

## Predictive Factors for Urinary Morbidity after I-125 Prostate Brachytherapy

**Introduction and Objective:** One of the major complications after iodine-125 (I-125) prostate brachytherapy is urinary toxicity. We aimed to develop a set of clinical parameters as a predictor of urinary morbidity after prostate brachytherapy for localized prostate cancer.

**Materials and Methods:** Using the clinical data of 288 consecutive patients who received I-125 prostate brachytherapy for localized prostate cancer, we developed the predictive factors for urinary morbidity after brachytherapy. We assessed the International Prostate Symptom Score (IPSS), age, tumor stage, PSA level at diagnosis, use of neoadjuvant hormone therapy, radiation dose received by 90% of the prostate (D90) and received by 30% of urethra (UD30) and measured total prostate volume (TPV) using transrectal ultrasonography. Multivariate logistic regression analysis was used to examine which factors were associated with urinary morbidity after brachytherapy.

**Results:** A mean follow-up was 58.8 months with ranging from 24 to 90 months. A total of 167 patients (58.0 %) received more than 3 months of neoadjuvant hormonal therapy. The mean pretreatment IPSS was 8.3 and the mean peak IPSS was 15.9 at 1 month after seed implantation. The mean IPSS of patients with large TPV (more than 35 cc), high D90 (more than 160 Gy) was significantly higher than that of patients with small prostate, low TPV, and low D90 at 1, 3, 6, 12, 18, and 24 months after brachytherapy. In multivariate analysis, TPV ( $\leq 35$  vs.  $>35$  cc) and D90 ( $\leq 160$  vs.  $>160$  Gy) were independent predictors of urinary toxicity at 3, 6 and 12 months after seed implantation. Only TPV was independent predictor of severe urinary toxicity up to 24 months after seed implantation ( $p=0.02$ ). Age ( $\leq 65$  cc vs.  $>65$ ,  $p=0.24$ ), PSA level ( $\leq 10$  vs.  $>10$  ng/ml,  $p = 0.98$ ), stage (T1c or not,  $p=0.67$ ), use of neoadjuvant hormone therapy ( $p = 0.56$ ), and UD30 ( $\leq 200$  vs.  $>200$  Gy) had no significant effect for the risk of urinary toxicity after brachytherapy.

**Conclusions:** High TPV and D90 were independent risk factors for urinary morbidity after prostate brachytherapy. TPV is the most important predictor of severe urinary morbidity up to 24 months after brachytherapy.