

AbstractID: 2748 Title: The Impact of Primary Gleason Grade on Biochemical Outcome Following Brachytherapy for Hormone Naïve Gleason Score 7 Prostate Cancer

Purpose: Biochemical outcome in Gleason score 7 patients with dominant pattern 4 histology is thought to be inferior to those Gleason score 7 patients with primary Gleason grade 3, based on conclusions from radical prostatectomy studies. In this study, we evaluate the effect of the dominant histologic pattern in Gleason score 7 prostate cancer on biochemical progression-free survival following prostate brachytherapy.

Materials and Methods: 273 consecutive Gleason score patients underwent permanent interstitial brachytherapy for prostate cancer without androgen deprivation therapy. All patients underwent brachytherapy more than 3 years prior to analysis. Biochemical progression-free survival was defined by a PSA cutpoint ≤ 0.4 ng/mL after nadir or by the ASTRO consensus definition. The median follow-up was 4.7 years. Clinical, treatment and dosimetric parameters evaluated for biochemical progression-free survival included primary Gleason grade, clinical T-stage, pretreatment PSA, risk group, percent positive biopsies, perineural invasion, patient age, isotope, supplemental XRT, prostate volume, brachytherapy planning volume, the percent of the target volume receiving 100%, 150%, and 200% of the prescribed dose (V100/150/200), the minimum percent of the prescribed dose covering 90% of the target volume (D90), tobacco consumption, hypertension and diabetes.

Results: The actuarial 8-year biochemical progression-free survival rate was 94.5% and 94.8% using either a PSA cutpoint ≤ 0.4 ng/mL after nadir or the ASTRO consensus definition, respectively. For biochemically disease-free patients, the median posttreatment PSA was < 0.1 ng/mL. When stratified by the dominant histologic pattern, no statistical difference in outcome was noted for any of the evaluated parameters. In forward conditional Cox regression analysis, pretreatment PSA and percent positive biopsies were statistically significant predictors of biochemical outcome.

Conclusions: In hormone naïve Gleason score 7 patients, prostate brachytherapy results in a high probability of 8-year biochemical progression-free survival and is independent of Gleason 3+4 versus 4+3 histology.