Point of Technique

Conservative Management of Early Bladder Rupture After Postoperative Radiotherapy for Prostate Cancer

Abbas Basiri, Mohammad Hadi Radfar

Keywords: prostate cancer, radiotherapy, bladder rupture, therapy

Urol J. 2008;5:269-71.
www.uj.unrc.ir

INTRODUCTION

Pelvic irradiation is known to cause several complications involving urinary bladder such as radiation cystitis, ulceration, and incontinence.[1,2] Spontaneous intraperitoneal rupture of the urinary bladder is a rare complication following pelvic irradiation.[3-5] To the best of our knowledge, there is only one report of radiation-induced bladder rupture following irradiation for prostate cancer which was managed surgically.[6] Here, we present a case of spontaneous intraperitoneal bladder rupture occurred 8 months after adjuvant radiotherapy for prostate cancer that was successfully managed conservatively.

CASE REPORT

A 65-year-old man was admitted with the chief complaint of gross hematuria. He had generalized abdominal pain particularly over the lower abdomen. He reported normal bowel function and denied any abdominal trauma. He had undergone radical prostatectomy for prostate adenocarcinoma (clinical stage, T2b), 2 years earlier. Due to an increase in serum prostate-specific antigen level, he had also received postoperative external pelvic irradiation 8 months earlier, consisted of 1.2 Gy per day, 5 days a week, to a total of 72 Gy. Then, he had developed a massive fibrotic tissue over the suprapubic region and suffered from mild obstructive symptoms and frequency. On admission, the patient was afebrile. His abdomen was mildly distended without generalized tenderness. Bowel sounds were diminished. There was marked tenderness without rebound tenderness and guarding over the lower abdomen.

The bladder was catheterized and about 70 mL of bloody urine was obtained. Daily urinary volume was normal. Serum prostate-specific antigen, serum creatinine and blood urea nitrogen remained within the normal range. Ultrasonography examination revealed a small amount of intra-abdominal fluid. Since abdominal pain improved gradually after catheterization, cystoscopy and cystography were performed to examine the bladder. Since the bladder neck was severely elevated on cystoscopy, entering the bladder was very difficult. Cystoscopic examination showed a low-volume bladder with edematous inflamed mucosa, but no point of perforation was diagnosed. Cystography showed extravasation of the contrast medium into the peritoneal cavity (Figure 1). Hence, spontaneous intraperitoneal rupture of the urinary bladder was diagnosed.

Department of Urology, Shahid Labbafinejad Hospital and Urology and Nephrology Research Center, Shahid Beheshti University (MC), Tehran, Iran

Corresponding Author:
Abbas Basiri, MD
Urology and Nephrology Research Center, 9th Boustan St, Pasdaran Ave, Tehran, Iran
Tel: +98 21 2256 7222
Fax: +98 21 2256 77282
E-mail: basiri@unrc.ir

