PO-0709
Acute toxicity in post-operative prostate cancer: hypofractionation-vmat versus conventional-3DCRT.
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Purpose/Objective: To retrospectively evaluate and compare the incidence of acute genito-urinary (GU), upper gastrointestinal (uGI) and lower gastrointestinal (lGI) injuries of hypofractionation by volumetric modulation by RapidArc therapy or VMAT (Hypo-RapidArc group) and conventional fractionation by three dimensional conformal radiotherapy (3DCRT group) in patients with localized prostate cancer treated with postoperative radiotherapy, after radical prostatectomy.

Materials and Methods: Between 2007 and 2012, 84 consecutive patients with clinically localized prostate cancer patients submitted to radical prostatectomy were irradiated to prostate bed: 41 with 3DCRT and 43 with VMAT by RapidArc. The median time to RT was 15 and 16 months respectively in 3DCRT and Hypo-RapidArc group respectively. The median dose to the prostatic bed was 70 Gy (70 - 76) with 2 Gy per fraction in 3DCRT group and 70Gy (70 - 72.4) with 2.5Gy (2.5 - 2.55) per fraction in the Hypo-RapidArc group. After radical prostatectomy, the median time to RT was 15 and 16 months respectively in 3DCRT and Hypo-RapidArc group. Acute GU, uGI and lGI toxicities after radiation treatment were evaluated using RTOG/EORTC medical scoring system.

Results: Acute G2 GU toxicities were better in Hypo-RapidArc group compared to 3DCRT group: 12% versus 17% respectively in the two groups. Inversely, for Acute G2 intestinal toxicities, 3DCRT was well tolerated: for uGI no G2 were found in 3DCRT versus 7% in Hypo-RapidArc group; for lGI toxicities7% in 3DCRT versus 18% in Hypo-RapidArc group. No G3 or greater toxicities were found in both groups. In both groups the PTV coverage is suitable: PTV mean dose is 99.4±1.0% and 99.6±0.9% and V95 96.3±3.6% and 95.7±8.9 for 3DCRT and RA group respectively. For 3DCRT group the Rectum received a mean dose of 42 ± 14.9 Gy (with V90 equal to 26.10.0 %) and the Bladder received 69±17.2Gy in mean (with the V50Gy equal to 45.0±19.5%); and for RA group the dose decreased to 37±5.2 Gy (V50Gy 9.6±5.1%) and 39±13.4 (V50Gy,25.2±14.4%) for Rectum and Bladder.

Conclusions: The results of our study of 84 patients have shown that acute G2 GU are reduced using hypofractionation by RapidArc compared to conventional fractionation by 3DCRT, while acute G2 lGI toxicities remain significantly better for the last one. Remarkable is the absence of G3 using hypofractionation by RapidArc as well as recorded previously with conventional fractionation by 3DCRT. Longer term data are awaited for late toxicity profiles and clinical efficacy in Hypo-RapidArc group of patients.

PO-0710
The necessity and effectiveness of adaptive replanning of patients having large prostate rotations
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Purpose/Objective: To assess the effectiveness of online monitoring of prostate rotation as an indicator of the need for adaptive replanning in prostate patients treated with IMRT; to evaluate the possibility to predict large interfracton prostate rotations based on rectal filling on the planning CT.

Materials and Methods: From a population of 640 prostate cancer patients treated with IMRT combined with online marker-based setup correction, 26 patients who exhibited frequent and large (>10°) prostate rotations were selected for a repeat CT scan and adaptive replanning. The effectiveness of adaptive replanning was assessed by evaluating the relative decrease in the frequency of large prostate rotations. The correlation between rectal filling as determined on the planning CT and the frequency of prostate rotations was evaluated in order to assess the potential impact of no action on this group of patients.

Results: For the 26 patients that were re-planned, the frequency of large prostate rotations significantly decreased by 80.7% on average (p<0.001) during the fractions treated with the adapted plan. No significant correlation was found between the rectum volume, cross-section or diameter on the planning CT and the frequency of prostate rotations (p=0.05), however there seems to be a higher risk of large rotations in patients with a rectal diameter larger than 5 cm at the level of the prostate base (p=0.03). If these patients had not been re-planned, due to the systematic change in prostate orientation the PTV coverage would have decreased to 90.2% on average, although the CTV would remain adequately covered for all patients.

Conclusions: For prostate cancer patients treated with IMRT combined with fiducial-based online position verification, a relatively simple prostate rotation monitoring protocol is sufficient to select the patients in need of adaptive replanning. Replanning based on the planning CT scan is not a significant predictor of the frequency of large prostate rotations, although patients with a large diameter of the rectum on the planning CT seem to have a chance of having large prostate rotations.

