

Brachytherapy of prostate cancer in patients with prior colorectal cancer

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Background

Patients with colorectal cancer are usually treated with external-beam radiation therapy (EBRT), surgery, and chemotherapy. These patients may develop a second primary of prostate cancer or may have local recurrent nonresectable colorectal cancer which may invade the prostate.

Because of previous radiation therapy and radical surgery, these patients are not candidates for a second EBRT or radical prostatectomy, and have no rectum for transrectal ultrasound-guided biopsy or transrectal ultrasound-guided transperineal brachytherapy. We report the only method of treatment for these patients using three-dimensional stereotactic system with computed tomography-guided brachytherapy with iodine 125 seeds. The low dose rate and high attenuation of iodine 125 seeds allows a second radiotherapy treatment with interstitial implant.

Methods

From June 1994 to November 2003, in the concord of 800 patients treated with three-dimensional stereotactic system with computed tomography-guided permanent implant of prostate cancer, 7 patients did not have a rectum. Four of these patients had colectomy for colorectal cancer—one of which had extensive invasion of the seminal vesicles of prostate cancer—two had local recurrent nonresectable colorectal cancer with invasion of the prostate, and one had resection of the colon for ulcerative colitis. Two of these patients had unsuccessful attempts for radical prostatectomy, and 2 patients had unsuccessful transperineal biopsies. Our posterior approach does not require transrectal ultrasound-guidance. The three-dimensional stereotactic system is adjusted to avoid obstruction of the needle by the coccyx with posterior

approach and computed tomography-guidance. Precise placement of seeds with use of the stereotactic system is accomplished to cover the target which includes the entire prostate, 5 mm outside the capsule of the prostate, the surrounding fat tissue, and seminal vesicles if involved. Pre- and post-implant dosimetry were performed with Varian software. Radiation dose of 144 Gy was accomplished with the use of iodine 125 seeds in strand.

Results

All patients with prostate cancer except one with seminal vesicle invasion had excellent clinical and biochemical control in 1 – 4 years post-implant. The 2 patients with colorectal cancer of local recurrent had good local control. There was no gastrointestinal or urinary morbidity except the patient with seminal vesicle invasion developed stricture of the distal ureter requiring stent.

Conclusion

Three-dimensional computed tomography-guided brachytherapy of prostate cancer in patients with prior colorectal cancer and without rectum is currently the only available and effective method of treatment.