CASE REPORT
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Granular Cell Tumors of the Urinary Bladder: An Extremely Rare Entity and Literature Review

Mesanenin Granüler Hücreli Tümörü: Oldukça Nadir Bir Olgu ve Literatür Derlemesi

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Abstract

Granular cell tumors (GCTs) of the urinary bladder are extremely rare tumors and there are only 26 reported cases in the literature. GCTs are usually benign tumors and it is important to differentiate them from other neoplasms of the bladder such as carcinomas. We herein report a case of a benign GCT of the urinary bladder.
Keywords: Granular cell tumor, Urinary bladder, Immunohistochemistry

Öz

Mesanenin granüler hücreli tümörleri (GCT) oldukça nadir görülen tümörlerdir ve literatürde sadece 26 olgu bildirilmiştir. GCT'ler genellikle iyi huylu tümörler olmakla birlikte karsinomlar gibi mesanenin diğer neoplazmaları ile ayırıcı tanısını yapmak önemlidir. Biz burada idrar kesesinin iyi huylu bir granüler hücreli tümör olgusunu bildirmeyi amaçladık.
Anahtar Kelimeler: Granüler hücreli tümör, Mesane, İmmünohistokimya

Introduction

Granular cell tumors (GCTs) are rarely seen and usually benign lesions that were initially described by Abrikossoff in 1926 (1). When first described, they were thought to be of muscular origin but, in the light of the recent histopathological findings, they are considered to be originating from Schwann cells (2). These tumors are most commonly found in the head and neck region, especially in the tongue (3). The bladder is an extremely rare location for GCTs. There are 26 reported cases of GCT of the bladder in the literature. The majority of GCTs of the bladder are benign and only 3 malignant cases have been reported (4). We herein report a case of a benign GCT of the bladder.

Case Report

A 74-year-old male patient was referred to our clinic with an incidentally found mass lesion in the bladder measuring approximately 2 cm in diameter. The patient had no urinary symptoms, no hematuria or any other complaints. His medical history included diabetes mellitus and hypertension. Urinalysis, blood tests, cystoscopic examination and abdominal/pelvic magnetic resonance imaging (MRI) were performed. Urinalysis and blood tests results were normal. Cyctoscopic examination revealed a mass lesion approximately 2 cm in diameter located on the left side of the bladder and protruding into the lumen. In the cystoscopic view, the mass was not a typical papillary lesion and the bladder mucosa overlaying the lesion was intact. It was difficult to say that the lesion was submucosal or intramural or caused by a completely different mass that may cause pressure on the bladder from exterior (Figure 1a). MRI images showed a contrast-enhancing mass lesion with smooth margins that originated from the left posterior wall of the bladder and projected to the lumen and no sign of extravesical invasion (Figure 1b, c, d, e).

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The tumor was removed with transurethral resection (TUR). Microscopically, a tumoral tissue with infiltrative solid growth pattern, which was not associated with surface epithelium, was observed in the bladder wall. It was seen that the tumoral tissue was composed of cells with oval or round vesicular nucleus and wide granular eosinophilic cytoplasm. There were no features like necrosis, high mitotic activity and cellular atypia (Figure 2a, b). Immunohistochemical staining revealed diffuse, strong positivity with S-100 protein (Figure 2c). Synaptophysin and chromogranin staining were also positive. Staining for pan-cytokeratin, p63 and GATA-3 were negative. The Ki-67 proliferative index was 1% (Figure 2d). All these findings supported the diagnosis of benign GCT of the bladder. The patient was disease-free in the first year after TUR.

