

# Conformal radiotherapy of clinically localized prostate cancer: analysis of rectal and urinary toxicity and correlation with dose-volume parameters

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## ABSTRACT

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**Aims and background.** Rectal and urinary toxicities are the principal limiting factors in delivering a high target dose to patients affected by prostate cancer. The verification of such toxicity is an important step before starting a dose-escalation program. The present observational study reports on the acute and late rectal and urinary toxicity in relation with dose-volume parameters in 104 patients with localized prostate cancer treated with 3-dimensional conformal radiation therapy.

**Methods and study design.** One hundred and four patients with stage T1b-T3b prostate cancer were treated with three-dimensional conformal radiation therapy to a total dose of 74 Gy, 2 Gy per fraction. Rigid dose constraints were applied for rectum and bladder. Acute and late rectal and urinary toxicities were analyzed also in relation to dose-volume histograms. Biochemical relapse-free survival was defined according to the American Society of Therapeutic Radiation Oncology (ASTRO) criteria and to the RTOG-ASTRO Phoenix Consensus Conference Recommendations using the Kaplan-Meier method.

**Results.** No grade 3 toxicity was observed. Acute and late grade 2 toxicity rates were 5.8% and 9.0% for rectum and 12.5% and 2.0% for bladder, respectively. Rectal V70 influenced the occurrence of late grade 2 toxicity. A relationship between acute and late urinary toxicity was also found. After a median follow-up of 30 months (range, 20-50), the actuarial overall and biochemical relapse-free survival rates were 84% and 77%, respectively, with a significant difference between low-intermediate and high-risk patients.

**Conclusions.** Conformal radiotherapy to the dose of 74 Gy was administered with good compliance. The incidence of acute and late toxicity was relatively low in accord with our dose constraints. Rectal V70 proved to be a reliable prognosticator of late toxicity. Overall survival and biochemical relapse-free survival rates were more favorable for low and intermediate-risk and significantly less favorable for high-risk patients.

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**Key words:** prostate cancer, radiotherapy, toxicity.

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