2383 Effect of Prostate Volume on Urinary Symptoms after IMRT for Prostate Cancer

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Purpose/Objective(s): Pretreatment prostate volume may correlate with genitourinary (GU) toxicity after radiotherapy. We evaluated this effect using standardized symptom and toxicity scores.
Materials/Methods: We retrospectively studied 353 men with localized prostate cancer, treated with IMRT (77.4Gy-81Gy). Radiation was given using RapidArc or 7-field IMRT and daily imaging. Patients completed International Prostate Symptom Score (IPSS) at 3 intervals: pre-tx (IPSS_Pre), 1 month post-tx (IPSS_1mo), and 1 yr post-tx (IPSS_1yr). GU toxicity was graded 1yr post-tx, per CTCAEv4.0. Patients were divided into 3 ultrasound volume groups (grps): <30g; 30-60g; >60g. ΔIPSS (post- minus pre-tx IPSS) was calculated at 1 month (ΔIPSS_1mo) and 1 yr (ΔIPSS_1yr), with ΔIPSS<0 as improvement from baseline. Statistical correlations were determined.
Results: None of the 353 men (median tx age 69; range 47-87) developed GU toxicity above CTCAE grade 2. N = 9 with grade 1 toxicity; N = 2 with grade 2 toxicity. No correlation was noted with GU toxicity and prostate volume. Positive correlation was noted between IPSS_Pre and prostate volume ($p<.05$, Spearman test). Correlations were seen between volume and ΔIPSS_1mo ($p=.001$) and ΔIPSS_1yr ($p=.004$), with greater improvement in larger glands. After grouping: N = 121 in <30g grp (mean vol. = 23.05g; range 7.1-29.9), N = 178 in 30-60g grp (mean 41.98g; range 30.0-60.0), N = 54 in >60g grp (mean 80.01g; range 61.0-161.0). For <30g grp: IPSS_1mo (median = 10) > IPSS_Pre (median = 6) > IPSS_1yr (median = 5). For 30-60g grp: IPSS_1mo (median = 10) > IPSS_Pre (median = 7) and IPSS_1yr (median = 7). For >60g grp: IPSS_Pre (median = 12) > IPSS_1mo (median = 10) > IPSS_1yr (median = 7). In the >60g grp, positive correlation was seen between volumes and both IPSS_Pre and IPSS_1yr ($p<.05$); this grp also had improved ΔIPSS_1mo (mean = -0.167) and ΔIPSS_1yr (mean = -2.56) compared to <30g grp (mean ΔIPSS_1mo = +3.93; mean ΔIPSS_1yr = +0.206) and 30-60g grp (mean ΔIPSS_1mo = +2.80; mean ΔIPSS_1yr = -0.353) on one-way ANOVA ($p<.05$). 67/353 men were on α-blocker, with N = 31 in the 30-60g grp showing lower ΔIPSS_1mo (mean = +0.1935) than non-α-blocker (mean ΔIPSS_1mo = +3.35), and improved ΔIPSS_1yr (mean = -3.90) than non-α-blocker (mean ΔIPSS_1yr = +0.395) on within-grp t-test ($p<.05$).
Conclusions: Gland size may impact management decisions. Our study shows improved urinary profile after IMRT at 1mo and 1yr from pre-tx baseline, in patients with larger glands (>60g), without increased severe GU toxicity. Further, these patients showed continual improvement in IPSS after treatment. Although <30g and 30-60g prostate groups showed acute worsening with IPSS_1mo > IPSS_Pre, both groups returned to baseline at 1yr. Alpha-blocker tx may most benefit the 30-60g group. IMRT shows minimal urinary toxicity across all volumes.

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