The case of the diverticular bladder tumor treated with diverticulectomy

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Introduction: The majority of diverticular bladder tumors (DBT) are urothelial. Due to the lack of the muscular layer in the diverticulum, the progression of these tumors is easier than in the bladder wall.

Case report: The case of invasive DBT with painless hematuria is presented. The patient was treated with diverticulectomy.

Conclusion: Unifocal Stage-T3 DBTs can be successfully treated with diverticulectomy.

Key words: Urinary bladder, diverticulum, tumor.

INTRODUCTION

The incidence rate of DBT ranges from 0.8%-10%. In comparison, the incidence rates of bladder tumors (BT) range between 17.2-20.1 in males and between 3.3-5.5 in females. The peak incidence of DBT occurs between 65 and 75 years; males are affected most commonly1-3.

The most common histologic type of DBT is transitional cell cancer, (TCC) in about 70-80% of cases, while the second is squamous cell carcinoma (20-25%). Not often, adenocarcinoma, carcinosarcoma and sarcoma may be present in the bladder diverticula. Factors that probably take part in the malignant alteration of the diverticular urothelium are poor emptying of the diverticulum, stasis of urine and chronic irritation and prolonged exposure to urinary carcinogens4.

Diverticular BT are thought to have poor prognosis, mostly because of delayed diagnosis and advanced stage at presentation. Due to the lack of the muscular layer in a diverticulum, there is a higher risk for early transmural spread of the tumor and local extension to the perivesical fat. Therefore, usual staging system for the bladder tumors is of limited value for the DBT, because stage T2 actually does not exist. Diverticular BT can be staged in the following manner: superficial (Ta, Tis), superficially invasive, but confined to diverticulum (T1) or extra diverticular (T3+)5.

The most common symptoms of DBT is painless hematuria, which is present in almost 90% of patients and frequently, intermittent. Other symptoms include vesical irritability, urgency, dysuria, or a palpable pelvic mass. In the advanced disease, upper urinary tract obstruction, flank pain and leg edema may be present6. Usual imaging methods for the diagnosis of DBT include abdominal ultrasound, computerized tomography (CT), CT-urography and magnetic resonance imaging (MRI). Both CT and MRI are helpful for the detection of DBT, bladder, ureteral, and renal synchronous lesions, local spread and lymphadenopathy7,8. Cystoscopy, endoscopic biopsy and urine cytology examination are important procedures in the diagnosis of DBT.

CASE REPORT

The case of the diverticular bladder tumor treated with diverticulectomy

The case of 70-year-old man with DBT is presented. The patient noticed intermittent painless gross hematuria two months prior to diagnosis. Previously, he had no medical history of genitourinary disease; he was of good health, without significant comorbidity. He had never smoked tobacco. However, he had positive family history for various malignant diseases: mother had liver cancer, brother had pancreatic cancer and his sister had thyroid cancer.

Abdominal ultrasound was not conclusive: it revealed a 3 cm large diverticulum on the lower part of the left bladder wall, fulfilled with the mass suggestive for bladder stones. Prostate volume was 32 mL and there were no post-void residual urine. Cystoscopy revealed the presence of the diverticulum with a narrow, 8-10 mm wide orifice and the tumor protruding the diverticular ostium. Abdominal CT revealed normal appearance of the both kidney, with the left kidney simple cyst; pelvic CT confirmed the presence of a mass in the bladder diverticulum,
with soft-tissue attenuation. There was no pelvic and retroperitoneal lymphadenopathy. CT-scan showing the mass in the diverticulum on the left bladder wall (Figure 1).

**OPERATIVE PROCEDURE**

The bladder was approached retroperitoneally, with midline incision. The bladder was opened and the opening of the diverticulum identified on the left bladder wall, 2 cm away from the left ureteral orifice. Ureteral stent was placed in the left ureter and the diverticulum removed with the part of the surrounding bladder wall.

Intraoperative photography presenting the tumor within the diverticulum. (Figure 2) Ureteral stent is placed into the left ureter.

The bladder was closed with interrupting sutures in two layers. Urethral catheter, cystostomy and the ureteral stent were left in situ. The stent and cystostomy were removed after three days, while urethral catheter was removed after two weeks. The patient was discharged in a good condition. Pathological examination revealed TCC of the diverticulum grade II with the microscopic local extension, stage T3. Surgical margins were free. (Figure 3).

**DISCUSSION**

The treatment of DBT includes transurethral resection (TUR), open or laparoscopic diverticulectomy, partial cystectomy and total cystectomy. Transurethral resection is indicated in cases of small superficial tumors which can be easily approached. In some cases, TUR cannot be performed, due to narrow diverticular opening and thin diverticular wall. Like in other BTs, TUR can be combined with intravesical therapy and/or radiotherapy. Diverticulectomy is indicated in the presence of bigger solitary tumors that cannot be treated by TUR.

Golijanin suggested that the patients with superficial disease should be treated conservatively, with repeated TUR, while the patients with superficially invasive disease should be treated with partial cystectomy. Patients with extra-diverticular extension should be treated with partial or radical cystectomy.

In the same way, Cancer Committee of the French Association of Urology (CCAFU) suggested that Ta-T1 low grade diverticular bladder tumors (DBT) should be managed with transurethral resection (TUR), while high grade DBT requires diverticulectomy. However, multiple DBT, or DBT associated with carcinoma in situ (CIS), require total cystectomy. (Table 1).

**CONCLUSION**

Diverticular BTs are the specific form of BT due to the lack of the muscular layer in the diverticulum. Therefore, these tumors can be either superficial, (Ta, T1) or infiltrative, (T3) with the penetration of the diverticular wall and subsequent perivesical spread. For that reason, the greater percent of these tumors are candidates for the radical surgical treatment. However, careful preoperative evaluation and staging are necessary for the proper treatment, be-
cause unifocal low grade lesions have good prognosis after conservative treatment, as well.

**SAŽETAK**

Uvod: najveći broj tumora koji se javljaju u divertikulumu mokraće bešike su urotelijalnog porekla. Ovi tumori su agresivniji i imaju bržu progresiju nego ostali tumori mokraće bešike. Razlog za to je činjenica da zid divertikuluma nema mišični sloj; zbog toga se i klasifikacija tumora u divertikulumu razlikuje od klasične klasifikacije tumora bešike.

**REFERENCES**