PO-0747
Revisiting guidelines for target definition after prostatectomy when taking MRI study into account

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Purpose or Objective: The definition of the clinical target volume (CTV) for salvage radiotherapy after prostatectomy is based on clinical and pathologic variables of the tumor and consensus guidelines. Multiparametric-MRI is recommended to evaluate pelvic recurrences after radical prostatectomy when the PSA is low (0.2-2 ng/ml) but the benefit of planning individualised radiation treatment based on the results of MRI is unknown. We analysed whether all suspicious lesions detected with pelvic multiparametric MRI were included in the clinical target volume defined according to four current guidelines and we determined the percentage of missing target if this radiological information was lost.

Material and Methods: We retrospectively reviewed the clinical records and multiparametric MRI studies of 70 patients with PSA recurrence after radical prostatectomy. Salvage radiotherapy of at least the prostate bed was indicated in all cases. On the simulation CT scan of 33 patients who had visible tumor recurrence in the MRI study, we delineated four different CTV according to RTOG, EORTC, PMH and FROGG consensus guidelines for postoperative prostate bed irradiation. We delineated a relapse CTV which included the radiological tumor recurrence plus 5 mm. For the PTV, we added a 5 mm margin. We compared volume size of the CTV and determined the percentage of geographically missed target (relapse PTV not included / relapse PTV).

Results: Multiparametric-MRI was positive in 33/70 patients. Local recurrence occurred in 27 patients, mainly in the perianastomotic area (19). Multiparametric-MRI detected positive lymph nodes in 7 patients, mostly in the external iliac region. The mean size of the lymph nodes was 10 mm (range 8-16 mm). The mean volumes of the CTV delineated according to the EORTC, RTOG, PMH and FROGG consensus were 81.5, 100.7, 109.3 and 99.7 cc, respectively. In 2 out of 33 cases, the recurrence depicted in the pelvic MRI was not totally enclosed in the CTV, independently of the consensus guidelines used. The missed recurrences were located in the left retrovesical region (patient 1) and at the level of the penile bulb (patient 2). The volumes of the relapsed PTV were 23.4 and 14.9 cc, respectively. The percentages of relapses outside the PTV created according to each guideline were 41%, 59%, 44 and 44% in patient 1 and 44%, 39%, 39% and 41% in patient 2. In 7 out of 70 patients (10%), lymph node recurrence would have been missed if we had only considered salvage prostate bed irradiation.

Conclusion: Using current guidelines for CTV definition for salvage radiotherapy after prostatectomy, we found that the local recurrences depicted in the pelvic multiparametric MRI were totally covered in most patients. Multiparametric-MRI may help tailor local and lymph node CTV and identify lesions to treat with a higher dose.

PO-0748
Escalated-dose IMRT for prostate cancer: long-term toxicity and biochemical outcomes

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Purpose or Objective: To report the toxicity and preliminary biochemical outcomes with high-dose intensity-modulated radiation therapy (IMRT) to a dose of 82.8Gy in patients prostate cancer.

Material and Methods: Between April 2002 and December 2013, 757 patients with biopsy proven prostate cancer were treated with high-dose IMRT. While 398 patients received a 7 or 8-field IMRT -sliding window- technique up to a median total dose to the prostate of 77.4 Gy/1.8Gy, 359 patients were treated with a 2 arc-Volumetric Modulated ArcTherapy (VMAT)plans up to a median total dose to the prostate of 82.0Gy/ 1.8Gy. In 264 high-risk prostate cancer patients the pelvic node region was treated to incorporate the nodes at risk. Total doses of 50.4Gy were prescribed to the pelvis. In 29 % of SW patients and 23% of VMAT patients an additional boost of up to 16 Gy was administered in cases of MRI-staged lymph node metastases. Acute and late toxicities were prospectively scored by the RTOG/ LENT SOA morbidity grading scales (until 2009) and a modified CTCAEv3.0 score (since 2009), respectively. Biochemical failure was defined according to the Phoenix definition of nadir + 2ng/ml. The median follow-up time was 65 months (range,12-151 months).

Results: The IMRT dose distribution provided excellent PTV coverage and satisfying protection of all the organs at risk, with less than 2% of all patients experiencing grade (G) 3 toxicities, G4 toxicities were not observed at all. In total 40.3 / 11 / 1.1% of patients developed acute G1/2 / 3 genitourinary (GU) toxicities, 28%/ 3.1% of patients experienced acute G1/2 gastrointestinal (GI) side effects, no patient developed acute > G2 gastrointestinal symptoms. Late GU- and GI toxicity was mild with > 85% of the patients free from any GU/GI toxicity during follow-up and no time trend to increased or to higher grade of GU/GI-toxicity. Maximum late GU toxicities were G1/2 / 3 for 10/2.5/ 1.6% of patients, respectively. Maximum late GI toxicities were G1/2 for 4.9 / 0.4Gy of patients. The 5-year freedom from biochemical failure (FFBF) was 87.8% for all patients and 95, 79.9 and 83.4% for low-, intermediate-, and high-risk disease.

Conclusion: These data demonstrate that escalated -dose IMRT is a well tolerated technique in prostate cancer patients and the preliminary excellent biochemical control rates are encouraging.