Received June 2008
Accepted August 2008

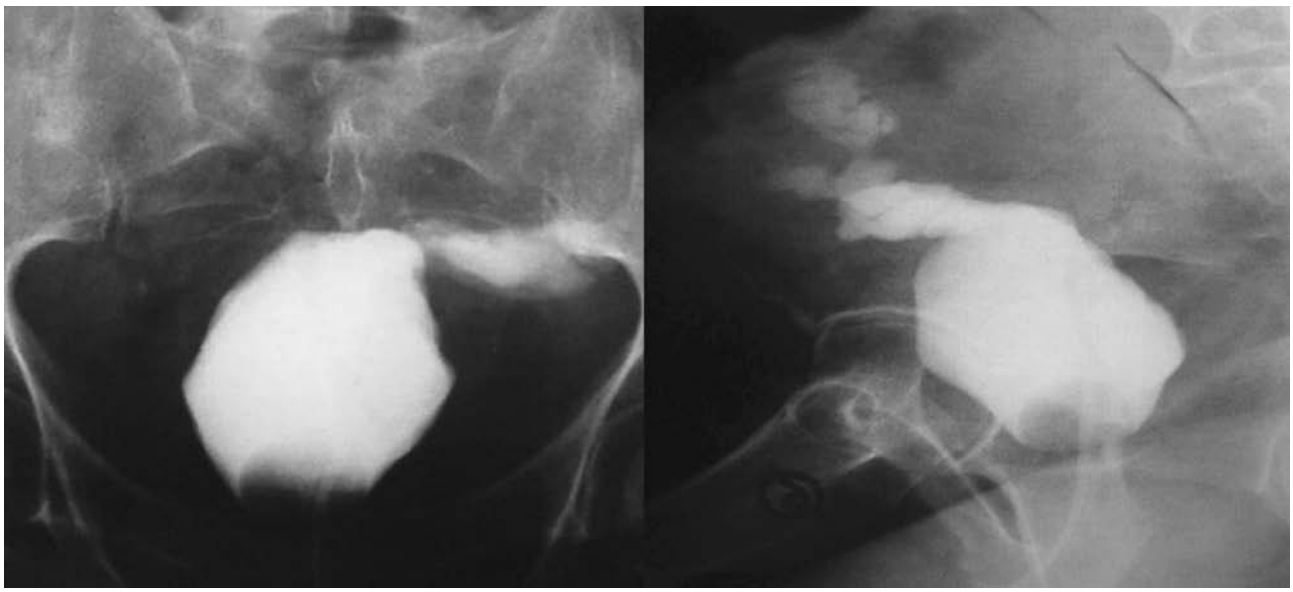

Figure 1. Cystography on admission.

TECHNIQUE

Regarding the high complication rate of surgery on irradiated tissues and improvement of the patient's situation, we decided to treat the patient conservatively with remaining the indwelling catheter for a longer period.

RESULTS

Abdominal pain and hematuria disappeared on hospital days 2 and 7, respectively, after urethral catheter insertion. Cystography was obtained 5 weeks later which showed a bladder capacity of 100 mL and no extravasation (Figure 2). Thereafter, the Foley catheter was removed and the patient continued intermittent self-catheterization. Ultrasonography revealed postvoid residue of less than 10 mL. The patient's recovery was uneventful with no further bladder rupture or elevation of serum prostate-specific antigen after 5 months.

DISCUSSION

The most common cause of rupture of the urinary bladder is trauma.[2] Nontraumatic rupture is known as spontaneous rupture.[7,8] Causes of spontaneous rupture include bladder wall lesions (malignant tumor, inflammatory lesions, and irradiation) or distention of the bladder wall (neurogenic bladder, outlet obstruction, and alcohol intoxication).[7,8] Bastable and colleagues reported 66 cases of spontaneous bladder rupture, of whom 28 (42.4%) had a diseased bladder, while 23 (34.8%) had urinary retention.[8]

Figure 2. Cystography after 5 weeks of catheter insertion.

Late effects of pelvic irradiation can be observed in the bladder with hematuria, radiation cystitis, fibrosis, and ulceration.[9] The spontaneous intraperitoneal rupture of the urinary bladder subsequent to pelvic radiotherapy is an extremely rare event.[3-5] The majority of reported cases of radiation-induced bladder rupture are in women

with a history of carcinoma of the uterine cervix who had undergone surgical treatment prior to radiotherapy and had a latency of at least 1.5 years.[2] Only one case of bladder rupture after radiation therapy for prostate cancer has been reported in which the rupture occurred 17 years after radiation, which was managed surgically.[2]

Intrapelvic surgery and radiotherapy are both known to induce neurogenic bladder.[9,10] Histologic changes caused by irradiation would weaken the bladder wall.[11] It is also supposed that postoperative changes in the bladder induce an expansion of the impaired bladder wall.[12] These changes together with some unknown factors would finally result in rupture of the bladder.

