ID – 19. **Elective pelvic nodal irradiation combined with a single-shot boost for the focal nodal in the Image-guided VMAT of oligorecurrent nodal failures from prostate cancer: preliminary experience**

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OBJECTIVE

Radiation therapy (RT) as salvage treatment for oligometastatic (≤3 metastases) pelvic nodal relapses of prostate cancer (PCa) is promising in terms of local control with low treatment-related toxicity. Both stereotactic body RT (SBRT) and elective pelvic nodal RT (ENRT) have been used in this setting and are considered valid, even if still investigational treatment options.

However, the best way to irradiate patients with an exclusive oligometastatic nodal disease remains debated. Most subsequent relapses after only SBRT for nodal recurrences are nodal and oligometastatic. The concept of spatial cooperation between SBRT and ENRT is also attractive in this kind of clinical scenario.

Hence, in this area we present our preliminary results in terms of early outcomes and toxicity data combining ENRT and SBRT on the pelvic nodal relapses after primary treatment for PCa.

METHODS

From April 2017 to March 2018, 12 patients with 15 isolated lymph nodes of recurrent prostate cancer were treated combining ENRT with SBRT on pelvic nodal relapses in single-institution retrospective study of the University Hospital of Udine (ASUIUD). Patient features are summarized in Table 1.

All patients underwent Choline-PET or PSMA PET/ CT to assess local failure.

The prophylactic lymph nodal delineations followed the Radiation Therapy Oncology Group (RTOG) guidelines. A three-dimensional volumetric margin of 5 mm was grown all around the prophylactic and gross nodal clinical target volume to generate the respective nodal PTV.

A SIB schema was designed to deliver 54 Gy (1.8 Gy/fraction) to the pelvic lymph nodals, and 60 Gy (2 Gy/fraction) to the positive nodals. The SBRT treatment was designed to deliver in one session 10 Gy to the positive nodes. The delivery techniques employed were IMRT and VMAT.

The main focus planning was achieving good target coverage (V95≥95) with optimal organ sparing. For organs at risk, the dose constraints used are derived from QUANTEC

Neoadjuvant ADT was administered for to all patients for a median time of 3 months.

Routine institutional image-based patient position verification protocols foresaw daily on-line matching by CBCT. The acute and late toxicities were recorded using the RTOG/EORTC scale. Restaging with TC/PET was performed 3 months after the end of treatment.

Table 1. Patient characteristics (N=12 pts)

Characteristic	Value
Age, yr	
Mean ± DS	71 ± 6
Median (range)	72 (67-80)
Primary treatment	
EBRT	1
Surgery	6
Surgery + EBRT	5
stage - N	
T2b-T2c	7
T3a-T3b	5
Gleason score	
6 - N	2
7 – N	6
≥8 – N	4
Progression-free survival mo	
<12	0
>12	12
PET imaging	
PSMA - N	3
Colina - N	9
Baseline PSA, ng/ml	
Median	0.9
≥ 0,5-1 - N	6
≥ 1 - N	6
Number of treated nodes	
1	9
2	3
≥3	0

Abbreviations: SD = standard deviation; PSA = prostate –specific antigen, Yr=years; mo= months; N = number of patients, PSMA = prostate-specific membrane antigen

RESULTS

The median follow-up duration was 6 months (range: 3 to 12 months). The median age was 70 years (range: 61–78 years).

The median time from primary cancer treatment to ENRT combined with SBRT was 3.4 years (range 2,4-7.9 years) with a primary Gleason score of ≥ 8 in 4 patients. All patients were treated to pelvic nodal site. One and two oligometastatic lesions were treated in 75% and 25% of patients, respectively.

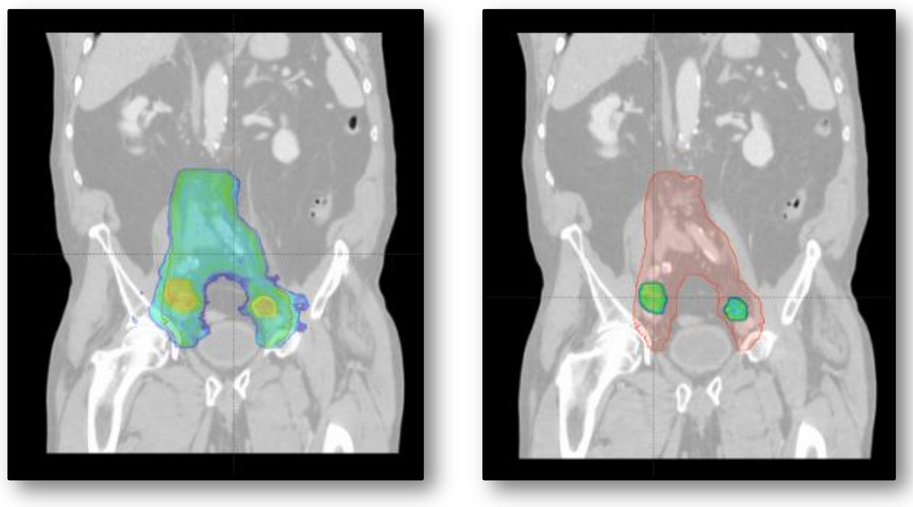
Median PSA value at the time of the Choline-PET and PSMA PET/ CT was 1.16 ng/ml and 0,59 ng/ml respectively.

All patients completed the prescribed radiation treatment, with no interruption.

Acute GU toxicity of grade 1 (increase in urinary frequency) was observed in one patient. The incidence of acute GI and GU toxicity of any grade were 14.2% and 35.7%, respectively. No acute and late toxicity ≥ 2 was noted.

Biochemical response seems to be complete at 3 month and 10 patients underwent a restaging with TC/PET 3–6 months after the end of treatment with complete metabolic response.

Coronal view of imrt dosimetry:
left: phase-1 ENRT treatment; right: Boost with SBRT approach



CONCLUSION

Combined treatment modalities is safe in the treatment for nodal metacrochronous oligometastatic castration-naive prostate cancer after primary treatment for PCa.

These results may provide a basis for a larger phase II study to examine the role of the elective pelvic nodal irradiation combined with focal nodal SBRT in this population currently treated only with focal nodal SBRT.