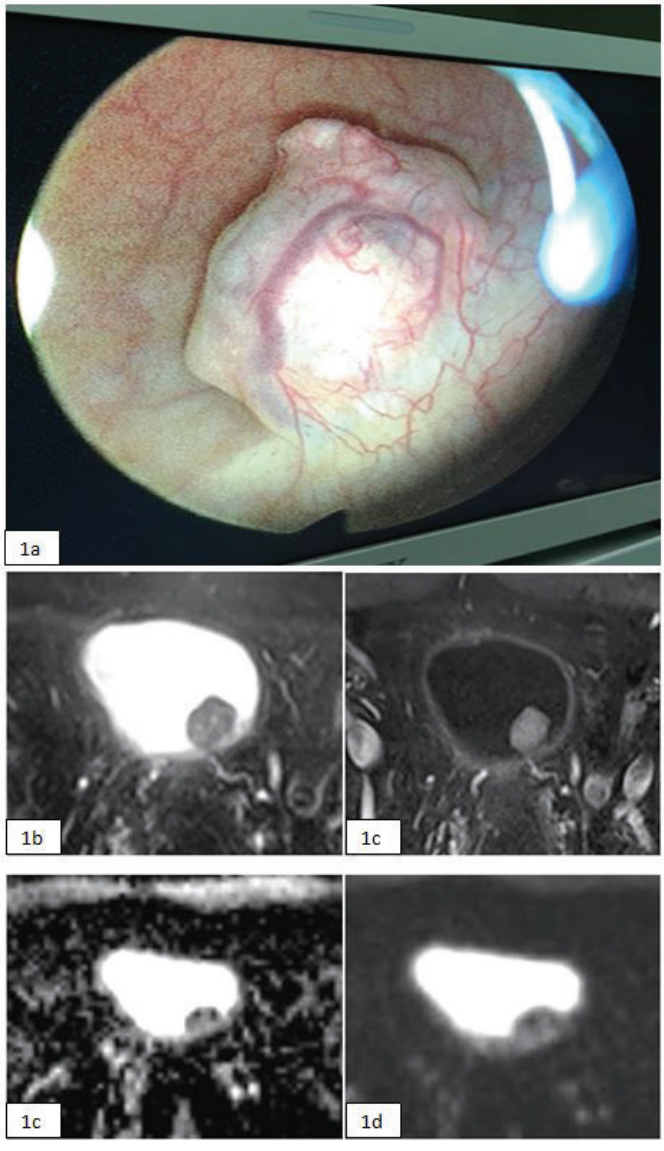

Figure 1. Macroscopic image of the tumor (a), Contrast enhanced T2-weighted transvers MRI image (b), Contrast enhanced T1-weighted transvers MRI image (c), ADC map and diffusion-weighted MRI image (d, e).

Discussion

GCTs were first described by Abrikossoff in 1926 as tumors of muscular origin (1). These tumors are rare neoplasms and frequently arise from the skin and oral cavity (3). However, there is also other locations for GCTs reported in the literature (e.g. penis, corpus cavernosum, scrotum, vulva) (5,6). GCT of the bladder is extremely rare and there are 26 reported cases in the literature (4,7,8,9,10,11,12). Because of the infrequent nature of this entity, most papers in the literature are case reports with one or two examples and the highest number of cases in one paper, which is recently published by Sun et al. (4), is 6.

GCTs of the bladder might present with gross hematuria with or without pain, dysuria, lower abdominal pain or voiding symptoms (3,7,9). Most of the cases in the literature had at least one symptom. Contrary to the literature, our case had no symptom such as dysuria or hematuria and the patient was diagnosed incidentally.

When first described, GCT was thought to be of muscular origin (1). But now with the immunohistochemical staining and structural findings with electron microscope, it considered to be raised from neural origin, from probably Schwann cells (2).

Microscopically, GCTs are composed of polygonal cells with abundant granular eosinophilic cytoplasm (13). Even though most of the cases in the literature are benign, it is important to make differentiation. There are some microscopic features to differentiate benign from malignant lesions. Necrosis, high mitotic activity, spindling, prominent nucleoli, high nuclear-to-cytoplasmic ratio, and high Ki-67 index are these features in GCTs (14,15).

