Case report

High-grade intradiverticulum bladder tumor: A case report

Maher Al-Hajjaj *

Department of Urology, Aleppo University Hospital, Aleppo, Syria

ARTICLE INFO

Keywords:
Case report
Transitional cell carcinoma
Bladder diverticulum

ABSTRACT

Introduction and importance: Bladder diverticula are mucosal outpunching of the bladder without a muscle layer. It could be detected incidentally or by giving symptoms of its complications.

Case presentation: A 59-year-old male patient presented with painless gross hematuria. A primary tumor arising in a bladder diverticulum was detected with computed tomography. Partial cystectomy with para-aortic lymph node dissection was performed. The pathology report showed high-grade papillary transitional cell carcinoma (PT3). Unfortunately, the patient died of an acute cardiac event and sepsis after one month postoperative.

Clinical discussion: Once patient had a bladder diverticulum, we should expect the patient to have complications. One of that is intradiverticulum bladder malignancy. Imaging studies such computed tomography with contrast should be performed to confirm the diagnosis. Surgical interventions play a major role in the treatment. Most patients present with late, so the survival rate is poor in general.

Conclusion: Intradiverticulum bladder tumors are a major challenge in urological practice and need multiple investigations to be detected. These types of bladder tumors have high mortality rate.

1. Introduction

Bladder diverticula are outpouchings of bladder wall caused by either congenital or acquired defects. They are usually thin-walled with a narrow neck and lack the muscularis propria layer. A subset of these lesions, however, may be complicated with inflammation, calculus, infection, and malignancy [1].

The incidence of Intradiverticular neoplasms was reported to be between 0.8% and 10% in most studies. The main clinical presentation is painless gross hematuria for diverticular tumor [2].

It draws attention because of the difficulty in early diagnosis and a higher risk of early invasion. Poor prognosis has already been documented [3].

Most malignant tumors in vesicle diverticula are of transitional type (about 78%); followed by squamous cell carcinoma (17%), a combination of transitional and squamous cell types (2%), and adenocarcinoma (2%) [4].

Herein a case of a 59-year-old male who presented to our center with gross hematuria, and was eventually found to have transitional cell carcinoma (TCC) of the bladder diverticulum observed on computed tomography (CT), followed by histopathological examination.

This case report has been reported in line with the SCARE Criteria [5].

2. Case report

A 59-year-old heavy smoker male came to our emergency department complaining of one episode of painless gross hematuria. Past medical history was remarkable for just three years of lower urinary tract symptoms treated by α1 blocker medication. Physical examination showed mild pale patient, Blood pressure 120/60 mm/Hg, Pulse = 70. There was mild tenderness in the lower abdominal region. Blood investigations revealed a hemoglobin of 9 g/dl, a white blood cell count of $13 \times 10^9/l$, and a platelet count of $390 \times 10^9/l$. Other blood investigations including creatinine, urea, and electrolytes were in a normal range. Urinalysis showed excess RBC/HPF, 30–50 WBC/HPF, and 4–5 epithelial cells/HPF. An ultrasound of the abdominal and pelvis showed grade 3 right renal hydronephrosis with a simple cyst, left renal simple cyst, and a bladder diverticulum in the right bladder wall which contains a mass with blood supply. A CT computed tomography before and after enhancement confirmed the diagnosis of right bladder diverticulum with $21.3 \times 51.9 \ mm$ mass intradiverticulum Fig. 1.

After taking the patient consent, we performed a cystoscopy. Under spinal Anastasia, cystoscopy showed enlarged prostate and severe bladder trabeculation.

Transurethral resection of bladder tumor (TUR-BT) was not feasible due to narrowing of the bladder. We performed transurethral resection...
of the prostate (TUR-P) to maintain symptoms of bladder outlet obstruction, and we sent the specimen to the pathology.

After which, by engaging the patient in the decision, we decided to perform open surgery.

By the lower abdominal midline approach, we performed partial cystectomy with free visible margins (Figs. 2 & 3). Para-aortic lymph node dissection was done to detect any metastasis.

A foley catheter was inserted to maintain intra-vesicle low pressure and prevent urine spillage during operation. A pathologist in our department reported 6 × 8 cm papillary transitional cell carcinoma (high grade) PT3 grade and lymph nodes were not free.

After one week at the admission ward, the patient developed a cardiac arrhythmia, right pleural effusion. Later, he had sepsis which leads, unfortunately, the patient to pass away.

