

# Neurological Symptoms as the First Presentation of Transitional Cell Carcinoma of Renal Pelvis

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## Abstract

We present a rare case with history of neurological symptoms due to multiple brain metastases and no urological symptoms. During patient evaluation for primary tumor, transitional cell carcinoma (TCC) of left renal pelvis was found. The patient underwent gamma knife stereotactic radio-surgery for the metastatic brain lesions. Radical nephroureterectomy was performed, and a 4-cycle course of paclitaxel and carboplatin chemotherapy was administered for the patient. The disease is stable and the patient is still alive after the 34 months follow-up duration.

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**Key Words:** Transitional cell carcinoma, Brain metastases, Bladder, Urinary tract

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## Introduction

Most commonly, transitional cell carcinoma metastasizes to regional lymph nodes, lungs, bone, and liver. Brain metastases as such from urothelial tumors are uncommon, and only few case reports are available on them. Upper tract urothelial tumors present usually with microscopic or gross hematuria (75%) [1]. We report an unusual case of transitional cell carcinoma of renal pelvis initially presented with neurological symptoms due to cerebral metastases without any urological symptoms.

## Case report

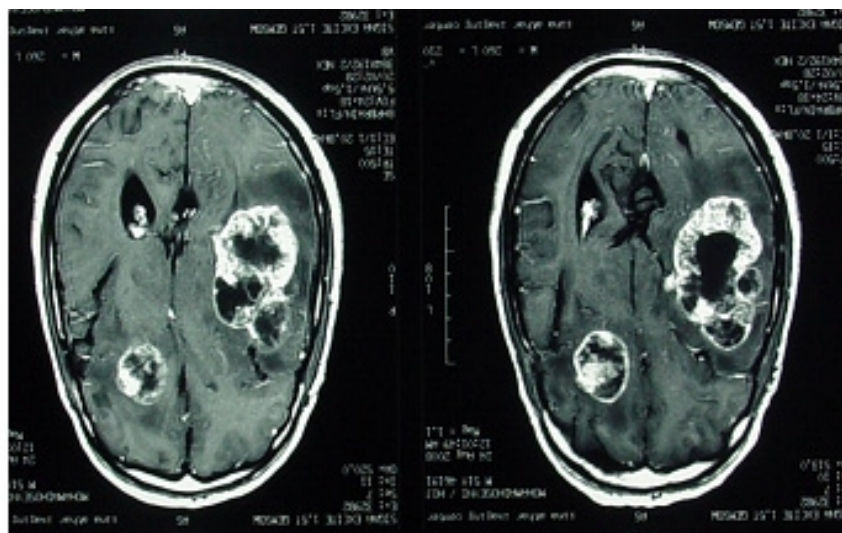
A 61-year-old man presented with hemiparesis, impaired memory and psychosis two weeks before admission. He had no history of previous medical disease or smoking. He did not mention any history of urologic symptoms such as flank pain or hematuria.

Physical examination revealed decreased force and sensation (4/5) on right side of the body. Magnetic Resonance Imaging (MRI) of brain revealed multiple focal lesions at grey-white matter junction in the right parietal and left frontal (Figure1). Abdominopelvic computerized tomography (CT) of the patient showed a small 1\*1 Cm mass in the left kidney pelvis. Chest CT scan did not reveal any abnormal lesion (Figure2).

Fine needle aspiration from left kidney under ultrasonography guidance was performed for the patient. Pathologic evaluation was suggestive of transitional cell carcinoma. Bone scan did not reveal any abnormalities. In cystoscopic evaluation no evidence of tumor in the bladder was found. Brain masses mentioned as metastasis from the renal pelvic site so, histological evaluation was not performed in order to confirm the cerebral lesion.

Stereotactic radio surgery with gamma knife was done for brain lesions followed by external beam radiotherapy (RT) of 2000 centigray for a week. Improvement of neurologic signs and symptoms and significant decrease in the size of the brain lesions were confirmed in the 6 months follow-up visit and MRI.

The patient underwent left radical nephroureterectomy and was discharged uneventfully in the sixth day post-operation. Histopathological examination showed a 2\*1 cm mass in the left pelvicalyceal system which was suggestive of high-grade transitional cell carcinoma. Two weeks after the surgery, four cycles of paclitaxel and carboplatin combination chemotherapy were administered for him. At the 34-months follow-up, the disease was stable without any progression.



**Figure1.** MRI of brain reveals multiple focal lesions at grey–white matter junction in the right parietal and left frontal lobes.