Most of the reported cases had a generalized peritonitis necessitating surgical intervention.[2] However, in some reports conservative management using indwelling catheter has been applied.[13] It should be noted that surgery on irradiated tissue has a higher complication rate.[14] Repeat rupture is a complication which may occur after either surgical or conservative treatment. However, it could be managed conservatively in a patient the first rupture has been managed conservatively.[13]

In the present report, conservative management protected the patient from surgical complications. Although our patient had intraperitoneal rupture of the urinary bladder, he did not show signs of generalized peritonitis and improved with Foley catheter insertion. Hence, we decided not to practice surgery. After 5 weeks of remaining the indwelling catheter, cystography revealed no extravasation. The patient did not have any repeat rupture during the 5-month follow-up. Surgical operation on the patient could be risky because of huge fibrotic tissue observed over the lower abdomen.

Spontaneous bladder rupture following pelvic irradiation could complicate the disease not only in women with cancer of the uterine cervix, but also in men with prostate cancer. To our best knowledge, this is the first case of spontaneous intraperitoneal rupture of the urinary bladder due to prostate cancer which was managed conservatively.

CONFLICT OF INTEREST

None declared.

REFERENCES

1. Marks LB, Carroll PR, Dugan TC, Anscher MS. The response of the urinary bladder, urethra, and ureter to radiation and chemotherapy. Int J Radiat Oncol Biol Phys. 1995;31:1257-80.
2. Nishimura T, Suzuki K, Iijima M, et al. Spontaneous rupture of bladder diverticulum after postoperative radiotherapy for carcinoma of the uterine cervix: a case report. Radiat Med. 2000;18:261-5.
3. Fujikawa K, Miyamoto T, Ihara Y, Matsui Y, Takeuchi H. High incidence of severe urologic complications following radiotherapy for cervical cancer in Japanese women. Gynecol Oncol. 2001;80:21-3.
4. Addar MH, Stuart GC, Nation JG, Shumsky AG. Spontaneous rupture of the urinary bladder: a late complication of radiotherapy--case report and review of the literature. Gynecol Oncol. 1996;62:314-6.
5. Kato A, Yoshida K, Tsuru N, et al. Spontaneous rupture of the urinary bladder presenting as oliguric acute renal failure. Intern Med. 2006;45:815-8.
6. Ketata S, Boulaire JL, Al-Ahdab N, Bargain A, Damamme A. Spontaneous intraperitoneal perforation of the bladder: a late complication of radiation therapy for prostate cancer. Clin Genitourin Cancer. 2007;5:287-90.
7. Stone E. Spontaneous rupture of the urinary bladder: report of two cases. Arch Surg. 1933;23:129-44.
8. Bastable JR, De Jode LR, Warren RP. Spontaneous rupture of the bladder. Br J Urol. 1959;31:78-86.
9. Fujikawa K, Yamamichi F, Nonomura M, Soeda A, Takeuchi H. Spontaneous rupture of the urinary bladder is not a rare complication of radiotherapy for cervical cancer: report of six cases. Gynecol Oncol. 1999;73:439-42.
10. Seski JC, Diokno AC. Bladder dysfunction after radical abdominal hysterectomy. Am J Obstet Gynecol. 1977;128:643-51.
11. Meyer K, Welsch H. [Spontaneous rupture of the urinary bladder after radiotherapy]. Zentralbl Chir. 1993;118:230-1. German.
12. Tabaru A, Endou M, Miura Y, Otsuki M. Generalized peritonitis caused by spontaneous intraperitoneal rupture of the urinary bladder. Intern Med. 1996;35:880-2.
13. Kaneko T, Nozawa T, Owari Y, et al. [Recurrent spontaneous rupture of the urinary bladder: a case report]. Hinyokika Kiyo. 2000;46:137-9. Japanese.
14. Maier U, Ehrenbock PM, Hofbauer J. Late urological complications and malignancies after curative radiotherapy for gynecological carcinomas: a retrospective analysis of 10,709 patients. J Urol. 1997;158:814-7.