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Review

A systematic review of quality of life in head and neck cancer treated with surgery with or without adjuvant treatment

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SUMMARY

Quality of life (QoL) is an important consideration in the management of head and neck cancers (HNC). We systematically reviewed the literature to assess the impact of curative surgical resection (+/– adjuvant therapy) of HNC on QoL. Eligible studies (participants > age 18 years, reported fully in English, and prospectively assessed QoL) were filtered using quality criteria, and classified according to the added value, using a published taxonomy. MEDLINE and EMBASE searching yielded 302 distinct reports, 49 met eligibility, and 26 met quality criteria.

Among the eligible studies, achievement of certain quality criteria was poor: a priori hypothesis (8%), statistical accounting of missing data (8%), reporting of assessment interval (35%) and rationale for chosen measure (53%). The most frequent ways QoL added value were: understanding of treatment benefit and risk (100%), comparing treatments for QoL effect (92%) and advancing QoL research methodology (50%). QoL (physical/social functioning and various symptom domains) deteriorated with treatment, gradually recovering to baseline (cancer diagnosis) level. Swallowing, chewing, saliva, taste, eating disruption, and aesthetic deficits may persist. Advanced tumors, extensive surgical resection, need for flap reconstruction, neck dissection, and postoperative radiation are associated with worse QoL outcomes.

Knowledge of these trends can be applied in shared decision making, identification of commonly faced QoL issues, and to develop and provide survivorship resources. Future research should focus on routinely incorporating QoL in randomized studies, reporting the result according to guidelines, and following knowledge translation principles to maximize the clinician's and patient's ability to use QoL data.

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Introduction

Patients with head and neck cancers (HNC) present unique challenges due to the close proximity of many critical structures that may be damaged by tumor or treatment. Management decisions must be based on the likelihood of cure as well as the resulting structural, cosmetic, and functional deficits, which can negatively impact quality of life (QoL) [1,2].

QoL has been described as the gap between a patient's expectations and present experience [3]. It represents a multidimensional, subjective assessment of the impact of a condition or treatment on a patient's life. It incorporates physical health, social, psychological, cognitive and emotional domains [4,5]. QoL priorities can guide shared decision-making in many oncologic situations, including palliative care, cases with very high survival, and cases where

two treatment options offer equivalent survival but a different side effect profile [6].

For early stage disease, using a single modality of treatment limits the toxicities to which a patient is exposed. In HNC, particularly in oral sites, surgical resection is used as a well-established curative modality. Postoperative radiation (PORT) or chemoradiotherapy (POCRT) may be added for high-risk features identified on pathology, such as extracapsular nodal spread, positive margins, pT3 primary, N2 nodal disease, perineural invasion and vascular embolism [7]. In locally advanced disease, planned combined treatment may provide the best chance of cure. Surgical resection can have a negative impact on appearance, dysphagia, speech and shoulder function, while the addition of PORT can cause xerostomia, dysphagia, altered taste, dental decay and osteoradionecrosis [8]. These additional adverse effects have the potential to negatively impact QoL.

A variety of well-validated tools now exist for measuring both general and disease-specific QoL. For HNC, popular instruments include the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire and Head and Neck Module

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(EORTC QLQ-C30 and HN-35) [9,10], University of Washington Quality of Life Questionnaire (UWQOL) [11] and the Functional Assessment of Cancer Therapy General and Head and Neck Cancer questionnaire (FACT HN) [12,13].

The number of research reports on QoL outcomes has risen dramatically, however it remains a challenge for the clinician to determine which studies have analyzed and reported these assessments with enough rigor to impact clinical decision making. Two groups have developed checklists to assess quality of reporting for QoL data [14,15]. We selected a minimum set of criteria based on these checklists to evaluate the studies in this review.

Meaningful QoL reporting can contribute in a variety of ways to improved cancer care. The NCIC-Clinical Trials Group (NCIC-CTG) has proposed a classification of the ways in which QoL outcomes can add value to clinical trial results. This consists of three non-exclusive categories (choosing the 'best' treatment, enriching the understanding of patient experiences, and improving clinical trials methods) subdivided into eight subcategories. We applied this taxonomy to the high-quality studies identified by our review, including those that were not clinical trials.

