

soft-tissue overlapped with 3cm bone were calculated as 0.93 and 0.83, respectively. The SNR of DE image for ROI1 and ROI2 of the step phantom was 45 and 674 for PP-DE compared to 43 and 203 for conventional DE, respectively. The effectiveness of the PP-DE algorithm compared to the clinical single energy x-ray image and conventional DE images, as well as the impact of patient size will be presented explicitly.

Conclusions: This study proved the feasibility of the bone-only PP-DE algorithm, which could potentially have clinical interests for image guidance for spine SBRT patients. This innovative method improves visualization of bony anatomy during, e.g., planar or stereoscopic image guidance of radiotherapy.

[1] Darvish-Molla et al., 2018, Medical Physics, DOI: 10.1002/mp.13354

30 RETROSPECTIVE EVALUATION OF THE EFFECTS OF INTEROBSERVER CONTOURING PRACTICES IN CLINICAL PRACTICE

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Purpose: To assess the contouring practices of radiation oncologists during everyday clinical practice and their impact on patient DVHs at a population level.

Materials and Methods: The DVHs of 560 prostate cancer patients who had undergone hypofractionated treatment (60Gy in 20 fractions) were exported from the Eclipse treatment planning system (Varian Medical Systems, Palo Alto, CA) into a custom DVH registry at our institution along with structure volumes and lengths. Patients were separated into intermediate (prostate only) or high-risk (additional 44Gy boost to pelvic lymph nodes) cohorts and further categorized based on primary radiation oncologist (RO). Structure volumes, lengths, and DVHs were compared between oncologists using 2-tailed Student's t-tests.

Results: PTV coverage was consistent across ROs and risk levels. In intermediate risk patients, no differences in contouring habits or DVH distributions were observed. However, in high-risk patients, one radiation oncologist achieved significantly more sparing of the rectum and bladder than their peers. The root cause was determined to be an inconsistent pelvic lymph node contour definition between ROs. The RO achieving better sparing contoured significantly smaller lymph node CTVs than their peers, and two other ROs adhered to different cranial-caudal limits than others. In light of these findings, we presented our results to the oncologists at our institution, prompting the selection of a universal pelvic lymph node contour definition.

Conclusions: Systematic interobserver contouring practices in regular clinical practice are detectable through statistical analysis of past treatment plans. Retrospective revision of these practices is recommended as a quality assurance measure to ensure consistent quality of care across an institution.

31 A MULTI-INSTITUTIONAL RETROSPECTIVE CLINICAL AND DOSIMETRIC ANALYSES OF 1033 OLIGOMETASTATIC PATIENTS TREATED WITH SBRT FROM THE CONSORTIUM FOR OLIGOMETASTASES RESEARCH - CORE

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Purpose: An international consortium of academic radiation oncology centres was formed to pool outcomes for patients with oligometastases (OM) treated with stereotactic body radiotherapy (SBRT). We sought to evaluate overall survival, progression-free survival, Grade 3 acute/late toxicities and the clinical factors that impact prognosis.

Materials and Methods: This study was a retrospective review of a multi-institutional cohort of patients treated with SBRT for oligometastatic (OM) disease (≤ 6 lesions) without brain metastases at presentation. Patients where other treatments led to a cytoreduction to an OM state were excluded. Patients were identified from databases at each institution and clinical and dosimetric data was collected through retrospective chart review. Survival statistics were calculated using a Kaplan-Meier product-limit method was used. A multivariate analysis was used to define the association of these outcomes to clinical parameters.

Results: 1033 patients were included in the analysis with 84 breast, 235 colorectal, 260 lung, 132 prostate, 63 kidney, 37 melanoma, 50 head and neck and 172 other cancers. Median age was 68 (18-94). Median follow-up was 24 months with 228 (22%) patients having undergone prior definitive (non-SBRT) metastases-directed therapy. Also, 754 patients had a metachronous presentation of OM while 279 presented with synchronous OM. At presentation, 596 (58%), 245 (24%), 105 (10%), 55 (5%), 32 (3%) patients had 1,2,3,4,5 metastatic lesions respectively and 875 (85%), 140 (13%), 18 (2%) patients had 1, 2 and 3 or more organs involved. All known sites of disease were treated in 981 (95%) patients. 663 (64%) of patients had systemic therapy before SBRT. OS was 83% and 67% at one and two years. Progression free survival at one and two years was 52% and 30%. Multivariate analysis for OS identified primary site ($p < 0.001$), synchronous versus metachronous presentation ($p = 0.01$), metastases confined to the lung only ($p < 0.001$) and nodal/soft tissue metastases only ($p = 0.01$). Notably, age, pre-SBRT chemotherapy, number of metastatic lesions and gender were included in the prognostic analysis and were not statistically significant for OS. There were 31 and 35 reports of \geq Grade 3 acute and late toxicities were recorded, including one Grade 5 pneumonitis and one Grade 5 bile duct stenosis.

Conclusions: In a large multi institutional cohort of selected patients with OM disease at presentation, SBRT appears to be an effective treatment for OM cancer patients with favourable long term outcomes and low rates of severe toxicity. Multivariate analysis identified primary site, synchronous versus metachronous presentation, metastases confined to the lung only and to nodal/soft tissue only as prognostic for OS.

32 LONG TERM RESULTS OF 120 CASES OF VESTIBULAR SCHWANNOMA TREATED WITH CYBERKNIFE™ ROBOTIC STEREOTACTIC RADIOSURGERY AT THE OTTAWA HOSPITAL CANCER CENTRE

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Purpose: Stereotactic radiosurgery (SRS) is a safe and effective alternative to microsurgery in the management of acoustic neuromas. The excellent outcomes from such treatments are well documented with Gamma Knife therapy in literature. The CyberKnife (CK) Robotic Stereotactic Radiosurgery (SRS) is an