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Case Report

Granular Cell Tumor of the Urinary Bladder

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A 67-year-old Korean man presented with gross, painless hematuria that had lasted for the previous 2 months. Cystoscopy showed a semispherical tumor approximately 1 cm in diameter that was covered with normal bladder mucosa and extended from the bladder neck to the posterior wall of the bladder. The patient underwent transurethral resection of the tumor. Histological examination and immunohistochemical staining showed a granular cell tumor (GCT). There were no features suggesting a malignant phenotype. On follow-up, the patient has remained free of bladder recurrence. We herein report this case of a GCT of the urinary bladder and review the literature.

Key Words: *Granular cell tumor; Immunohistochemistry; Urinary bladder*

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Granular cell tumors (GCTs) are uncommon, usually benign neoplasms that most commonly originate from the head and neck region, especially the tongue. On the basis of immunohistochemical and microscopic findings, GCTs are considered to be originated and derived from Schwann cells. GCTs rarely affect the genitourinary system, and only 15 cases of GCTs of the urinary bladder have been reported [1-5]. GCTs are believed to be a usually benign tumor, but they are occasionally mistaken for malignant tumors because of their presentation as solid tumors with ill-defined margins and an ulcerated surface. Only two cases of a malignant GCT of the urinary bladder have thus far been reported. This report describes a case of a GCT of the urinary bladder in Korea.

CASE REPORT

A 67-year-old Korean man was referred to our institution because of gross, painless hematuria and scrotal pain for the previous 2 months. He had received medications in another hospital, but his symptoms had not subsided. He exhibited lower urinary tract symptoms, especially nocturia. The patient appeared to be healthy and his past history was unremarkable. On the physical examination, he had tenderness of the left testis and the epididymis. His hemoglobin was 11.7 g/dl and his hematocrit was 36.8%. Routine chemistry tests showed his serum creatinine to be 2.3 mg/dl and his serum alkaline phosphatase to be 258 IU/l. Other parameters were within normal ranges. Urine analysis showed hematuria and pyuria. A urine culture was positive for *Enterococcus faecium*. We performed an abdomen/pelvis computed tomography (CT) scan, urine cytology, and cystoscopic exam for a hematuria workup. The CT scan showed no definitive mass in the abdominal or pelvic cavity, and there was no localized thickening of the bladder wall. The CT scan revealed epididymo-orchitis with abscess formation in the left testicle. Urine cytology was negative for malignant cells. Cystoscopy showed a semispherical tumor approximately 1 cm in diameter that was covered with normal bladder mucosa and extended from the bladder neck to the posterior wall of the bladder (Fig. 1). Transurethral resection of the tumor and a simple left orchiectomy was performed.

Microscopic examination of the tissue revealed cohesive

groups of cells arranged in lobules that were divided by fibrous septae. There was no evidence of muscle invasion. A high-power microscopic view of the tumor cells showed polygonal cells, small round nuclei, and abundant granular eosinophilic cytoplasm. There was no increased mitotic activity, necrosis, or hemorrhage (Fig. 2A). Immunostaining for S-100 protein showed diffuse cytoplasmic and nuclear positivity in tumor cells, confirming the diagnosis of GCT (Fig. 2B). Immunoreactivity to other markers, including desmin and vimentin, pancytokeratin, and CD68, was negative. These histopathologic findings were compatible with a GCT.

On the follow-up cystoscopy done 2 months later, there was no evidence of tumor recurrence. The patient has now remained free of disease for over 6 months since the operation.

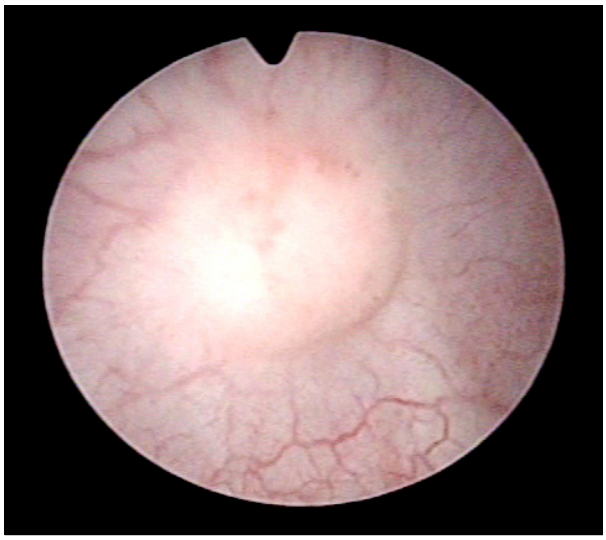

FIG. 1. Cystoscopy showed a semispherical tumor approximately 1 cm in diameter covered with normal bladder mucosa in the posterior wall of the bladder.

