PO-0981

First experiences with combined EBRT and HDR-brachytherapy boost using Co-60 in patients with prostate cancer

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Purpose/Objective: To evaluate the first clinical and dosimetry data of a new afterloading machine using a Co-60 source.
Materials and Methods: Patients with prostate cancer were treated by combined external beam radiotherapy (EBRT) followed by a brachytherapy boost: After 46Gy EBRT to the prostate two fractions of 9 Gy were applied, each 2 weeks apart. In 2008 a new afterloading machine (Multisource®, Eckert & Ziegler BEBIG, Germany) was installed using a Co-60 source. Toxicity data were compared to a cohort of 131 patients treated with Ir-192 and the same fractionation scheme at our institution from 2001 – 2008.
Results: A total of 117 patientswere treated with Co-60 from 01/2008-10/2012. Median age at diagnosis was 72 years. Patients had a mean PSA value of 25.5 ng/ml and a mean Gleason-score of 7.2 (≤ 6: 16%, 7: 65%, ≥ 8: 19%). High risk tumours were present in 53%, intermediate risk in 42% and low risk in 5% of the patients. Neo-/adjuvant antihormonal therapy was given in 38.2%. Mean prostate volume was 31.7ml and mean IPSS was 7.4 at presentation. DVH parameters (mean values) for brachytherapy were D90: 8.97 Gy, COIN: 0.68. Dmax for rectal wall was 8.0 Gy and 11.8 Gy for the urethra. The TRAK value was 0.27 cGy x m^2. Toxicities were evaluated according to CTCAE v3.0. Most frequent acute GU toxicities were an increase in urinary frequency (49%, 19.6% and 5.9%, grade I / II / III), painful voiding (45%, 4% and 4%, grade I / II / III) and urinary bleeding after interstitial brachytherapy (36.5% and 11.5%, grade I / II). Acute GI toxicity presented with proctitis (12% and 6%, grade I / II) and diarrhea (14% grade I). No acute grade IV toxicity was reported. Late toxicities are not presented because of the short follow-up (median 13.7 months). In comparison with the patients formerly treated with Ir-192 no significant increase in acute adverse events were reported (39.2% vs. 29.8% for grade II and 9.8% vs. 5.3% for grade III, Co-60 vs. Ir-192). The comparison of the dosimetry data is still under evaluation and will be presented at the meeting.
Conclusions: Using Co-60 for a HDR-brachytherapy boost after EBRT is a feasible technique in prostate cancer patients with no excess of toxicities in regard to Ir-192. Due to the short follow-up long term data on clinical outcome have to be awaited.

PO-0982

Additional value of T2-weighted MR imaging for post-planning dosimetry after I-125 prostate brachytherapy

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Purpose/Objective: The standard for the determination of post-implant dose parameters of trans rectal ultrasound-guided permanent radioactive I-125 implantation of the prostate (BT) is a CT-based identification of the implanted seeds and of the prostate and organs at risk. However, while CT depicts the seeds very clearly, the contour of the prostate cannot reliably be identified, due to poor soft tissue contrast.In this study, we evaluated added use of T2-weighted MR images (MRI) for prostate delineation, while the CT were used for seed identification.
Materials and Methods: Thirteen patients underwent both CT and MRI 30 days after BT. CT and MRI were manually registered based on seed localization using the registration tool in Eclipse V8.9. Registration was performed independently by 2 physicists. One physician contoured the prostate on CT and MRI on different days without seeing the other image modality. The evaluation was based on the minimum dose to 90 percent of the prostate (D90) and the percentage of the prostate receiving 100 percent of the prescribed dose (V100).The D90 and V100 were computed for CT-based (CT was used for seed localization and prostate delineation) and for CT/MRI based postplanning (CT was used for seed localization and MRI for prostate delineation). The variability of the dosimetric parameters based on registration uncertainty was estimated based on the variation of the D90 and V100 between the 2 physicists performing the registration.
Results: In contrast to other reports, we found a sufficient seed visibility on MRI for an effective registration based on seed localization. The major difficulty during registration was that the prostate shape varied in some cases and consequently not all seeds could be matched. This created an uncertainty for the registration, and depending on which seed group was chosen to match, the 2 physicists arrived at different registrations. Eliminating the 2 patients for which the registration was not possible, we found that the mean difference in the D90 and V100 between the CT-based and the CT/MRI-based post-planning was 4% and 9% (max deviation -18% and 30%) respectively. The mean difference in the D90 and V100 between the CT/MRI based post-planning by the 2 physicists (registration uncertainty) was 3% and 2% (max value 10% and 5%) respectively.
Conclusions: MRI is valuable in contouring more precisely the prostate and therefore getting a more realistic dosimetric characterization of the implantation. However, the registration adds an uncertainty to the postplanning process and this uncertainty must be understood to obtain meaningful data. We found that it is important to be critical during the registration and to perform a CT/MRI based postplanning only for those patients for which we feel an optimal registration can be performed. Our preliminary findings show that if this is done, there is a gain in post-planning dosimetric accuracy. Future investigations will evaluate the use of 3D MRI images to see if the uncertainty on the CT/MRI registration can be further reduced.

POSTER: BRACHYTHERAPY TRACK: SKIN CANCER

PO-0983

High dose rate hypofractionated in skin cancer using the Valencia applicator

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Purpose/Objective: The nonmelanoma skin cancers are among the most common tumours, especially in older patients. The classic approach is surgery, but the development experienced by high dose rate brachytherapy, achieves similar cure rates and cosmetic results. With this approach, at the Hospital La Fe, the Valencia Applicators are used as accessories of the Nucletron HDR microSelectron Unit, which allow treatment of lesions up to 4 mm deep and 3 cm in maximum diameter. The purpose of this work was to assess the oncologic and cosmetic results, and acute toxicity (RTOG/CTCv3), in patients with nonmelanoma skin carcinoma treated with Valencia Applicator with a new regime of hypofractionation.
Materials and Methods: We retrospectively reviewed the results of 48 basal cell carcinomas in 33 patients treated at our institution between January 2008 and March 2010, with a follow-up between 24 and 54 months (30% of the patients with a follow-up longer than 3 years). Most of the patients (55%) were male, and 70% were over 70 years. The treatment protocol includes the determination of the area (GTV-CTV) by a dermatologist with the dermatoscope and depth ultrasound. The treatment schedule consists of 7 Gy delivered in 6 by 7 Gy or 7 by 6 Gy fractions, scheduled in 2 sessions per week, reaching 42 Gy . The treatment is prescribed at 3 mm depth in those lesions whose depth is 3 mm or less, and at 4 mm to lesions between 3 mm and 4 mm.
Results: Of the 48 tumours treated, 35 were located in the facial and 13 elsewhere. Practically all the lesions (47/48) resulted in a depth less than 3 mm. Local control at 3 months has been excellent (47/48) and registered a high dermal toxicity was grade 1 (RTOG/CTCAEv3), having being resolved with topical treatment at 4 weeks in all but one case that required 2 months. The esthetical result (RTOG/CTCAEv3) was magnificent in all cases.
Conclusions: In our experience, the HDR-BT with Valencia Applicator in hypofractionated regime provides excellent results, for both cosmetic and local control in the short term, with little toxicity. Moreover the hypofractionation facilitates compliance with treatment comfort in elderly patients.

POSTER: BRACHYTHERAPY TRACK: MISCELLANEOUS

PO-0984

Value of Doppler ultrasound analysis in the regression of uveal melanoma after episcleral brachytherapy plaque.

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