PO-0935
IMRT treatment for palliative irradiation of spinal bone metastasis
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Purpose/Objective: To assess the practical feasibility of IMRT treatment planning and delivery for single dose palliative radiotherapy in spinal bone metastases limiting adverse effects as vomiting, nausea and diarrhea.

Materials and Methods: Target volumes and critical structures were delineated. IMRT plans were created using RayStation (RaySearch, Stockholm) for 36 patients previously treated with one posterior field. The plans consisted of three beams with in total 9 segments at fixed gantry angles of 130, 180 and 230 degrees using 6 MV photons. IMRT plans were compared to the conventional plans with respect to planning time and treatment time. Normal tissue sparing as well as target coverage and dose homogeneity were evaluated by dose volume histograms.

Results: IMRT plans resulted in normal tissue sparing resulted from IMRT due to a more localized dose delivery. Dose to the kidneys was higher in IMRT patients, but to a level well below the QUANTEC-tolerance limits. IMRT treatment planning results in improved target homogeneity. In the higher region of the spine (TH4-TH9) the esophagus still receives a high amount of dose.

PO-0936
Comparative study between 3D-CRT and IMRT in definitive treatment of cervical cancer
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Purpose/Objective: the primary aim to conduct a dosimetric study between WP-3D-CRT and WP-IMRT as regard to coverage to target volumes and doses to risk structures for definitive treatment of cervical cancer stage IB-IVA.

Materials and Methods: 15 patients with cervical cancer stage IB-IVA were treated with WP-3D CRT (45 Gy/25 fr /5weeks) with concomitant weekly cisplatin 40mg/m² followed by one application of LDR brachytherapy 30 Gy to point A then parametrical boost 15-15 Gy/5fr / week. The patients were replanned with WP-IMRT. The margin was compatible with literatures and organ motion. DVHs were compared for the target volumes and OAS using paired t-test.

Results: The mean target volume coverage by 95% (V42.7) was 95.78% for WP-3D-CRT and 93.22% for WP-IMRT (p value <0.001). IMRT was associated with significant dose reduction to OAS at V40 and V45 levels. There was >20% reduction at V40 level for most of patients: 63.52% (bladder), 16.67% (small bowel) and 37.12% (rectum).

Conclusions: An initial IMRT plan with appropriate margin encompassing the target volumes and potential microscopic pelvic spread leads to reduction in the doses to OAS without compromising the target volume. while in locally advanced cases stage IIb-IVA, there was a little benefit especially when large part of rectum or bladder were included in the target volumes.

PO-0937
Impact of quality assurance on contour conformity within two UK head & neck radiotherapy trials
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Purpose/Objective: Radiotherapy quality assurance (RTQA) is now a requirement of radiotherapy trials since poor protocol compliance has been shown to impact on outcomes. We aim to determine the degree of variation in head and neck target contouring and the impact of RTQA feedback on clinician conformity using pre-accrual benchmark cases.

Materials and Methods: Two trials, the first a randomised study of dose escalated intensity modulated radiotherapy (IMRT) versus standard dose IMRT in patients receiving treatment for locally advanced laryngeal / hypopharyngeal cancers (ART-DECO) and the second a study of cochlear sparing IMRT versus conventional radiotherapy in patients with parotid tumours (COSTAR), require all prospective investigators to submit pre-accrual contouring benchmark cases. Cases are assessed for protocol compliance and resubmissions requested until trial compliant. All benchmark cases for ART-DECO and COSTAR until June 2012 are collected in DICOM format. Cases were analysed using a tumour management group (TMG) consensus contour. Dice coefficient (DC), Jaccard index (JI) and geographical miss index (GMI) were calculated for each individual structure. The data was pre-processed to ensure uniform structure nomenclature and then analyzed using automated trial analysis tools built using MATLAB R2011a and CERR v.4.0.

Results: By June 2012, 14 clinicians had submitted a total of 77 exercises for the ART-DECO trial; 38 for case 1 and 39 for case 2. The maximum number of re-submissions was 4. For the COSTAR trial, 27 clinicians had submitted a total of 53 benchmark cases. The maximum number of re-submissions was 3. A total of 700 target volume contours were analysed; 385 for ART-DECO (CTV1, spinal cord (SC), brainstem (BS), ipsilateral parotid (IP) and contralateral parotid (CP)) and 330 for COSTAR (CTV1, SC, BS, CP, left cochlea and right cochlea). All conformity indices showed varying levels of conformity in clinician contouring. For ART-DECO exercise 1, BS had a median JI of 0.55 (Interquartile Range (IQR) 0.11) and CTV1 had a median JI of 0.63 (IQR 0.11). Improvements in JI were seen after each successive submission from individual clinicians. After submission 4 for ART-DECO exercise 1...