3. Discussion

Of the various neoplasms affecting the urinary tract, urinary bladder is the most common site. The presence of a bladder diverticulum increases the likelihood of neoplastic changes. One study reported that when a diverticulum was present, the likelihood of neoplastic changes relative to that of a normal bladder was increased by 0.8–10% [6].

It is thought that stasis of urine in the bladder diverticulum produces chronic mucosal irritation and prolonged exposure to urinary carcinogens, thus increasing the risk of malignancies of the diverticulum epithelial lining [1].

Cross-sectional imaging methods, including ultrasonography, CT and magnetic resonance imaging (MRI) have to be used singly or in combination, in neoplasms of the lower urinary tract [2].

Our patient underwent computed tomography (CT) which demonstrated right bladder wall diverticulum contains a mass of 21.3 × 51.9 mm in diameter (Fig. 1).

The modalities of surgical treatment vary from conservative transurethral resection to aggressive radical cystectomy. Transurethral resection is a standard for removal of bladder tumor. However, the anatomic structure of bladder diverticulum made it impossible to complete resection of bladder diverticular tumor in some cases such as where there was narrowing of the diverticular neck [3].

In our case, we performed a cystoscopy firstly which showed an enlarged prostate gland and extremely trabeculated urinary bladder. On the right wall, there was a narrow hole which is the neck of a diverticulum. We could not enter the diverticulum. We performed transurethral
resection of the prostate (TUR-P) to reduce lower urinary tract symptoms in our patient.

With advances in minimal invasive surgery, laparoscopic diverticulectomy or partial cystectomy was gradually accepted by urologists in this clinical scenario with promising results [3].

As in our patient, he underwent partial cystectomy including the mass by midline lower abdominal incision approach with bilateral para-aortic lymph node dissection (Fig. 2).

The pathology report revealed transitional cell cancer PT3 (high grade).

Bladder diverticulum neoplasms have a poor prognosis because the diagnosis is late and associated with early invasion, which results from the anatomy of the diverticulum that lack muscular fibers [2].

After one week, our patient had cardiac arrhythmias and right lung pleural effusion. He was monitored in the intensive care unit. After that, he developed sepsis which led, unfortunately, the patient to pass away.

Intradiverticulum bladder tumor should be treated once diagnosed. They have a major impact on patients' life. Such patients need a team of urologists and oncologists side by side to take the most appropriate decision for the patient.

4. Conclusion

Tumor arising diverticulum of the urinary bladder is a serious challenge to urologists. Imaging studies play a major role in the treatment plan. Most cases have a poor prognosis.

Provenance and peer review

Not commissioned, externally peer-reviewed

Sources of funding

There are no sources of funding.

Ethical approval

N/A.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Research registration (for case reports detailing a new surgical technique or new equipment/technology)

N/A.

Guarantor

Maher Al-Hajjaj.

CRediT authorship contribution statement

N/A.

Declaration of competing interest

N/A.

Acknowledgment

I would like to acknowledge Thurayya Zaitouni for her great efforts.

References

[1] A. Bourgi, E. Ayoub, S. Merhej, Diverticulectomy in the Management of Intradiverticular Bladder Tumors: A Twelve-year Experience at a Single Institution, 2016, 2016(May 2014).

[2] M. Mouna, M.A. Chakra, Urology case reports urothelial carcinoma arising from a bladder diverticulum containing multiple stones: a case report, Urol. Case Rep. 20 (July) (2018) 80–82 [Internet]. Available from, https://doi.org/10.1016/j.eucr.2018.07.013.

[3] H. Chen, Y. Lin, Y. Cheng, Urological science urothelial carcinoma arising within bladder diverticulum d report of a case and review of the literature, Urol. Sci. 27 (3) (2016) 177–180 [Internet]. Available from, https://doi.org/10.1016/j.urols.2015.03.003.

[4] Maurice Stephan, Diverticular Carcinoma of the Urinary Bladder: Diagnosis And, 2005, pp. 121–124, https://doi.org/10.1159/000083925.

[5] R.A. Agha, T. Franchi, C. Sohrabi, G. Mathew, for the SCARE Group, The SCARE 2020 guideline: updating consensus surgical Case Report (SCARE) guidelines, Int. J. Surg. 84 (2020) 226–230.

[6] Ahmad Fuad, Abdul Aziz, Christopher Lee, Kheng Siang, Giant Intradiverticular Bladder Tumor, 2017, pp. 212–216, https://doi.org/10.12659/AJCR.902101.