3D-conformal hypofractionated radiotherapy for prostate cancer with daily transabdominal ultrasonography prostate localization: toxicity and outcome of a pilot study

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ABSTRACT

Aims and background. To evaluate the feasibility, toxicity and patient outcome of hypofractionated 3-dimensional conformal radiotherapy for low- and intermediate-risk prostate cancer, using daily an ultrasound targeting system (BAT™).

Methods. Between May 2005 and October 2006, 25 patients (cT1-T2, GS ≤7, mean initial PSA = 7.06 ng/ml) received a dose of 72 Gy in 30 fractions. Only the prostate was included in the clinical target volume. Immediately before each radiotherapy session, BAT™ ultrasound alignment was performed. Acute and late toxicity was evaluated according to the Radiation Therapy Oncology Group criteria; the Phoenix definition (PSA = nadir + 2 ng/ml) was applied to define biochemical failure. BAT™ localization data were provided for 300 out of 750 procedures.

Results. No interruptions in 3-dimensional conformal radiotherapy due to toxicity were registered. There was no acute rectal toxicity in 52% of patients; 28% had G1, 16% had G2, and 1 patient had a G3 event. No acute urinary toxicity was observed in 28% of the patients. G1 toxicity occurred in 40%, G2 in 28%, and G3 in 1 patient; no G4 event was observed. With an average follow-up of 45 months, one biochemical relapse was observed; late toxicity showed an excellent profile: 78% of the patients had no rectal toxicity, 16% had G1, and 1 patient had G2 toxicity. Most of the patients (68%) had no late urinary complications, whereas 32% had G1 toxicity. Localization data showed systematic and random errors in relation to some procedure biases.

Conclusions. Promising tumor control and toxicity profile were observed with this mildly hypofractionated BAT-based 3-dimensional conformal radiotherapy. Free full text available at www.tumorionline.it

Key words: hypofractionation, image-guided radiotherapy, prostate cancer, ultrasound imaging.

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