Side effects after radiotherapy for pharyngeal cancer

Kenneth Jensen, MD

The PhD dissertation was accepted by the Faculty of Health Sciences, University of Aarhus, and defended on June 20th 2007.

Official opponents: Jens Overgaard, Johannes Langendijk (Netherlands) and Kirsten Bjordal (Norway).

Tutors: Cai Grau, Anders Bonde Jensen and Therese Ovesen.

Correspondence: Department of Oncology, Aarhus University Hospital, Noerrebrogade 44, 8000 Aarhus C, Denmark.

E-mail: Kennethjensen@dadlnet.dk

Dan Med Bull 2007;54:241

ABSTRACT

The studies for the PhD dissertation were carried out at the Department of Oncology, Aarhus University Hospital.

Radiotherapy is an important treatment modality for cancer of the pharynx. Unfortunately, side effects are often ill defined and quantified using non-optimal methods. New technical methods for delivering a tumouricidal dose of ionizing radiation and simultaneous spare the surrounding tissues have become available. These methods require a high technical standard but also increase the demand for radiobiological knowledge since the oncologist has to prioritize where the dose should be deposited.

The dissertation is presented as five papers and one review. All published or in press.

The first study is a retrospective study in 139 patients with oropharynx cancer treated with either bilateral opposed fields or an ipsilateral technique sparing the contralateral side of the neck. A significant reduction in the prospectively collected standard morbidity scores, was observed after ipsilateral treatment.

The two next papers describe the results of a cross sectional quality of life study. We translated the quality of life questionnaire EORTC H&N35 into Danish, and tested it in 116 recurrence free head and neck cancer survivors. Morbidity was scored as usual by the oncologist and the head and neck surgeon. We found a low sensitivity and specificity of the physician's scores to detect patient assessed morbidity.

This finding led us to perform a cross sectional study on 35 pharynx cancer survivors to examine the relationship between objective findings and the answers to the questionnaire. The patients were examined with an endoscopic evaluation of swallowing, saliva flow measurements and a dental examination with orthopan tomography and questionnaires. We found a poor correlation between patient reported side effects and objective changes. Furthermore, the findings of the swallowing examination were compared with dose and volume parameters of the radiotherapy based on individual delineations of organs at risk on the planning CT scans. These analyses showed that doses to volumes of the distal part of the upper aerodigestive tract were predictive of both objective and subjective swallowing problems, including aspiration.

The findings of this thesis, in conjunction with other studies carried out in the field, stresses the importance of using the right endpoint in studies on side effects after radiotherapy. When the optimal endpoint is used the researcher has the best opportunity to quantify dose-volume effect associations and eventually develop a gentler but still efficient treatment.