**Figure2.** Abdominopelvic CT Scan shows a small 1\*1 Cm mass in the left kidney pelvis.

## Discussion

The most common tumors within the central nervous system are metastatic tumors. Brain metastases from the urothelial tumors are uncommon [2]. To our knowledge, occurrence of brain metastases due to the upper tract urothelial malignancies in the literature was not reported except two case reports of renal pelvic TCC with brain metastases.

The first case, which was reported by Bloch et al. [3] in 1987, had renal pelvic TCC with metastasis to cerebellum. The patient underwent nephroureterectomy surgery followed by whole brain irradiation. The patient survived for 3 months after operation. Kabalin et al. [4] reported the

second case in 1990. Ten months after nephroureterectomy and chemotherapy, the patient had presented with multiple cerebral metastases. He was treated by intravenous dexamethasone and whole brain irradiation, but he died 2 months later.

Our patient initially presented with neurological symptoms due to metastatic lesions, and during work-up for the primary disease was found to have renal pelvic transitional cell carcinoma. Contrast enhancing MRI is the most sensitive imaging method for assessing the presence of brain metastases [5].

The appearance of neurological symptoms and multiple contrast-enhancing mass solid lesions in the brain at the grey–white matter junction in the context of known systemic cancer in patients with neurologic

symptoms would be considered diagnostic for metastatic lesion. Therefore, we did not confirm the brain lesion histologically prior to stereotactic radio-surgery.

Stereotactic biopsy is indicated when imaging features are atypical or diagnosis of the primary malignancy was remote from the presentation of the brain metastases [6].

Mori et al. in their report on experience of stereotactic radio-surgery for brain metastases from renal cell carcinoma, did not perform biopsy of the cerebral lesions prior to radio-surgery due to typical radiological findings in conjunction with primary tumor [7]. Huang et al. performed stereotactic biopsy prior to radio-surgery only in patients with atypical radiological findings [6].

The main treatment modality for metastatic urothelial tumors is chemotherapy with initial success rate of 50–70%, which is usually transient. Median survival in patients with metastatic urothelial tumors treated with chemotherapy alone is around 13 months [8].

Since the introduction of methotrexate, vinblastine, doxorubicin, and cisplatin (MVAC) chemotherapy regimen, the incidence of brain metastases from TCC of urinary bladder has increased because this regimen prolongs the duration of remission but does not cross the blood brain barrier. Hence, it increases the risk of cerebral involvement, which normally does not occur until late in the disease process [9]. In a retrospective study Siefker-Radtke et al. [10], observed 33% 5-year survival in a selected group of 31 patients who underwent metastasectomy for advanced urothelial cancers. Patients who responded to prior chemotherapy and had recurrence at the initial or sole metastatic site, and a period of stable disease with no progression and tumors that could be resected with clear margins are selected for metastasectomy.

The main treatment modality for multiple brain metastases was whole brain radiation therapy, which extends median survival from 1–2 months (steroid treatment only) to 4–6 months in most series. Recently, stereotactic radio surgery is being used increasingly in selected patients of brain metastases with more than one lesion [11].

Mahmoud-Ahmed et al. [12] reported the role of radiation therapy for brain metastases from bladder cancer. They showed that stereotactic radio-surgery can increase survival from 2 months to 12 months for patients who received whole brain radiation therapy alone.

Recent studies [13, 14] revealed that stereotactic radio-surgery combined with whole brain irradiation

is more beneficial than whole brain radiation therapy alone for brain metastases. It is believed that gamma-knife radio-surgery affect the macroscopic disease while whole brain radiation inhibits the microscopic metastases.

Although MVAC is the most effective chemotherapeutic regimen for metastatic transitional cell carcinoma of the urinary tract [15], its severe toxicity leads many chemotherapists to use alternative chemotherapeutic regimens. It has been shown that the combination of paclitaxel and carboplatin has an effective role on metastatic TCC with low toxicity [16]. We used this regimen for the present case.

Although metastases from the transitional cell carcinoma of the renal pelvis to the brain is rare, this possibility should be kept in the mind in evaluating patients with metastatic disease of the brain. Because of availability of non-invasive treatments like gamma knife for brain metastases, and newer less toxic chemotherapy, such patients can be managed with less morbidity and longer survival.

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None

## Conflict of Interest

The authors have no conflict of interest in this article.

## Authors' Contribution

All the authors have equally contributed in the preparation of manuscript, literature review and research.

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