

Radiotherapy and Voice Rehabilitation in Laryngeal Cancer

Effects on Health-Related Quality of Life and Voice Function

AKADEMISK AVHANDLING

Som för avläggande av medicine doktorexamen vid Sahlgrenska akademien, Göteborgs Universitet, kommer att offentlig försvaras i hörsal Arvid Carlsson, Medicinaregatan 3, Göteborg, fredagen den 20 mars 2015 kl 13.00

av

Therese Karlsson
Examinerad läkare

Fakultetsopponent:

Docent Katarina Olofsson

Institutionen för Klinisk Vetenskap, Enheten för Öron-, näs och halssjukdomar, Umeå Universitet
Centrum för Öron-, näs och halssjukdomar och käkkirurgi vid Norrlands Universitetssjukhus, Umeå.

Avhandlingen baseras på följande delarbeten:

- I. Tuomi, L*. Karlsson, T*. Johansson, M. Finizia, C. Health-related quality of life and voice following radiotherapy for laryngeal cancer – a comparison between glottic and supraglottic tumours. *Acta Oncologica* 2015; 54 (1) 73-9.
- II. Karlsson, T. Bergström, L. Ward, E. Finizia, C. A prospective longitudinal study of voice characteristics and health-related quality of life outcomes following laryngeal cancer treatment with radiotherapy. Submitted.
- III. Karlsson, T. Johansson, M. Andréll, P. Finizia, C. Effects of voice rehabilitation on health-related quality of life, communication and voice in laryngeal cancer patients treated with radiotherapy: A randomised controlled trial. *Acta Oncologica* 2015. E-pub ahead of print.
- IV. Karlsson, T*. Tuomi, L*. Johansson, M. Andréll, P. Finizia, C. Effects of voice rehabilitation after radiotherapy for laryngeal cancer – a longitudinal study of voice function and health-related quality of life. Submitted.

* Shared first authorship

Göteborg 2015



GÖTEBORGS UNIVERSITET

Radiotherapy and Voice Rehabilitation in Laryngeal Cancer

Effects on Health-Related Quality of Life and Voice Function

Therese Karlsson

Department of Otorhinolaryngology, Institute of Clinical Sciences
at the Sahlgrenska Academy, University of Gothenburg

ABSTRACT

The overall aim of the thesis was to describe the effects of radiotherapy following laryngeal cancer on health-related quality of life (HRQL) and voice function as well as to assess the efficiency of voice rehabilitation.

Patients treated by radiotherapy for laryngeal cancer were included in the study and randomised into two groups, one intervention group receiving voice rehabilitation and one control group. Patients were assessed prospectively pre-radiotherapy and one, six and 12 months post-radiotherapy completion. Voice rehabilitation took place between one and six months post-radiotherapy. Endpoints included patient-reported outcomes, such as HRQL measured by European Organisation for Research and Treatment of Cancer Quality of Life Questionnaires (EORTC QLQ) as well as communication function according to Swedish Self-Evaluation of Communication Experiences after Laryngeal cancer (S-SECEL). Perceptual, acoustic and temporal analyses of voice recordings were also performed. Additionally, a vocally healthy control group was included for comparison.

Results demonstrated that although HRQL deteriorated for both glottic and supraglottic tumours one month post-radiotherapy, the latter group reported the largest deteriorations. In terms of voice quality, acoustic measures revealed that glottic tumours deviated significantly from vocally healthy controls pre-radiotherapy with some parameters improving post-radiotherapy. Supraglottic tumours however, demonstrated no difference compared to the vocally healthy control group at either time-point.

Twelve months post-radiotherapy, laryngeal cancer patients demonstrated no significant difference when compared to pre-treatment in terms of HRQL, communication dysfunction or voice quality, albeit still had abnormal values. HRQL declined immediately post-radiotherapy and recovered to pre-treatment values at six months post-radiotherapy. All patients presented with perceptually perceived dysphonia, with only the variable “roughness” changing significantly during the study period. Roughness improved post-radiotherapy but deteriorated again between six and 12 months post-radiotherapy.

The intervention group receiving voice rehabilitation demonstrated more improvements in HRQL and communication function domains compared to the control group, which remained static during the study period. The improvements were maintained up to six months post-voice rehabilitation (12 months post-radiotherapy). Voice rehabilitation also appeared to prevent the perceptual deterioration observed in the control group between six and 12 months. Lastly, the likelihood of experiencing a clinically significant communication improvement at 12 months post-radiotherapy was positively influenced by undergoing voice rehabilitation and negatively influenced by smoking continuation.

This thesis concludes that the majority of laryngeal cancer patients have impaired voice quality, communicative function and HRQL prior to radiotherapy with no significant improvements seen 12 months post-radiotherapy. Voice rehabilitation has positive effects on HRQL and communication function as well as seems to hinder a perceived deterioration of the voice quality roughness. These beneficial effects are maintained up to six months following voice rehabilitation completion. Voice rehabilitation could be offered to patients who experience voice and communication problems as well as to risk patients identified by speech-language pathologists.

Keywords: laryngeal cancer, health-related quality of life, voice, communication, voice rehabilitation

ISBN: 978-91-628-9284-5 (tryckt), 978-91-628-9285-2 (e-pub). <http://hdl.handle.net/2077/37536>.