in detecting local relapse after radical prostatectomy for prostate cancer by analysis of post-prostatectomy fossa appearance in pre- and post salvage radiotherapy DCE-MRI.
Methods and Materials: 33 patients undergoing DCE-MRI without endorectal coil before salvage radiotherapy (RT) without evidence for metastases were selected retrospectively and evaluated using information of post treatment DCE-MRI with an interval $\geqslant$ 12 months and response of Prostate-specific antigen (PSA) after RT, median <0.01 ng/mL (mean 0.02 ng/mL, range, <0.01–0.08 ng/mL). The median PSA at diagnosis of biochemical recurrence before salvage RT was 0.34 ng/mL (mean 0.57 ng/mL, range 0.08- 2.38 ng/mL). Pre-RT DCE-MRI scans were compared with post-RT-DCE-MRI-scans to assess behaviour of any suspicious lesions.
Results: 22/33 patients had 24 enhancing nodules in the post-prostatectomy fossa in pre-RT-DCE-MRI at a median PSA of 0.51 ng/ml (mean 0.74 ng/mL, range 0.11 to 2.38 ng/mL). These pre RT enhancing nodules disappeared in post treatment DCE-MRI while PSA showed biochemical remission after RT. Therefore these nodules were considered as highly specific for macroscopic local prostate cancer recurrence. 11/33 patients had normal post-prostatectomy MRI findings at median PSA of 0.22 ng/mL (mean 0.24 ng/mL, range 0.08 and 0.53 ng/mL) without changes after salvage RT. Calculated sensitivity for the MRI identification of the location of the source of the PSA recurrence within the prostatic bed was 72% per lesion for all cases and reached 100% at PSA-levels >0.53 ng/mL. Specificity was 100%.
Conclusions: Enhancing nodules in the DCE-MRI of the post-prostatectomy fossa can be detected depending on the PSA-level with high sensitivity and specifitiy. Thus DCE-MRI without endorectal coil, which can simultaneously be used for RT planning, may be a valuable tool to detect local recurrence even at low PSA-levels (>0.11 ng/mL), and may be used for dose escalation on macroscopic sites of local recurrence.

7010 POSTER DISCUSSION

The Impact of Rectal Distension Present on Planning Scans on Localized Prostate Cancer Outcomes in the Era of Image-guided Radiotherapy

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Background: Rectal distension (RD) at time of radiation planning has been associated with lower rates of biochemical progression free survival (bPFS). Use of daily image-guided radiotherapy (IGRT) on prostate may overcome prostatic displacement from RD. We review the impact of RD on prostate cancer outcomes in patients treated with daily IGRT.
Methods and Materials: 189 localized prostate cancer patients were treated with daily IGRT on implanted fiducials from 2001–2003. Patients treated with neoadjuvant/adjuvant hormone therapy were excluded. All patients received 79.8 Gy in 42 fractions delivered via 3D conformal radiotherapy (88.9%) or intensity modulated radiotherapy (11.1%). Clinical target volume (CTV) was prostate +/- seminal vesicles. The planning target volume was a 10 mm expansion on the CTV in all directions except for posteriorly where a 7 mm margin was used. Six RD parameters were measured on CT simulation scans: rectal length (RL); rectal volume (RV); average cross sectional area (CSA); superior rectal diameter (SRD); inferior rectal diameter (IRD); and average rectal diameter (ARD). The primary end-point was the impact of the RD on bPFS using the PSA nadir + 2 definition. After adjusting for T-stage (T1 vs T2+) and risk-category (low vs intermediate vs high), associations between bPFS and RD were determined through multivariate analysis using a Cox-proportional hazard model. Secondary end-points were physician scored RTOG acute/late gastrointestinal (GI) and genitourinary (GU) toxicity scores.

