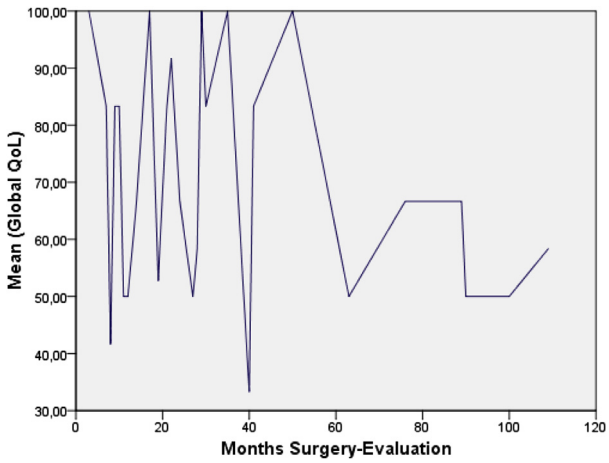

FIGURE 1. Chart showing the absence of correlation between the time since surgery (in months) and the overall QoL (EORTC QLQ-C30 questionnaire mean scores).

In addition to TL, 41.18% were also submitted to radiotherapy and 14.71% to chemoradiotherapy.

The vast majority of patients (91.18%) received speech therapy postoperatively and at the time of the interview, 20.59% expressed themselves by ES and 44.12% through TES. The other 35.29% patients remained nonvocal.

Table 1 shows the patients scores for the EORTC QLQ-C30 and the mean scores of the general population and for larynx or hypopharynx cancer population.

The analysis of our patients EORTC QLQ-C30 results showed worse global QoL and functional capacity when comparing with the general population, but better average scores than patients with larynx or hypopharynx cancer.[14] Furthermore, the results of the symptoms scale demonstrated a significantly lower percentage of symptoms than population with hypopharynx or larynx cancer.

We also found that patients with stage I or II disease had a significantly higher physical functioning and patients who underwent radiotherapy had a significantly lower functional capacity in the role functioning subscale.

In addition, the outcomes of the groups with different forms of alaryngeal expression showed that physical functional capacity was significantly higher in the ES group compared with the TES and nonvocal groups.

When comparing the PTE placed during TL group with the group that had it placed in a second surgical procedure, we noticed that despite the global QoL being higher in the first group (Figure 2), there was not a significant statistical difference in the results of the two groups in the three questionnaires.

The analysis of SECEL questionnaire scores (Table 2) revealed that the nonvocal group had a significantly higher perception of communication impairment in environmental and attitudinal subscales. The patients who underwent speech therapy had a significantly lower perception of communication dysfunction in the environmental subscale.