We aimed to systematically review the literature to provide a qualitative assessment of the impact of curative surgical resection of HNC, with or without adjuvant treatment, on QoL. We have used a hybrid quality assessment tool to quantify the overall quality of QoL reporting, and have additionally assessed the added value of QoL reporting using the NCIC-CTG taxonomy.

Materials and methods

Literature search

MEDLINE and EMBASE databases were searched from inception to Jan 11, 2012. The search was limited to research performed on adult humans and published in English. We included only studies that had the three Medical Subject Heading (MeSH) terms "Quality of Life", "Head and Neck Neoplasms" and "Carcinoma", as well as one of the four following terms: "Surgery", "Resection", or MeSH terms "Surgical Procedures" or "Combined Modality Therapy". Studies were excluded if they contained terms "lymphoma", "melanoma", "sarcoma", "thyroid", or "esophagus". Furthermore, the reference lists of included studies were reviewed to find additional relevant papers.

Eligibility assessment

Electronic search results were combined using an online reference management system, and duplicates removed. Titles of all studies were reviewed and ineligible papers were eliminated. A checklist was created to streamline eligibility assessment of the remaining studies. One reviewer (JL) assessed the studies, and discussed any uncertainties with a second reviewer (JK). Any remaining uncertainties were resolved by a third reviewer (JR). Reference lists of the assessed studies were also reviewed to find appropriate studies that had been missed by the electronic search.

Eligible studies included adult (>age 18) participants, were reported fully in English, and acquired data prospectively. We required that more than 50% of the patients in the studies had HNC, and that there was a definable group of patients who had resectable disease, and underwent surgical resection with curative intent.

Quality assessment

Quality of QoL reporting was assessed by two independent reviewers (JL,JK). Disagreement was resolved by consensus. A third reviewer (JR) resolved persistent disagreements.

A modified version of the minimum data checklist developed by Efficace et al. was used [14]. Two additional items were added to cover categories not assessed by Efficace that were described by Sprangers et al. [15]. The original checklist defined a high quality paper as meeting 8 out of 11 criteria. We determined, a priori, to include studies fulfilling 9 out of our 13 criteria. All included studies were required to have used a validated QoL measurement tool.

Data extraction and review

The finalized list of high quality studies meeting inclusion criteria was assessed by one reviewer (JL) for data extraction. A form was used to record citation information, study design, number of participants, radiotherapy and chemotherapy regimens, surgical intervention, QoL tools and outcomes.

Added value

We next assessed the ways in which each study could add value to the current body of literature using the NCIC-CTG taxonomy [16]. Articles, judged in each category independently, could add value in one or many categories. Two independent reviewers (JL,JK) assessed each included study. Again, disagreement was resolved by consensus; a third reviewer (JR) resolved persistent disagreements.

Results

Literature search

Initial search of EMBASE and MEDLINE returned 260 and 171 papers respectively. After removing duplicates, 302 unique articles were identified. After eliminating non-relevant articles based on a title search, 69 remained. Three additional references were identified on manual search. The literature search methodology has been shown in Fig. 1.

Eligibility and quality assessment

Of 72 papers identified, 49 satisfied eligibility criteria and 26 met our minimum quality score. Performance by quality criterion is shown in Fig. 2a.

Amongst eligible papers not meeting our quality standards, fewer than 30% reported: a priori hypothesis, rationale for a given measure, assessment timing and statistical accounting for both missing data and multiple endpoints. Amongst the studies meeting overall quality standards, poor reporting was noted for a priori hypothesis (8%) and statistical accounting of missing data (8%). All 26 studies meeting quality criteria [8,17–41] used validated QoL tools with adequate domains covered, reported baseline population and discussed QoL results.

Added value

The added value contributed by all 26 research reports [8,17–41] is shown in Fig. 2b. All 26 reports [8,17–41] enhance the understanding of treatment benefit and risk and 24 reports [8,17–20,22–24,26–41] studied QoL as a primary outcome to compare treatments. Thirteen reports [17,19,20,22,23,25,27,29,30,35,39–41] advanced QoL research methodology.

Five reports addressed QoL in under-evaluated populations. Derk et al. [34,36] reported short and long term QoL in elderly patients with HNC. Mowry et al. [31] focused on QoL in advanced oropharyngeal cancers. Two studies [17,20] reported QoL in cohorts from developing countries.

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