Rectal distension parameter	Median distension (range)	Hazard Ratio	95% Confidence Interval
Rectal length	7.9 cm (5.6–12.4)	0.98	0.74–1.31
Rectal volume	49.8 cm^3 (20.9–123.6)	1.00	0.99–1.02
Average cross-sectional area	6.4 cm^2 (3.1–13.4)	1.03	0.89–1.18
Superior rectal diameter	3.0 cm (1.3−6.4)	0.87	0.62–1.21
Inferior rectal diameter	2.6 cm (1.5−4.3)	1.14	0.61–2.10
Average rectal diameter	2.9 cm (2.0−4.3)	0.95	0.47–1.94

Results: Median follow-up was 7.7 years for patients alive at last visit. 84.1% of patients had a T-category of T1a-T2a (T2b/T2c 14.3%; >T2c or Tx 1.6%). Low or intermediate risk disease was 92.6% of patients, while 7.4% had high-risk disease. The 7-year bPFS rate was 78.7%. There were no significant associations between any of the RD parameters and bPFS (see table). Acute GI toxicity grade >2 was 0%. Acute GU toxicity grade >2 was 5.3%. There were 2 events of acute grade 4 urinary obstruction requiring catherization. Late GI toxicity grade >2 was 1.1%. Late GU toxicity >2 was 1.1%. No late GU or GI grade 4 toxicities were reported.
Conclusion: RD does not appear to impact bPFS when patients are treated with daily IGRT on prostate. Severe acute or late toxicity was uncommon and bPFS is consistent with other reports.

7011 POSTER DISCUSSION

Cellular and Humoral Immune System Activation by Sipuleucel-T − Preliminary Data From the OpenACT Phase 2 Trial

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Background: Sipuleucel-T is an autologous cellular immunotherapy designed to stimulate an immune response against prostate cancer. It is made from peripheral blood mononuclear cells (PBMCs) cultured ex vivo with a recombinant fusion antigen, PA2024 comprising prostatic acid phosphatase [PAP] linked to granulocyte-macrophage colony-stimulating factor [GM-CSF]). Sipuleucel-T has demonstrated improved overall survival (OS) in men with asymptomatic or minimally symptomatic metastatic castrate resistant prostate cancer (mCRPC). OpenACT is a Dendreon-sponsored Phase 2 trial, designed to further evaluate the safety and immune responses in mCRPC patients (pts). Survival follow-up is ongoing.
Materials and Methods: Sipuleucel-T was administered every 2 weeks (wks) $\times$ 3 and antigen presenting cell (APC) activation (CD54 upregulation) was assessed by flow cytometry. In vivo responses to PA2024 and PAP antigens were assessed at baseline and 2 wks after the 3rd infusion by IFNγ ELISPOT, ^{3}H-thymidine T cell proliferation assays; humoral responses were measured by ELISA. Cytokines were profiled during manufacture of sipuleucel-T and in pt serum before and after treatment (multiplex MSD assay).
Results: 104 pts were enrolled. Following the manufacture of sipuleucel-T, CD54 upregulation was greater at the 2nd and 3rd infusions, suggesting a prime-boost phenomenon. Analysis of the culture supernatants showed an increase in T cell activation-associated cytokines (IL-2, IL-4, IL-5, IL-6, IL-10, IL-13, IFNγ, and TNFα) after the 1st infusion. Cytokines associated with APCs (IL-8, IL-12p70, IL-1β, MCP-1, MIP-1β, TARC, and Eotaxin) were elevated. Compared to baseline, humoral responses against PAP and PA2024 after therapy were robust ($P < 0.001$ for both). Post-treatment IFNγ ELISPOT responses to PA2024 and PAP were increased from baseline ($P < 0.001$ and 0.073, respectively) as well as proliferative responses ($P < 0.001$ and 0.003, respectively). Serum cytokines associated with immune activation were increased from baseline (IL-6, TNFα, and IL-10 [$P < 0.05$]). Prior docetaxel exposure (28% of treated pts) did not adversely affect immune responses. Adverse events reported here were comparable to those reported in the pivotal Phase 3 IMPACT trial.
Conclusions: Sipuleucel-T generates a prime-boost immune response in pts with mCRPC by activating the immune system. The humoral response to PAP and newly reported serum cytokine profiles provide support for sipuleucel-T's mechanism of action.

7012 POSTER DISCUSSION

Patients Treated With Sipuleucel-T Who Had Prior Docetaxel Had Positive Immune Responses and Survival Benefit

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Background: Sipuleucel-T, an FDA-approved therapy for men with asymptomatic or minimally symptomatic metastatic castrate resistant (hormone refractory) prostate cancer, has been demonstrated to prolong