DISCUSSION

GCTs are uncommon, usually benign neoplasms that most frequently originate from the skin and oral cavity. The disease entity was first described by Abrikossoff in 1926 as a myoblastic tumor associated with striated muscle of the tongue [1]. Today, on the basis of immunohistochemical and electron microscope patterns, GCTs are considered to be of neural origin and to be derived from Schwann cells [6]. The tumor arises at almost every anatomic site, most commonly in the skin, subcutaneous tissue, and oral cavity [6]. GCTs involving the genitourinary tract are exceptionally rare. They have been reported on the shaft of the penis, glans penis, the corpus cavernosum, scrotum, and vulva [7]. GCTs of the urinary bladder are extremely rare, with only 15 cases described so far [1-5]. Gross hematuria is the most common symptom in patients affected with a GCT of the urinary bladder. Middle-aged males are the most commonly affected, although these tumors can occur in persons of all ages. GCTs mostly follow a clinically benign course, but are commonly mistaken for malignant tumors because they are solid-looking, ulcerated tumors with ill-defined margins. Immunohistochemical studies are particularly useful to differentiate such tumors from carcinomas and sarcomas because GCTs stain positive for S-100 protein, calretinin, the alpha subunit of inhibin, HLA-DR, laminin, and various myelin proteins, whereas they are commonly negative to immunostaining for epithelial (cytokeratin, Cam 5.2, AE/A13), neuroendocrine (neuron-specific enolase, chromogranin A, and synaptophysin), and sarcoma (desmin, vimentin) markers [8,9]. Most GCTs are benign,

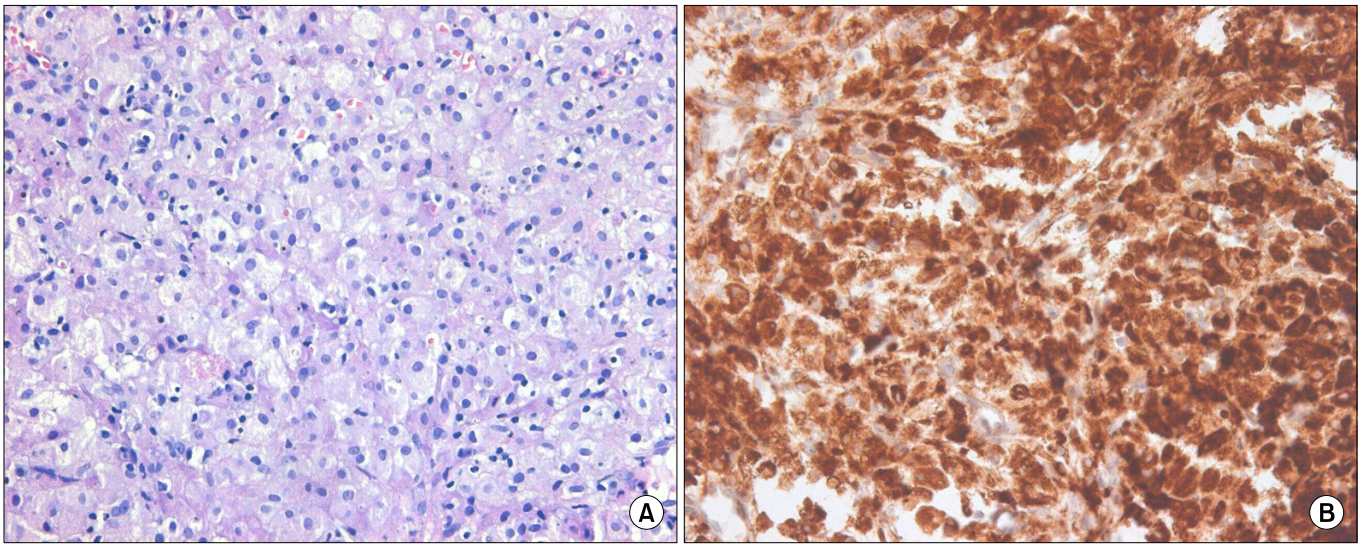

FIG. 2. (A) High-power microscopic view of tumor cells showing abundant granular cytoplasm and small nuclei (H&E, x400). (B) Tumor cells showing diffuse and strong cytoplasmic and nuclear positivity with immunohistochemical staining (S-100, x400).

and simple excision with clear surgical margins is sufficient treatment [5]. Most of the previously reported cases of benign GCTs of the urinary bladder underwent bladder preservation treatment and were shown to be free of disease recurrence. Only two cases of a benign GCT showed local recurrence, and both were cured by the same modality. Therefore, conservative surgical treatment such as transurethral resection alone or partial cystectomy appears to offer an adequate means of local control for benign tumors, and more radical resections are not required [3]. In the case of a malignant GCT, more aggressive surgical treatment should be required. Only two cases of the malignant type of a GCT of the bladder have been reported. Since the first reported malignant GCT in 1945, Abbas described an additional malignant GCT in 2007 [1,10]. In the first malignant case, complete excision was performed. However, the patient died from recurrence and metastases at 17 months [1,10]. The second case, which was managed by radical cystectomy plus lymph node dissection, showed long-term, disease-free survival [1,10].

It is crucial to clearly differentiate these benign tumors from much more common malignant solid tumors of the urinary bladder to save the patient from radical management protocols. We recommend careful pathologic assessment for appropriate diagnosis and treatment of benign GCTs of the urinary bladder.

Conflicts of Interest

The authors have nothing to disclose.

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