

Feasibility of helical tomotherapy for radical dose retreatment in pelvic area: a report of 4 cases

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ABSTRACT

Aims and background. To retrospectively determine acute toxicity and local control in patients with recurrence after definitive radiotherapy for prostate, bladder and rectal carcinoma.

Methods. Between September 2009 and March 2010, 4 patients with a prior history of pelvic radiotherapy were treated with helical tomotherapy. The prior course of radiotherapy was given for prostate cancer in 2 patients, bladder carcinoma in 1 patient and rectal carcinoma in 1 patient. The median prescribed dose of the prior course of radiotherapy was 6320 cGy (range, 5000-7600), and the median elapsed time between the first and second course was 17 months (range, 4-73). The total prescribed dose for tomotherapy retreatment was 60 Gy in 3 patients and 50 Gy in 1 patient. Hormone therapy was administered to 2 patients before and during radiation. No patient underwent surgical resection.

Results. The cumulative mean dose to the rectum ranged from 3813 to 6058 cGy; cumulative rectal maximum dose to 1 cc ranged from 6475 to 8780 cGy. Regarding the bladder, the cumulative mean dose was between 4384 and 7612 cGy; cumulative maximum dose to 1 cc ranged from 7560 to 9790 cGy. All patients completed the re-irradiation course. Acute genitourinary toxicity (RTOG scale) was grade 0 in 3 patients and grade 1 in 1 patient; acute gastrointestinal toxicity was grade 0 in 3 patients and grade 1 in 1 patient. With a median follow-up of 9 months (range, 7-12), late toxicity was G0 in all patients. Three patients showed partial response with computed tomography or magnetic resonance imaging, and 1 had a PSA decrease.

Conclusions. Re-irradiation with helical tomotherapy was well tolerated, with low rates of acute and late toxicity. It can be therefore considered a useful tool to improve local control in patients previously treated with radiotherapy. However, a larger number of patients and a longer follow-up are required to assess retreatment safety.

Key words: image-guided radiation therapy, intensity-modulated radiation therapy, pelvic radiotherapy, retreatment, tomotherapy.

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