PO-0749
Factors predicting late severe urinary incontinence after postprostatectomy RT: a longitudinal study

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Purpose or Objective: To evaluate pelvic recurrences after radical prostatectomy, we found that the local recurrences depicted in the pelvic multiparametric MRI were totally covered in most patients. Multiparametric-MRI may help tailor local and lymph node CTV and identify lesions to treat with a higher dose.
Purpose or Objective: The fear of radiotherapy-induced urinary incontinence (URINC) often contraindicates post-prostatectomy RT (POPRT), despite the lack of accurate data about its real incidence and severity. The purpose of this analysis was to analyze clinico-dosimetric factors predicting severe, self-reported URINC 1 and 2 years after POPRT.

Material and Methods: In 2012 a longitudinal, observational study aimed at assessing URINC from POPRT including prophylactic whole-pelvis irradiation (WPRT) was activated at our Institute. For the evaluation of urinary toxicity, 2 validated questionnaires, IPSS and ICIQ-SF, are to be filled-in by pts at baseline, at RT mid-point and end, at 3 and 6 months after RT conclusion, and every 6 months thereafter. This analysis pertains to the first 101 pts correctly filling the questionnaires at baseline and at 12 months (60 also at 2 years). Fifty-four and 47 pts were treated with adjuvant (ADV) and salvage (SALV) intent after a median of 4 and 38 months, respectively, from radical prostatectomy (RP), with either conventional (n=42) or moderately hypofractionated (n=59) regimens, at a median 2-Gy equivalent dose (EQD2) to the prostatic bed of 70 and 74 Gy in ADV and SALV cohort, respectively, and a median EQD2 dose of WPRT of 50 Gy.

Results: The mean baseline ICIQ scores were 7.8 and 4.8 in ADV and SALV cohorts, respectively (p=0.009). The corresponding values at 1 and 2 years were 7.4 vs 7.3 and 8.5 vs 7.9, respectively. Severe URINC (≥ 13 points) was recorded in 23% and 19% at 1 year, and in 17% and 21% of pts treated with ADV and SALV intent, respectively (p=0.20). The 75th quartiles of ICIQ at 12 (ICIQ12) and 24 (ICIQ24) months (12 and 13 points, respectively), were set as end-points for regression logistic analysis. Several clinico-dosimetric factors, including age, diabetes, hypertension, ptT and pN stage, # of removed LNs, RT intent, time from RP to RT, fractionation, EQD2, adjuvant androgen deprivation (AAD), IQQ and IPSS baseline values were analyzed. Variables with a p-value <0.20 at univariable analysis were entered into a backward stepwise multivariable model indicating baseline ICIQ and nocturia (IPSS item #7) and AAD as predictors of ICIQ12 (AUC 94%), while baseline ICIQ24 and EQD2 predicted ICIQ24 (AUC 89%).

Conclusion: The risk of long-term severe URINC 1 and 2 years after POPRT is strongly modulated by baseline URINC, and by AAD and higher EQD2, respectively (Figure 1).

PO-0750
Conventionally-fractionated VMAT vs. SBRT in prostate cancer:PSA kinetics, toxicity, quality of life
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Purpose or Objective: In the present study, conventionally fractionationed volumetric arc therapy (VMAT) and hypofractionated stereotactic body radiotherapy (SBRT) modalities were aimed to compare in terms of side effects and quality of life (QOL) in patients with localized prostate cancer.

Material and Methods: Patients who admitted to I.U. Institute of Oncology with a diagnosis of localized prostate cancer during the period from March 2010 to December 2013 were included into the study. Patients received radical RT with dose schedules of either 33.5 Gy/5 fr for SBRT or 75.6 Gy/35 fr for VMAT. Acute and late side effects of treatment were evaluated according to CTCAE version 4. IPSS and EORTC QOL-PR25 forms were used to assess QOL at baseline, end of treatment and during follow-up.

Results: Of the 48 patients (28 SBRT, 20 VMAT) who were included into the study, 40 (20 SBRT, 20 VMAT) were evaluated for their QOL status. All demographic and pathological features including median age of the patients, clinical manifestations, and the risk groups were found to be similar between treatment groups. PSA control rates were ≥100 in both arms during the follow up with a median of 23 months. PSA nadir values were detected to be 0.5 ng/dl in both arms. PSA bounce was observed in 43% and 50% of patients in SBRT and VMAT arms, respectively. The magnitude of PSA bounce value was significantly higher in SBRT arm compared with VMAT (0.8 ng/dl vs. 0.1 ng/dl, p=0.01). PSA decline rate in VMAT arm was found to be significantly higher than in SBRT arm (p = 0.028). Grade 3 rectal toxicity was not observed in any of the treatment arms. Although Grade 3 urinary side effects were not seen in patients treated with VMAT technique, 3 patients (10.7%) in SBRT arm with a history of TURP before RT experienced Grade 3 urinary toxicity. No significant difference was observed between the two arms concerning sexual activity functioning and sexual functioning scores whereas the scores at 10.5 and 13.5 months were found to be significantly decreased compared with baseline in both treatment arms. SBRT and VMAT arms did not differ significantly regarding urinary, incontinence, bowel symptom scores and IPSS obstruction scores. The magnitude of increase in IPSS scores at the end of the treatment compared with baseline were detected to be significantly higher in VMAT arm than SBRT arm (p=0.046). The decrease in hormonal symptom scores at 4.5, 10.5 and 13.5 months compared with baseline was detected to be significantly higher in VMAT arm than SBRT arm (p=0.007, p=0.027, and p=0.021, respectively).