

a myriad of clinical responsibilities to the entire surgical team to promote positive patient outcomes.

This presentation will describe and discuss opportunities and issues for nurses who are new to, about to become involved with, or, who are already involved with robotic surgery; *from handmaiden to right hand*.

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INVITED

Health-Related Quality of Life as a Prognostic Factor in Patients With Oesophageal Cancer

P. Lagergren¹. ¹Karolinska Institutet, Upper Gastrointestinal Research Department of Molecular Medicine and Surgery, Stockholm, Sweden

Background: Since treatment for oesophageal cancer is extensive and the long-term prognosis is poor, tools that can help predict the prognosis are warranted. The use of measures of health-related quality of life (HRQL) are becoming increasingly more common in clinical research, and accumulating evidence suggests that HRQL data can predict survival in oesophageal cancer patients.

Materials and Methods: The literature as available on PubMed was reviewed on this topic. Several cohort studies have been performed, some of which have been of population-based design. Results from randomised clinical trials with HRQL as a secondary outcome were reviewed also. The assessment of HRQL has mainly been based on the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire Core 30 (EORTC QLQ-C30) together with the oesophageal-specific module (QLQ-OES18).

Results: Based on the available literature, where adjustment for potential confounding factors has been performed, poor global quality of life, poor physical and role function, fatigue and appetite loss before treatment appear to independently predict a worse chance of survival. HRQL measured after treatment may also be of prognostic value. When measured 3–6 months after oesophageal cancer surgery, poor global quality of life, physical function and social function and symptoms of fatigue, pain, dyspnoea, appetite loss, dysphagia and odynophagia are associated with shorter survival. Improvement in physical function within 6 months of surgery has been found to be associated with a better chance of survival while increased pain and fatigue is associated with worse survival.

Conclusions: Measures of HRQL might be of use in predicting survival in patients with oesophageal cancer. HRQL can be used in clinical practice to direct the need for investigations to detect recurrent disease, and in the planning of follow-up, supportive care and palliative treatments. However, more research is needed to clarify the role of HRQL as a prognostic tool in the clinical management of oesophageal cancer patients.

Special Session (Sat, 24 Sep, 14:15–15:15) Late Toxicity Treatment of Head and Neck Cancer

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INVITED

Biological Insights

R.P. Coppes¹. ¹University Medical Center Groningen, Departments of Radiation Oncology and Cell Biology, Groningen, The Netherlands

Despite relatively high survival rates, the quality of life of head and neck patients is severely compromised because of radiation-induced impairment of salivary gland function and consequential xerostomia (dry mouth syndrome). Although in some patients a recovery can be seen even up to 5 years after irradiation, mostly the damage is permanent. Similar late regeneration of the salivary glands has been shown in rats after fractionated irradiation. From these preclinical experiments radiation-induced hyposalivation has been described in 4 distinct phases. The first phase (0–10 days) was characterised by a rapid decline in flow rate without changes in amylase secretion or acinar cell number. The second phase (10–60 days) consists of a decrease in amylase secretion and is paralleled by acinar cell loss. Flow rate, amylase secretion and acinar cell numbers do not change in the third phase (60–120 days). The fourth phase (120–240 days) is determined by a further deterioration of gland function but an increase in acinar cell number, albeit with poor tissue morphology. The most primitive tissue stem cells, residing in the excretory duct seem to be responsible for the late regeneration of the tissue. Indeed, the maintenance and repair of the tissue integrity are the primary roles of the tissue stem cell. Stimulation of stem/progenitors before or after irradiation with e.g. pilocarpine or KGF, results in enhanced regeneration which however does not always lasts. Therefore, for the normal tissue it is of eminent importance to spare the tissue stem cells. Recently, it became apparent that the tissue stem cells may not be evenly distributed over the tissue. Irradiation of a critical 7 volume % part of the parotid glands, suggested to contain the

tissue stem cells, indeed resulted in more than a proportional damage as shown by the reduced saliva production, whereas the non-centrally orientated volume induced a lower than proportional level of damage. Next to the tissue stem cells, also the vasculature plays a prominent role in late tissue damage. Together with extensive fibrosis, prominent telangiectasia can be observed in the salivary glands late after irradiation. However, mobilisation of bone marrow derived mesenchymal cells and endothelial progenitor cells have been shown to be able to prevent late vascular damage in the mouse salivary gland. In conclusion, the tissue stem cells and the vasculature play a major role in late salivary gland damage. Here specific sparing of high stem cell density regions together with enhanced circulating endothelial progenitor cells may yield an enhanced recovery after irradiation and improved salivary gland function.

