Oncology

Urinary Bladder Paraganglioma and Concomitant Metastatic Lung Cancer. A Case Report

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ABSTRACT

We present a case of an organ confined urinary bladder paraganglioma and concomitant metastatic lung cancer to the liver diagnosed on a 66 year old man initially though to be metastatic bladder cancer. The patient was referred to our hospital for frank hematuria and a single solid bladder tumor was identified at flexible cystoscopy. We are also reviewing the literature on the diagnostic and therapeutic approach of extra-adrenal phaeochromocytoma.

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Introduction

Extra-adrenal phaeochromocytoma (paraganglioma) of the urinary bladder is a rare clinical entity, accounting for less than 0.05% of all bladder tumors.

It also comprises 10% of all extra-adrenal phaeochromocytomas. 35% of these tumors are malignant. They develop in the paraganglion chromaffin tissue of the nervous system.

There are very weak data to support familial predisposition. Common symptomatology in patients with bladder paraganglioma includes hematuria and intermittent hypertension during urination, along with generalized symptoms due to increased levels of catecholamines.

Serum and urine catecholamine levels are considered to be the most appropriate tests for diagnosing catecholamine-secreting paragangliomas.

Additionally, measurement of an epinephrine metabolite, the free serum metanephrines level, has the best validity for distinguishing a phaeochromocytoma from a functional paraganglioma.

However, almost a third of bladder paraganglioma patients do not present with tumor specific symptomatology.

Histological features of the tumor are the same as in paraganglioma of other organs, including adrenal pheochromocytoma. The large, polyhedral, pleomorphic, chromaffin tumor cells grow in a “zellballen” pattern and are embedded in a fibrous network that is rich with blood vessels. Malignant features cannot be distinguished and the only proof of metastasis can be provided from imaging investigations.

The most appropriate imaging modalities for the diagnosis of urinary bladder paraganglioma is the CT and the MRI scans but due to its rare prevalence in urinary bladder malignancies specific imaging and hematological tests are often not performed leading to unexpected and occasionally serious intra-operative morbidity.

In our case transurethral complete and uneventful resection of the tumor was performed. We are presenting the case and reviewing the international literature on this rare subject.

Our case

A 66 year old man presented with a single episode of hematuria to the AnE department.

Clinical examination was unremarkable.

All blood test including full blood count and urea and electrolytes came back normal.

His medical history included hypercholesterolemia, hypertension and moderate to severe aortic stenosis with good left ventricular function.

He also had a 15 pack per year smoking history but quit smoking 35 years ago.

He denied any previous major abdominal or pelvic surgery.

He underwent a flexible cystoscopy, a contrast CT scan of the thorax, abdomen and pelvis and a urine cytology test as per protocol of hematuria investigation in our unit. The flexible cystoscopy
revealed a solid lesion of the posterior bladder wall and the CT scan showed a bladder lesion as filling defect (Fig. 1) and a upper lobe 5 cm mass of the right lung (Fig. 2) with some cavitation accompanied by right hilar and subcarinal lymphadenopathy and at least 3 liver lesions, very suspicious for liver metastases.

The patient then underwent complete transurethal resection of the bladder tumor and had a normal recovery.

Surprisingly, histology report of the bladder tumor showed paraganglioma.

The sample included deep muscle which was not involved in the tumor.

The lamina propria was infiltrated by nests of eccentric nuclei. Mitoses were inconspicuous (Ki67 index <1%) and the nests of cells were surrounded by delicate vascular network. The cells were strongly positive for CD56, synaptophysin and chromogranin with a surrounding network of S100 positive cells (Fig. 3). Cells were negative for CAM 5.2 and CD68.

The additional finding of lung lesions had been discussed in the local lung multi-disciplinary team meeting, where CT guided liver biopsies were recommended.

Unfortunately, the pathology of the liver biopsies showed metastatic lung adenocarcinoma. He was treated with palliative chemotherapy.

**Discussion**

Urinary bladder paraganglioma is a very rare clinical entity. It mostly represents a benign tumor and the majority of paragangliomas are considered to be hormonally active.

However, clinical suspicion at the time of patient presentation is low and therefore all tumor-specific biochemical (catecholamines and free serum metanephrine levels) and imaging investigations (Iodine metaiodobenzylguinidine scintigraphy [MIBG]) are not necessarily offered. However, serum catecholamines levels, should offered, are not necessarily related to malignancy potential.

For imaging modalities with greater precision, if in doubt, positron emission tomography (PET) scanning with 18F-fluorodeoxyglucose, 11C-hydroxyephedrine and 6-18F-fluorodopamine can be offered. In our case they were not performed.

Our patient was asymptomatic apart from the presence of frank, painless hematuria. There were no specific investigations requested for the patient except from urgent flexible cystoscopy and a CT urogram which showed suspicion of metastatic bladder cancer.

Tumor specific cystoscopic features of paraganglioma are not yet established in bibliography.

Diagnosis was set by histological examination.

The patient did not develop any intra-operative complications and urinary tract recovery was normal following complete resection of the tumor.

With regard to treatment options for organ confined disease, complete surgical excision is the treatment of choice. This may entail transurethral resection or partial cystectomy.

For benign lesions 5-year survival is excellent and estimated at 95%.

Data on metastatic paraganglioma are sparse as no large series of long-term follow up can be found in current literature. A combination of radiotherapy, palliative chemotherapy and surgical excision is recommended. As far as therapeutic agents are concerned, chemotherapeutic agents such as cyclophosphamide, dacarbazine and vincristine are some of the most preferable.

For late stage bone metastases, I-labeled-MIBG can be offered for symptom palliation.

Further research on this subject is warranted.
Conflict of interest
None.

References
1. Li S, Li F, Yue Q, et al. Unsuspected paraganglioma of the urinary bladder with intraoperative hypertensive crises: a case report. Exp Ther Med. 2013 Oct;6(4):1067–1069. http://dx.doi.org/10.3892/etm.2013.1242, 2013 Aug 1, PMCID: PMC3797305.
2. Dahm P, Gschwend JE. Malignant non-urothelial neoplasms of the urinary bladder: a review. Eur Urol. 2003;44:672–681.
3. Lenders JW, Pacak K, Walther MM, et al. Biochemical diagnosis of phaeochromocytoma: which test is best? J Am Med Assoc. 2002;287:1427–1434.
4. Vahidi K, Joe BN, Meng M, et al. Review of atypical pelvic masses on CT and MRI: expanding the differential diagnosis. Clin Imaging. 2007;31:406–413.
5. Wang H, Ye H, Guo A, et al. Bladder paraganglioma in adults: MR appearance in four patients. Eur J Radiol. 2011;80:217–220.