prostate cancer. The aim of this study is to determine the significance of Ki-67 and ERG as a biomarker of patient outcome for prostate cancer patients treated with radiotherapy.
Methods and materials. Pretreatment archival prostate biopsy tumor tissue was available from 339 stage T1–T4 prostate cancer patients treated with external beam radiotherapy alone or in combination with androgen deprivation therapy (ADT) between 2003 and 2005. All patients were diagnosed by needle biopsy and none of them had evidence of metastasis. Paraffin-embedded prostate cancer tissue was available in 88/339 patients. Immunohistochemical staining of Ki-67 was used to determine the proliferation index in each case. The Ki-67 was expressed as a percentage (<3 vs ≥3) of immunoreactive tumor cells to the total counted tumor cells. ERG-EP11 monoclonal antibody was used to determine the presence of ERG protein. A positive reaction was considered if the tumor cells showed a nuclear staining to ERG-EP11 antibody. Factors associated to failure, survival and progression were analysed. Estimates of survival were determined using Kaplan–Meier methods. Unadjusted and adjusted hazard ratios were calculated using the Cox regression model.
Results. Mean age was 70 years (range 56–84). T1–T2 stage 276 patients (81.5%), T3 61 patients (18%). Initial PSA (ng/ml) was <20, 279 patients (82.4%) and >20, 60 patients (17.6%). Forty-nine percent of patients had Gleason score ≥ 7. Median radiation dose to prostate was 74 Gy. Whole pelvic irradiation was administered in 44%, and 75% received ADT. Expression of Ki-67 ≥ 3% was observed in 64/82 patients (78%) and for ERG+ in 54/82 patients (66%) for the analyzed cohort. Intermediate (Ki-67 ≥ 3%, 13/20 pts, 65%, and ERG+, 14/20 pts, 70%), and high-risk (Ki-67 ≥ 3%, 45/53 pts, 85%, and ERG+, 35/53 pts, 66%) groups were the highest expression observed (p <0.05). With a median follow-up of 7.28 years (range 1.4–15 years), the 10-year OS for Ki-67 < 3 vs Ki-67 ≥ 3% was 89% and 87%, and 93% and 85% for ERG− vs ERG+. The 10-year BRFS for Ki-67 < 3 vs Ki-67 ≥ 3% was 100% and 73% (p 0.06), and 87% and 77% for ERG− vs ERG+. On univariate analysis (for entire cohort, 339 pts), initial psa (p 0.01), Gleason (p 0.001), and nadir psa post-RT (p 0.001) were significantly associated with biochemical failure. Ki-67 ≥ 3% was associated with a trend biochemical failure (p 0.063). Estimates of survival and Cox regression model for 88/339 pts will be presented.
Conclusions. Expression of Ki-67 ≥ 3% and ERG+ obtained from pretreatment prostate cancer biopsies could be used as predictor biomarkers of advanced stages, failure and survival after treatment with radiotherapy.

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IMRT for prostate cancer: Preliminary results of toxicity

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Introduction. The intensity-modulated radiotherapy (IMRT) for prostate cancer permits further dose escalation and appears to be less toxic compared to three-dimensional conformal radiotherapy (3D-CRT).
Objectives. To report the incidence of treatment-related toxicity after IMRT for prostate cancer.
Methods. Between January 2009 and December 2011, 79 patients with prostate cancer were treated with IMRT with doses ranging from 76 to 80 Gy in 64 patients with stages T1–T4 prostate cancer and 66–76 Gy in 15 patients with a recurrence after prostatectomy. The median follow-up was 20.95 months (6.1–39.6). Gastrointestinal (GI) and genitourinary (GU) posttreatment toxicities were graded according to the RTOG Acute and Late Radiation Morbidity Scoring Criteria/Schema. Sexual toxicity was graded according to the National Cancer Institute's Common Terminology Criteria for Adverse Events (CTC 4.0). We evaluated the toxicity presented during radiotherapy = 0 months (0 m), at 3 months (3 m) and 6 months (6 m) after completion of therapy (Acute Toxicity). Finally, we evaluated the toxicity from 6 months of completing treatment to the last follow-up date (Late Toxicity).
Results. Grade ≥ 2 toxicities of non-operated patients: Acute GU toxicity: 0 m: 33.3%; 3 m: 3.2%; 6 m: 1.6%. Acute GI toxicity: 0 m: 1.6%; 3 m: 0%; 6 m: 0%. Late GU toxicity: 1.6%. Late GI toxicity: 0%. Late sexual toxicity: 31%. Grade ≥ 2 toxicities of operated patients: Acute GU toxicity: 0 m: 13.3%; 3 m: 0%; 6 m: 0%. Acute GI toxicity: 0 m: 0%; 3 m: 0%; 6 m: 0%. Late GU toxicity: 7.1%. Late GI toxicity: 0%. Late sexual toxicity was: 100%.
Conclusions. IMRT was feasible and sure, with low rates of serious acute toxicity and without any late grade 3–4 genitourinary or gastrointestinal toxicity despite the delivery of high radiation dose levels. Many non-operated patients preserved erection long term. More patients and longer follow-up are needed to confirm our results.

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Initial experience with prostate cancer stereotactic body radiation therapy (5.65 Gy × 8) using helical tomotherapy

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Introduction. Acute grade 3 toxicity is uncommon during stereotactic body radiation therapy (SBRT) for low-risk prostate cancer (PCa) using robotic radiosurgery (Katz, 2010; Freeman, 2011).
Purpose. Single-institution single-arm prospective study in low-intermediate PCa. Endpoint: To assess acute toxicity (to exclude > 5% men have grade3 GU or any grade3 GI).