PO-0711
Radical radiotherapy for prostate cancer in octogenarians: A single centre experience
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Purpose/Objective: As male life expectancy increases throughout the developed world the incidence of prostate cancer is also increasing. Better diagnostics and raised public awareness has also contributed to this. A significant survival benefit favouring hormone therapy and radical radiotherapy over hormone therapy alone in locally advanced prostate cancer has been shown in recent studies. Radical radiotherapy technology for prostate cancer has evolved significantly aiming to reduce toxicity to normal tissues. Taking 10 year survival as the standard for assessing the use of radical treatment, we looked at the outcomes of patients who received radical radiotherapy for prostate cancer commencing after their 80th birthday.

Materials and Methods: A total of 26 patients treated with IMRT combined with online marker-based setup correction, 26 patients who exhibited frequent and large (>10°) prostate rotations were selected for a repeat CT scan and adaptive replanning. The effectiveness of adaptive replanning was assessed by evaluating the relative decrease in the frequency of large prostate rotations. The correlation between rectal filling as determined on the planning CT and the frequency of prostate rotations was evaluated in order to assess the potential impact of no action on this group of patients.

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benefit and toxicity of the addition of radiotherapy over hormones alone in this group.

**PO-0712**

**Early-stage prostate cancer in patients under 70 years: the curative role of radiotherapy**

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**Purpose/Objective:** Prostate cancer patients (pts) under 70 years are more often candidates to surgery rather than radiotherapy (RT). We analyzed the results of ≤ 70 years patients with localized disease to demonstrate that RT is a valid alternative to surgery also in younger men.

**Materials and Methods:** From January 1988 to December 2009, 214 pts with T1-2N0M0 prostate cancer were treated with 3-5 fields conformal RT. The median baseline PSA level was 10.4 ng/ml (range 0.2-254). Gleason score (GS) was: 2-6 in 114 pts, 7 in 37 pts, and 8-10 in 18 pts. During the years the dose to the prostate was gradually increased from 60 Gy to 76 Gy. Forty-eight pts (22.4%) received 60-68 Gy and 166 (77.6%) 70-76 Gy in 2 Gy daily fractions. Biochemical failure was defined according to ASTRO consensus criteria. Acute and late toxicity were graded according to the RTOG and EORTC criteria. Moreover we investigated the effects of patient and treatment related risk factors on acute and late toxicity.

**Results:** The median follow-up was 105 months (range 14.2-180). Biochemical relapse occurred in 65 pts (30.4%), local failure in 8 (3.7%), regional failure in 2 (0.9%), distant metastases in 20 (9.3%). The 5 and 10 year biochemical relapse free survival (bRFS) for all 214 pts were 84.4% and 66.7% respectively. There was one patient with Grade III GI toxicity and 2 in 105 (49%) and 98 pts (45.8%), respectively. There were no cases of acute late toxicity were graded according to the RTOG or EORTC criteria. Morel we investigated the effects of patient and treatment related risk factors on acute and late toxicity.

**Conclusions:** Grade ≤ 70 years patients are more often candidates to surgery rather than radiotherapy (RT). The median baseline PSA level was 10.4 ng/ml (range 0.2-254). Gleason score (GS) was: 2-6 in 114 pts, 7 in 37 pts, and 8-10 in 18 pts. During the years the dose to the prostate was gradually increased from 60 Gy to 76 Gy. Forty-eight pts (22.4%) received 60-68 Gy and 166 (77.6%) 70-76 Gy in 2 Gy daily fractions. Biochemical failure was defined according to ASTRO consensus criteria. Acute and late toxicity were graded according to the RTOG and EORTC criteria. Moreover we investigated the effects of patient and treatment related risk factors on acute and late toxicity.

**PO-0714**

**Choline-pet guided radiation therapy planning in prostate cancer patients**

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**Purpose/Objective:** To assess the impact of Choline-PET in treatment planning of prostate cancer (PCa) patients eligible for radiation therapy (RT).

**Materials and Methods:** We prospectively enrolled 20 consecutive patients (mean age 70.4 years, range 58-84) referred to our department for RT planning with radical intent (n=2) or assavage therapy (n=18). Patient were submitted to a single-day protocol, including dedicated CT scan of the pelvis and Choline-PET. Gross-tumor volumes (GTV), clinical-tumor volumes (CTV), planning-tumor volumes (PTV) and organs at risk (OAR) were outlined on CT with Eclipse Varian Medical System software, whereas GTV-PTV was defined as areas with pathologic uptake and contoured with PET/CT software on Advantage GE workstation.

**Results:** According to the imaging findings, in 14/20 patients the indication for RT was confirmed: in 2 cases it was limited to the prostatic bed, in 7 cases RT was extended to the entire pelvis, and in 5 patients the treatment was performed on extra-pelvicorgans. In 30% of cases (6/20), either a negative scan or evidence of extensive disease at PET addressed patients to other treatment options. Overall Choline-PET determined a modification in patient management in 75% of cases (15/20): in 7 patient the impact was exerted directly in treated volumes, whereas a specific boost in PET-positive lesions was given to 50% of all irradiated patients (7/14). Conclusions: Choline-PET can have a significant impact on RT planning of PCa patients. The influence in therapeutic decision is seen up to 75% of cases, and in 1/3 of patients unnecessary RT can be avoided.