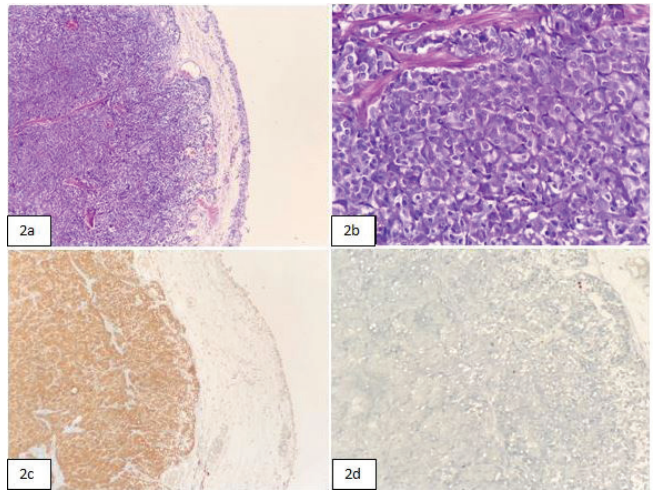

Figure 2. Granular cell tumor, showing nests of polygonal cells with abundant granular eosinophilic cytoplasm And vesicular nuclei. HEx100 (a), Granular cell tumor, showing nests of polygonal cells with abundant granular eosinophilic cytoplasm And vesicular nuclei. HEx200 (b), Nuclear and cytoplasmic expression for S 100 protein. İmmunohistochemistry S100x100 (c), Decreased Ki 67 proliferation index (d).

On the other hand, there is a controversy about muscle invasion. Muscle invasion has been reported to be a malignancy (9,14). But recently another paper reported that muscle invasion by GCTs was common and was not an indication of malignancy (4). Apart from this, perineural or vascular invasion and infiltrative growth pattern are also not indicative of malignancy (15).

Only 3 of the 26 cases of the GCTs of the bladder have been reported to be malignant (4,7,8). The first malignant GCT was reported in 1945 and complete excision was performed. However, the patient had recurrence and metastasis after 17 months (8). The second and third malignant cases were reported in 2007 and 2018. The second case was managed with radical cystectomy plus lymph node dissection and the patient showed long-term disease-free survival (7). The last malignant case was also treated with radical cystectomy and bilateral pelvic lymphadenectomy. This patient developed lung metastasis in the second year and received multiple chemotherapy regimens (4).

Three of the 23 benign GCTs of the bladder had local recurrence (10,11,12). All these recurrent cases were managed with TUR and after their last TUR, the patients were disease-free at 2.5 years, 3 years and 1.5 years respectively.

In the bladder, it is very important to differentiate GCTs from other bladder neoplasms such as carcinomas, sarcomas or malakoplakia. For this purpose, immunohistochemistry takes a major role. In GCTs, tumor cells stained positively for especially S-100 protein as well as synaptophysin, various myelin proteins, neuron-specific enolase (NSE) and stained negatively for cytokeratins, desmin, and vimentin. These immunohistochemistry results can confirm the diagnosis of GCT and helps excluding other neoplasms such as sarcomas and carcinomas (2,13).

There is no consensus about treatment for GCTs of the bladder in the literature. According to most opinions, because of its usually benign nature, surgical treatment via TUR with negative surgical margins generally sufficient for definitive treatment (7,9). On the other hand, a recent paper reporting the highest number of cases suggests partial cystectomy if technically feasible because of the locally infiltrative nature of GCTs (4).

Conclusion

Granular cell tumor of the bladder is an extremely rare condition. GCTs are mostly benign tumors and it is important to differentiate them from other bladder neoplasms such as carcinomas. Immunohistochemical staining is very helpful for the right diagnosis. Even though they are infrequent, clinicians and pathologist should consider GCTs in differential diagnosis.

Ethics

Informed Consent: Written informed consent was obtained from the patient

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: İ.E., O.Ö., A.İ.T., Design: İ.E., Y.Ç., A.İ.T., Data Collection and/or Processing: O.Ö., Y.Ç., N.S., Analysis and/or Interpretation: İ.E., O.Ö., Y.Ç., N.S., Literature Research: Y.Ç., O.Ö., A.İ.T., Writing: İ.E., O.Ö., A.İ.T., N.S.

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