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A retrospective analysis after low-dose-rate prostate brachytherapy with permanent ^{125}I seed implant: clinical and dosimetric results in 70 patients

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ABSTRACT

Aims and background. To evaluate the biochemical disease-free survival (bDFS) rate after ^{125}I permanent-implant prostate brachytherapy.

Methods. Patients with a diagnosis of prostate adenocarcinoma and adequate PSA follow-up were selected for this retrospective study. Brachytherapy with permanent ^{125}I seeds was performed as monotherapy, with a prescribed dose of 145 Gy to the prostate. Patients were stratified into recurrence risk groups according to the National Comprehensive Cancer Network (NCCN) guidelines. Biochemical failure was defined using the American Society of Therapeutic Radiology and Oncology (ASTRO) guidelines. The post-implant D90 (defined as the minimum dose covering 90% of the prostate) was obtained for each patient. Two cutoff points were used to test the correlation between D90 and bDFS results: 130 Gy and 140 Gy. bDFS was calculated from the implant date to the date of biochemical recurrence. Univariate and multivariate analysis were performed using the SPSS software and included clinical stage, pretreatment PSA, Gleason score (GS), androgen deprivation therapy, D90, and risk groups. In the univariate analysis we used a cutoff point of 5.89 ng/mL for PSA and 5 for GS.

Results. From June 2003 to April 2007, 70 patients were analyzed. The patients' distribution into recurrence risk groups was as follows: 39 patients (56%) in the low-risk group, 23 patients (33%) in the intermediate-risk group, and 8 patients (11%) in the high-risk group. At a median follow-up of 47 months (range, 19-70 months) bDFS was 88.4%, with a global actuarial 5-year bDFS of 86%. Disease-related factors including initial PSA level, GS and risk group were significant predictors of biochemical failure (P = 0.01, P = 0.01, P = 0.006, respectively). In multivariate analysis, risk group (P = 0.005) and GS (P = 0.03) were statistically significant.

Conclusion. Our data are in agreement with those in the literature and, despite the short follow-up, confirm the advantage of brachytherapy for patients at low and intermediate risk of recurrence.

Key words: prostate brachytherapy, risk groups, biochemical disease-free survival, prostate-specific antigen.

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