



Michele Rigo<sup>1</sup>, Rosario Mazzola<sup>1</sup>, Vanessa Figlia<sup>1</sup>, Luca Nicosia<sup>1</sup>, Niccolò Giaj-Levra<sup>1</sup>, Francesco Ricchetti<sup>1</sup>, Ruggero Ruggieri<sup>1</sup>, Filippo Alongi<sup>1,2</sup>

<sup>1</sup> Radiation Oncology, IRCCS Sacro Cuore Don Calabria Hospital, Negrar-Verona, Italy  
<sup>2</sup> University of Brescia, Brescia, Italy

## Aims

To investigate the efficacy and toxicity of 68Ga-PSMA PET-CT-guided stereotactic radiotherapy (SBRT) in the treatment of oligometastatic prostate cancer.

## Methods

A total of 34 prostate cancer patients with biochemical relapse (22 castration sensitive and 12 castration resistant) were treated with Volumetric Modulated Arc Therapy and Image-Guided RT (VMAT-IGRT) on  $\leq 5$  metastatic sites detected by 68Ga PSMA PET-CT.

Androgen deprivation therapy was continued in castration resistant (CR) patients.

## Results

A total of 74 metastases in 34 patients were treated with SBRT. The involved sites were pelvic lymph or paraaortic nodes ( $n = 53$ ), bone ( $n = 13$ ), seminal vesicles ( $n = 1$ ), lung metastases ( $n = 2$ ) and relapses in prostate or prostatic bed ( $n = 5$ ). The median PSA prior to RT was 0.65 ng/mL (range 0.14 – 6.49 ng/mL), the median PSA-doubling time was 5.9 months (range 0.61 – 140) and the median PSA post RT was 0.61 ng/mL (range 0.02-30). A median dose of 35 Gy (range 25–70 Gy) was delivered by VMAT-IGRT in 5–10 fractions (the median BED2Gy was 144 Gy). At a median follow-up of 12.6 months (range 3–24 months), 16 patients out of 34 patients irradiated (47%) were in remission and 18 were in progression. In particular, 8 out of 12 castration resistant (CR) patients (67%) and 8 out of 22 castration sensitive (CS) patients (36%) were in progression. The actuarial 1-year LC, PFS and CSS rates were 93, 47 and 100%. Systemic treatment free survival was 8 months (range 2-24 months). No one patient experienced grade  $\geq 3$  acute gastrointestinal or urinary toxicity.

## Conclusions

By providing optimal LC, low toxicity and a promising PFS, 68Ga PSMA PET-CT-guided metastases directed SBRT may be considered a promising treatment strategy in patients with oligometastatic prostate cancer, allowing to postpone systemic therapies. Further studies could confirm this promising findings.