Late effects in patients treated for head and neck cancer
K. Henneberg1, K. Jensen1, H. Prindal1, P. R. Olsen1, M.W.H. Nielsen1
Aarhus University Hospital, Department of Radiation Oncology, Aarhus C, Denmark

Introduction and purpose: Patients with head and neck cancer are treated with surgery, radiotherapy and chemotherapy either alone or in combination. The treatment has serious consequences for the patients, because of frequent and severe late side effects that often affects the patient's everyday life. The aim of the study was to investigate the unmet needs of the head and neck cancer survivors and to manage the late effect of the treatment. We wanted to investigate which health care efforts the patient needed in order to improve their quality of life.

Method/material: This mixed methods study included 204 patients, that were seen once during the first two years after the end of treatment. Patients were recruited from our follow up clinic and invited by letter. Patients completed three different questionnaires: EORTC QLQ C30, -H&N35 and HADS. The patients were there in the interviews, using focused questions dealing with predefined topics and, analyzed by content analysis.

Result: In general the patients were doing well, but with large individual differences. Common side effects were dysphagia (60%) and, dry mouth (75%). The derived consequences of these side effects were - amongst others - difficulties with social interaction, speech, eating with others, fatigue, sexual problems, sleeplessness and memory problems. The frequency of side effects declined with time but some of the patients struggled years after treatment. The patients use at least three coping strategies; "avoid", "accept" and "action". In our study the patients were largely incapable of finding help to handle the late effects of the treatment. The questionnaires were not a sufficient screening tool for unmet individual needs that were commonly only identified during the interview.

Conclusion: The late effects, after treatment for head and neck cancer, have multidimensional consequences for the experienced health related quality of life. The patients need support and counseling to cope with the late effects and a specialized rehabilitation service with a multidisciplinary approach should be offered. It is important to screen and talk with head and neck patients systematically because there are large individual differences in how they deal with the long term consequences of treatment.

Symposium: The future of Radiation Oncology publishing: views through the Red and Green telescopes

How to do a good manuscript review
L.P. Muren1
Aarhus University Hospital, Department for Medical Physics, Aarhus C, Denmark

Peer review is an important basis for scientific activities and progression. Peer review is the cornerstone for evaluation of scientific work, including applications for research grants and positions as well as scientific reports and publications in scientific journals. This presentation will focus on the role of peer review of manuscripts submitted for consideration for publication in journals. Initially, the presentation will address the importance of peer review as the main method for scientific evaluation; alternatives to the conventional peer review process will also be mentioned. Subsequently the presentation will go through the major steps in reviewing a manuscript. This also includes the issues to consider when receiving the invitation from the journal. Key questions to address when evaluating the various parts of the manuscript (Introduction, Materials & methods, Results and Discussion) will be covered.

References:

Poster Viewing : S: RTT

Enhancing safety and quality of the radiotherapy process using a multidisciplinary end-to-end review
M. Albers1, J. Stam1, T. Janssen1, A. Van Mourik1, A. Van Gietersbergen1, C. Van Vliet-Vroegindeweij1
The Netherlands Cancer Institute, Department of Radiation Oncology, Amsterdam, The Netherlands

Purpose or Objective: In radiotherapy (RT) extensive quality assurance (QA) protocols exist to guarantee the safety and quality of treatments. Generally, the QA consist of performance, consistency and/or stability checks of individual items such as CT acquisition, treatment planning or treatment device. Besides QA of individual items, the coherence of all items constituting the entire chain is crucial for the overall treatment quality. Therefore, in 2013, we started with the “Analysis of Process Quality” (APQ); an analysis of the RT process from CT to RT. The purpose of this retrospective analysis of the APQ results is to investigate whether the APQ improves and optimizes the RT process.

Material and Methods: The APQ is performed monthly for four randomly chosen patients for a specific tumor site. For each patient, a physicist and a radiation technologist (RTT)
review every step in the RT process. They check whether the used protocol is applicable, if the choices made in the RT process are logical and whether the workflow was correct. Afterwards, the reviews are discussed plenary by the four physicist-RTT couples and a radiation oncologist (RTO) specialized in the tumor site. In this meeting, actions to optimize the RT process are defined. For the retrospective analysis, the items on the action lists are categorized either as: protocol checks (incorrect/incomplete protocol), procedure checks (difference in interpretation of protocols), and abnormalities in human actions (misunderstanding/human error) or techniques (technical shortcoming).