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INVITED

Late Functional Outcome in Chemo-Radiation

H. Langendijk¹, R. Steenbakkers¹, O. Hoegen-Choevalova¹, H.P. Bijl¹.

¹University Medical Center Groningen, Radiation Oncology, Groningen, The Netherlands

The last decade, major progress has been made in the treatment of head and neck squamous cell carcinoma (HNSCC). There is growing evidence that more aggressive treatment regimens, either the delivery of radiotherapy with concomitant chemotherapy or altered fractionation schedules, improve tumour control and survival. However, these new treatment regimens have come to the expense of radiation-induced side effects (RISD), such as swallowing dysfunction and xerostomia. As quality of life is particularly affected by RISD, prevention of this side effect may improve the therapeutic ratio of treatment for HNSCC. One of the ways to prevent RISD is to reduce the dose to the anatomical structures involved in swallowing, i.e. the swallowing organs at risk (SWOARs) and salivary glands.

At the department of Radiation Oncology of the University Medical Center, all patients with head and neck cancer undergoing curative radiotherapy are subjected to standard follow up program in which acute and late toxicity is prospectively and systematically assessed at fixed time points during and after radiotherapy. Currently, more than 800 patients have been entered in this program, which enables studies on the relationship between radiation dose distributions in several organs at risk (OARs) and late toxicity.

In our prospective cohort, we found that xerostomia is the most frequently reported grade ≥ 2 RISD. Since the introduction of IMRT, the prevalence of this side effect has been reduced significantly as compared to 3D-CRT without sparing of the parotid glands. Recent results of our preclinical studies indicate that further improvement may be achieved by specifically sparing certain sub volumes within the parotid glands.

Another important late side effect is swallowing dysfunction, which has a major impact on patient-rated quality of life. The results of our prospective study showed that the dose in specific anatomical structures, such as the dose to the pharyngeal constrictor muscles and the supraglottic area are the most important factors for late swallowing dysfunction. In addition, swallowing dysfunction more frequently occur among patients treated with chemoradiation. In silico planning comparative studies indicate that sparing these SWOARs may result in a reduction of the risk of this side effect. The first results of a prospective phase II study on swallowing-sparing IMRT look promising in this regard. These results will be presented.

Conclusion: Parotid sparing IMRT significantly reduces the risk on xerostomia. Further improvement may be expected from sparing specific sub volumes of the parotid glands and possibly by proton radiotherapy. Swallowing sparing IMRT is expected to result in a significant reduction of swallowing dysfunction after curative (chemo) radiation.

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INVITED

Late Functional Outcome Surgery

A. Dietz¹. ¹Universitätsklinikum Leipzig, Klinik für Hals- Nasen- Ohrenheilkunde und Plastische Operationen, Leipzig, Germany

Today's main guidelines for treatment in HNSCC are still based on phase III-trials and comprehensive metaanalysis with excess of radiation or chemo radiation at the expense of surgical trials. As stated by Higgins and Wang (Higgins 2008), clinical recommendations for HNSCC treatment based on evidence are difficult due this disproportion of surgical and non-surgical trials. This conflict is triggered by the fact that instruments for evaluating best surgical practice are different from methodological standards in non surgical phase-II or -III trials (this is nicely considered by Higgins 2008). Late functional outcome after surgery is becoming more evident since late functional outcome after multimodality treatment has been augmented as issue in comparison of best treatment in head and neck squamous cell carcinoma (HNSCC). To address this problem, Lefebvre and Ang