

Overdoz prostat radyasyonunda acil robotik radikal prostatektomi

Emergency robotic radical prostatectomy for acute prostate radiation overdose

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Özet

67 yaşında prostat adenokarsinom tanılı boost doz yerine, tam doz iodine-125 brakiterapiyi takiben eksternal beam radyoterapi tedavisi olarak tıbbi bir talihsizlik yaşamış hasta, ileri değerlendirme ve radikal prostatektomi için kliniğimize yönlendirildi. Hastaya robotik radikal prostatektomi ve bileteral pelvik lenf nodu diseksiyonu yapıldı. Radyoaktif çekirdekler çıkarıldı ve 10 aylık takipte hastalısızdı. En önemlisi hastada ciddi pelvik komplikasyonlar yoktu. Aşırı doz radyasyon alan bu tip hastalar radikal prostatektomi için ivedilikle yönlendirmelidir.

Anahtar Kelimeler: prostat kanseri, brakiterapi, radikal prostatektomi

Abstract

A sixty seven-year-old patient who was diagnosed to have prostatic adenocarcinoma, experienced a medical misadventure when he received external beam radiation therapy followed by a full dose of iodine-125 brachytherapy, instead of a boost dose. The patient was referred to our center for further evaluation and possible urgent radical prostatectomy. The patient underwent successful robotic radical retroperitoneal prostatectomy with bilateral lymphnode dissection. Radioactive seeds were removed and the patient remains disease-free with 10 months follow-up. Most importantly, the patient has not experience any serious pelvic complications. Patients with this type of radiation overdose should be immediately referred for emergency radical prostatectomy.

Key Words: prostate cancer, brachytherapy, radical prostatectomy.

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Introduction

Numerous modalities are available for treating men with prostate cancer, and a multidisciplinary approach to treatment is often beneficial. For localized prostate cancer, the most common treatments are radical prostatectomy (RP) or whole prostate radiation therapy (RT). In 2008 alone, an estimated 186,320 new cases of prostate cancer were diagnosed in USA and 45 % of those patients

(80,000) choose RT as initial treatment.(81) Although the treatment outcomes of RT are comparable with those of RP, radiation therapy possesses its own unique set of side effects which are directly related to dose of radiation. (2,3) Herein we present the case of a patient with prostate cancer who received external beam radiation therapy (EBRT) followed by brachytherapy (BT) boost. However the treating radiation oncologist realized that the patient

received a full dose of BT instead of a boost dose. The radiation overdose exposed the patient to future risk of severe bladder and rectal complications including radiation cystitis, radiation proctitis, subsequent tissue breakdown and possible fistula formation. (4-8). To our knowledge, there are no reports on the acute management of this specific type of BT overdose.

Case report

A sixty seven-year-old patient who was diagnosed with intermediate-risk localized prostate cancer (Gleason score 7(3+4) and prostate specific antigen (PSA) 7.7 ng/ml) and a treatment plan was developed using a combination of EBRT with BT boost. The patient received 5 weeks of daily EBRT which he completed in December 2009 (45 Gy in 25 fraction) and inadvertently received a full dose of iodine-125 BT seeds (145Gy) in January 2010 instead of the boost dose. The BT dosimetry error was recognized early and the patient underwent emergency robotic-assisted radical prostatectomy with bilateral pelvic lymph node dissection 5 days after seed implantation. Radiation safety personnel were present in the operation room to minimize the radiation exposure to all personnel and handle the radioactive prostate specimen and extraprostatic seeds upon removal. Prior to the operation dosimetry with a pubic arch computed tomography (CT) was performed and all 86 of implanted iodine 125 radioactive seeds were identified and located. A radical prostatectomy was performed with wide dissection of neurovascular bundles due to the dense periprostatic scarring as well as edema. The BT seeds outside the prostate were removed using the spoon and those inside the gland removed along with the prostate. Blood loss was 150 cc. The radical prostatectomy specimen was handled by the radiation safety officer and placed in a radiation safe for 5 months until the radioactive isotopes have been adequately decayed. Geiger counter detected no radioactivity of the dissected pelvic lymph nodes thus they were sent for immediate pathological evaluation. The final pathologic report revealed adenocarcinoma of the prostate Gleason grading not possible due to radiation effects with negative surgical margins and no malignancy in the pelvic lymphatic nodes. The patient was discharged on the 4th postoperative day. At 10 months follow-up, the patient was dry to urination, and his main complaint was erecti-

le dysfunction for which he underwent a penile implant. Serum PSA value was undetectable (< 0.1 ng/ml).

Discussion

Medical errors can result in radiation overdose with significant patient harm (9). There is significant concern by the public that medical errors are underreported and an open culture discussing near misses, incidents and errors are important to improving patient safety. Since patients with localized prostate cancer usually live for many years, a serious complication such as rectourethral fistula from a radiation overdose can impair quality of life for decades. (4-8) It is of the utmost importance for medical errors to be recognized early, disclosed to the patient and every attempt should be made by the treating physicians to mitigate risk of complications related to the medical error. In this patient's case the treating physicians recognized the medical error of radiation overdose, disclosed the error to the patient and facilitated his transfer to a tertiary medical center where intervention (emergency robotic radical prostatectomy) could be performed to mitigate the risk of pelvic complications such as radiation cystitis, proctitis, and fistula formation.

The combination of EBRT along with BT boost remains both popular and effective treatment for prostate cancer. In this patient's case, an overdose of radiation therapy was prescribed when full dose BT was delivered instead of a boost dose. In this situation, an emergency radical prostatectomy with removal of any extraprostatic seeds will eliminate the radiation source and thereby prevent the radiation dose to the pelvis from reaching harmful levels. The surgery is a true emergency, since the longer the prostate remains in place, the greater the radiation dose delivered to the pelvic tissues. The robotic approach was selected in order to minimize radiation exposure to the surgical team. The importance of this case to radiation oncologists is twofold: first to be aware that a medical error in BT dosimetry can occur when BT is given as a boost following EBRT and secondly, should this medical error occur, an emergency radical prostatectomy should be performed to prevent the radiation dose from reaching harmful levels.

Conclusion

External beam radiation with brachytherapy boost remains a popular treatment for localized prostate cancer.

One medical error that can occur with this approach is a dosimetry error in which a full brachytherapy dose is administered instead of a boost dose. If such an error occurs, emergency radical prostatectomy should be considered to remove the radiation source and mitigate the risk of pelvic complications.

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