Results: In three years the APQ resulted in a total of 76 actions. The results are displayed in Table 1. Examples of some typical actions include: adjusting the dose volume histogram reports in showing more relevant information, unifying the workflow around peer review of delineations, securing consistency of patient setup information.

Only small abnormalities were found, which didn’t influence the radiation treatment or caused any injury. In addition, the APQ turns out to be a good tool to enhance collaboration between multidisciplinary professionals like physics, RTT’s and physicians.

Conclusion: From our results, it follows that the APQ detects several types of (small) abnormalities in the total RT process. It is known that large errors typically result from a combination of small abnormalities through the process chain. Therefore we believe that by finding and correcting these small abnormalities, the APQ inherently improves the quality and safety of our treatment. In discussing the quality of our treatment in this multidisciplinary setting, we increase commitment and mutual understanding. In short, the APQ is a unique and effective process audit to enhance the quality and safety of the entire RT process.

PV-0223
Accuracy of 2D angiogram to 3D MRI registration for frameless stereotactic targeting of brain AVM
I.T. Kuijper, O. Hertgers, J.P. Cuijpers, F.J. Lagerwaard
VU University Medical Center, Radiation Oncology, Amsterdam, The Netherlands

Purpose or Objective: Stereotactic Radiosurgery (SRS) is an established treatment option for arteriovenous malformations in the brain (bAVM). Two dimensional (2D) digital subtraction angiography (DSA) is used for accurate delineation of the AVM because of its high temporal resolution. In current practice, an invasive head frame and localizer box are used to indirectly register 2D DSA with 3D magnetic resonance angiography (MRA) datasets. The new registration method, which is commercially available, segments a vessel tree from the 3D vector had a mean (SD) of 1.5 ± 0.71 mm (range 0.1 - 4.7 mm). The mean (± 1 SD) results for 69 registrations of each DSA image are shown in Figure 1. No difference >0.5 mm was seen between registrations with the DSA of either the carotid- or vertebral artery. Furthermore, no significant differences were found in patients with prior hemorrhage and/or embolization (p>0.05). The mean inter-observer disagreement between the two observers was 0.3 mm with maximum differences of 2.6 mm. Good image quality, the correct orientation of the DSA image sets together with whole brain MRA scans for optimal vessel segmentation are important criteria for accurate registration using the new method.

Table 1. Percentage categories per process step

<table>
<thead>
<tr>
<th>Percentage (%)</th>
<th>Imaging preparation</th>
<th>Treatment planning</th>
<th>Radiation treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol</td>
<td>7%</td>
<td>14%</td>
<td>5%</td>
</tr>
<tr>
<td>Procedure</td>
<td>8%</td>
<td>13%</td>
<td>7%</td>
</tr>
<tr>
<td>Abnormality (human)</td>
<td>5%</td>
<td>8%</td>
<td>3%</td>
</tr>
<tr>
<td>Abnormality (technique)</td>
<td>5%</td>
<td>7%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Conclusion: The new software based DSA-MRA registration using vessel tree segmentation is a feasible and accurate approach and agrees to within a mean of 1.1 mm and 1.3 ° with the traditional method using a frame and localization box. The new registration method allows the application of frameless (fractionated) radio surgery and could facilitate the import of external diagnostic DSA images for treatment planning.

PV-0224
To be greeted as a human being - A meta-synthesis of cancer patients’ experiences of radiotherapy
S. Petri
Copenhagen University Hospital - Rigshospitalet, Department of Oncology- Section for Radiotherapy, Copenhagen, Denmark

Purpose or Objective: Around 35,000 Danish people are diagnosed with cancer each year, and approximately 16,000 people receive one or several radiotherapy fractions. In Denmark radiotherapy is delivered by special educated oncology nurses and radiographers, in the following referred to as radiation therapists (RTTs). Results from existing research suggest that the RTTs play an important role in relation to how the radiotherapy treatment is experienced by the patients. In addition, patients feel tied down and as slaves of the time due to the daily treatments. Furthermore the high-tech context in a radiotherapy department may seem intimidating to the patients and consequently create insecurity and uncertainty in an already vulnerable situation. However, in order to establish a culture of patient-centered care and communication in clinical practice more knowledge on how patients experience radiotherapy treatment is warranted. The purpose of the study was therefore to explore how adult cancer patients experience radiotherapy based on existing qualitative research.