Retrospective chart review was performed to identify patients with T3 prostate cancer treated with combination EBRT and HDR brachytherapy boost between July 1997 and September 2014. Biochemical recurrence (BCR), defined as prostate specific antigen (PSA) nadir + 2 ng/mL, locoregional recurrence (LRR), distant metastases (DM), and prostate-cancer specific mortality (PCSM) were estimated using cumulative incidence and subdistribution hazard ratio (SHR) competing risk analysis. Overall survival (OS) was estimated using Kaplan Meier product limit estimator, with Cox proportional hazards modeling used to analyze associations between pre-treatment characteristics and survival outcomes.

Results

Of 185 patients, 139 (75.1%) had T3a and 46 (24.9%) had T3b disease. Gleason 8-10 disease was present in 87 (47.3%) patients and the median PSA was 9.3 (interquartile range [IQR] from 25th to 75th percentile, 5.8-19.4). Nearly all patients received whole pelvis EBRT (178, 96.2%) and androgen deprivation therapy (95.7%, median duration 11 months).

The median follow-up time was 89 months (IQR 49-122). The 8-year BCR rate was 29%; 26.1% for T3a and 38.3% for T3b (SHR 1.5, 95% CI 0.9-2.7, p = 0.15). The 8-year LRR rate was 7.9%, 5.2% for T3a and 16.8% for T3b (SHR 2.3 95% CI 0.9-6.1, p = 0.09). The 8-year DM rate was 11.9%, 9.2% for T3a and 21.3% for T3b (SHR 3.0, 95% CI 1.5-6.2, p = 0.003). The 8-year PCSM rate was 3.6%, 1.9% for T3a and 9.1% for T3b (SHR 6.1, 95% CI 1.6-23.7, p = 0.008). The 8-year OS rate was 90.1%, 91.5% for T3a and 85.7% for T3b disease (Cox HR 2.1, 95% CI 0.9-4.7, p = 0.07). Grade 3 or higher gastrointestinal and genitourinary (GU) toxicities were rare; only one patient had a grade 3 chronic GU toxicity (0.6%).**Conclusion**

HDR brachytherapy boost for T3 prostate cancer was well tolerated. Patients with T3b disease had higher rates of LRR and statistically significantly higher rates of DM and PCSM. This suggests HDR brachytherapy boost is safe and efficacious for T3 disease, but combination chemohormonal agents may be necessary to address the high metastatic risk in patients with locally advanced prostate cancer, particularly for T3b disease.

PO-1056 Ultra-Focal Salvage HDR-brachytherapy for recurrent prostate cancer: a single institution experience

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Purpose or Objective

To evaluate the clinical outcome of ultra-focal salvage brachytherapy (UFSBT) after primary external beam radiotherapy or LDR-brachytherapy in terms of toxicity and efficacy, based on a single institution experience.

Material and Methods

Between June 2016 and June 2018 twenty patients underwent UFSBT. Patients were initially treated for primary prostate cancer with external beam radiotherapy or LDR brachytherapy. Following the development of biochemical failures (based on the Phoenix criteria), the presence of exclusive local recurrences was confirmed using Ga-68-PSMA-PET/CT and multi-parameter MRI. Treatment procedure consisted of an ultrasound guided catheter placement followed by the definitive planning using dedicated CT with co-registered PET/CT and MRI datasets. Gross tumor volume (GTV) delineation was performed on these datasets, following cognitive co-registration focusing on the region of the treatment. A margin of 5 mm (constrained to the prostatic urethra and the anterior rectal wall) was added to generate the Clinical target volume (CTV). All patients were treated using a MicroSelectron HDR (Elekta AB, Stockholm, Sweden). The prescription dose was a single fraction of 19 Gy to the CTV. The dose distribution was graphically optimized for maximal CTV coverage while respecting the pre-defined dose constraints for the organs at risk: Bladder_D1cc ≤ 12 Gy, Rectum_D1cc ≤ 12 Gy and Urethra_D10 ≤ 17.7 Gy. Patients were followed up every 3 months for Prostate Specific Antigen (PSA) and toxicity assessment using CTCAE version 4.0.

Results

Sixteen patients received external beam radiotherapy and four LDR-brachytherapy as primary treatment. The mean interval between the primary treatment and salvage brachytherapy was 9.2 years (range 4-16). At presentation for UFSBT, three patients received already a hormonal treatment for their biochemical recurrence. This treatment was stopped at the day of intervention. So none of the patients received concomitant or adjuvant hormonal treatment in association with the salvage brachytherapy procedure. The mean age at time of UFSBT was 72 years (range: 56-88). On average nine (range 6-12) needles were inserted. The mean CTV was 9.4 cc (range: 4.7-24.0). All relevant dose constraints were respected (average ± standard deviation): CTV_D95: 19±2.1 Gy, Bladder_D1cc: 5.5±3 Gy, Rectum_D1cc: 9.2±2.2 Gy, Urethra_D10: 10.8±3.3 Gy.

Median follow-up after UFSBT was 12 months (range: 3.9-28.0), with two biochemical recurrences to date. One of these 2 recurrent patients refused additional investigation and was put under hormonal treatment, while the other one remained locally uncured (persistent and identical prostate lesion at 12 months follow-up). Toxicity was limited to GU and GI grades I in all treated patients.

Conclusion

Ultra-focal salvage brachytherapy using HDR with a single fraction of 19 Gy offers an effective treatment option with promising local control and limited toxicity.

PO-1057 Salvage high-dose-brachytherapy for recurrent prostate cancer patients: 10 years of experience.

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Purpose or Objective

The analysis of mature results of salvage high-dose-rate brachytherapy (sHDRBT) for recurrent prostate cancer.

Material and Methods

This retrospective study on sHDRBT analyses prostate cancer patients suffering local failure (biopsy confirmed) after primary irradiation. They were included in this research consecutively from the introduction of this method to achieve median follow-up >5 years. Planned treatment schedule was interstitial sHDRBT in three fractions of 10 Gy, every two weeks. Acute and late toxicity of the treatment was assessed using the RTOG/RTOG grading criteria. Biochemical relapse was defined according to the Phoenix consensus. 5-year biochemical failure-free survival was calculated.

Results

83 men were enrolled in our study, treated from 2008 to 2012. Median follow – up time was 61 months (11– 111 months). Median age was 70 years (55 – 80). Median relapse peak PSA was 3,1 ng/ml (0,065 – 19,9 ng/ml). Median PSA at last follow-up was 0,358 ng/ml (0,008-2470,74 ng/ml). 80 patients suffered from urinary toxicity grade 2 or below. 11 patients developed late urinary toxicity grade 3. 6 patients had late rectal toxicity grade 1. There were 34 biochemical relapses. 25 patients suffered from metastases. 5- year biochemical failure-free survival was 59%.