P035 Choline PET guided salvage intensity modulated radiation therapy (sIMRT) for Oligometastatic Castrate Resistant Prostate Cancer (OCRPC)

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Introduction & Objectives: C11 Choline PET (CholPET) and other PET agents enable early detection of recurrent prostate cancer (CaP). CholPET guided sIMRT to regional lymph nodes (LNs) is well-tolerated and yields low rates of in-field recurrence (IFR) for patients (pts) with castrate sensitive prostate cancer (CaP). In this study the role of such treatment in OCPRC pts is examined.

Materials & Methods: A retrospective review identified consecutive OCRPC pts who completed CholPET-guided sIMRT to LNs and osseous metastases (OM), if present. OCRPC pts were defined by testosterone <50 ng/dL and ≤6 lesions. sIMRT mode dose and fractionation was 45 Gy in 25 fractions (fxs) prescribed to the LN region(s) at risk with a simultaneous integrated boost of 56.25 Gy to choline-avid LNs. Clinical outcomes from the time of completion of sIMRT were analyzed. PSA failure was defined as >0.2 ng/mL. Radiographic response was defined by a decrease in size and/or choline avidity of treated lesions, and IFR was defined as occurring within the 50% prescription isovolume. Kaplan-Meier and competing risk methods were used.

Results: Between 2013-16, 29 OCRPC pts received sIMRT, and median age was 71 years (yrs) (range 57-85). Median follow up was 49 months (mos) (IQR 42-56). Radical prostatectomy was primary treatment in 23 pts (79%), and 17 pts (59%) had Gleason grade group ≥4. Treated sub-diaphragmatic LN regions included pelvic only (8 pts, 28%), proximal common iliac/para-aortic only (10 pts, 34%), and both (11 pts, 38%). Four pts (14%) also had choline-avid LNs above the diaphragm. Eight (28%) pts had a history of OM, 3 of whom had active choline-avid OM (range 1-2) that were treated with sIMRT. Seventeen pts (59%) received new systemic therapy concomitantly with sIMRT: 8 (28%) advanced androgen deprivation therapy only, 4 (14%) chemotherapy, and 5 (17%) both. Twenty-one pts (72%) experienced a PSA decrease of ≥50% after sIMRT, and of 21 pts who achieved a PSA <0.2 ng/mL, median time to PSA failure was 15 mos (95% CI 12-28). Twenty-three pts (79%) had a radiographic response on first follow-up imaging (median 6 mos, range 2-19). Median new distant metastasis free survival was 16 mos (95% CI 4-28). Two pts (7%) had IFR only, 14 pts (48%) had out-of-field recurrence only, and 5 pts (17%) had both. Overall survival was 89% at 3 yrs (95% CI 79-100) and 50% at 5 yrs (95% CI 31-81). No radiation-related toxicity grade ≥3 was observed during sIMRT.

Conclusions: Consistent with observations in castrate sensitive CaP, pts with OCRPC treated with CholPET-guided sIMRT experience high rates of biochemical and radiographic responses with low rates of IFR, including those pts treated without additional systemic agents. Compared to historical controls, these results suggest benefit of such therapy and provide data to design prospective trials.