

# Extremely Delayed Renal Cell Carcinoma Metastasis Mimicking Convexity Meningioma

## Konveksite Menenjiomunu Taklit Eden İleri Derecede Gecikmiş Renal Hücreli Karsinoma Metastazı

### ABSTRACT

Cerebral extra-axial metastases mimicking meningioma are extremely rare. Imaging characteristics may not always differentiate between meningioma and metastatic tumors. A 68-year-old-woman who had been operated for renal cell carcinoma 20 years ago presented with new symptoms of an intracranial mass lesion. A large extra-axial convexity mass destroying the calvarium and dura was excised with Simpson Grade I removal. The pathology examination revealed metastatic carcinoma. Such tumors that satisfy several criteria for a diagnosis of meningioma, but prove instead to be metastatic carcinoma form the focus of our discussion. A meticulous clinical evaluation and histopathological diagnosis is essential in patients with an intracranial mass whether the lesion looks like a primary or metastatic tumor on the first evaluation.

**KEY WORDS:** Meningioma, Convexity, Renal cell carcinoma, Metastasis

### ÖZ

Menenjiomu taklit eden serebral ekstra-aksiyal metastazlar oldukça nadirdir. Görüntüleme özellikleri, menenjioma ve metastatik tümörleri her zaman ayırd edemeyebilirler. 20 yıl önce renal hücreli karsinoma nedeni ile ameliyat edilen ve intrakranial kitle lezyonuna dair yeni şikayetlerle başvuran 68 yaşındaki bir kadın hasta sunulmaktadır. Kalvaryum ve durayı destrükte eden büyük ekstra-aksiyal kitle Simpson Grade-1'e uygun şekilde çıkarılmaktadır. Patolojik inceleme metastatik karsinoma işaret etmiştir. Menenjioma tanısı için yeterli özelliklere sahip olan ancak menenjioma yerine metastatik karsinom tanısı ispatlanan bu tür tümörler taratışmamızın temelini oluşturmaktadır. İlk değerlendirmeye primer veya metastatik tümörleri düşündürseler de intrakranial kitleli hastalarda titiz klinik değerlendirme ile beraber histopatolojik tanı esastır.

**ANAHTAR SÖZCÜKLER:** Menenjioma, Konveksite, Renal hücreli karsinom, Metastaz

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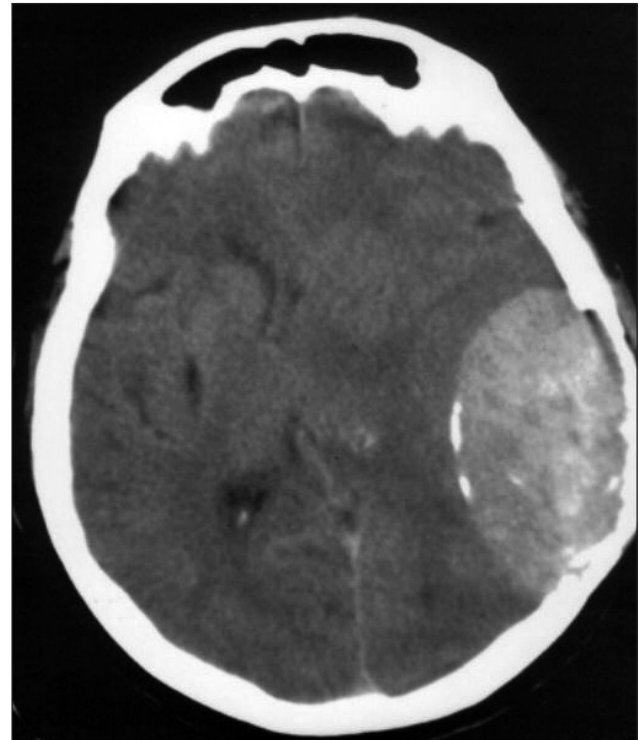
## INTRODUCTION

Cerebral metastases are the most frequent brain tumors in adults. Cerebral metastases are generally intra-axial tumors, whereas extra-axial masses mimicking meningioma are extremely rare (1,4). The pathophysiology of dural metastasis of the tumors is still a subject of debate. Two mechanisms have been put forward involving venous and arterial dissemination. Because of the prognostic relevance in discriminating meningiomas and metastatic tumors, the differential diagnosis is essential in the management of isolated extra-axial tumors even when a meningioma is suspected.

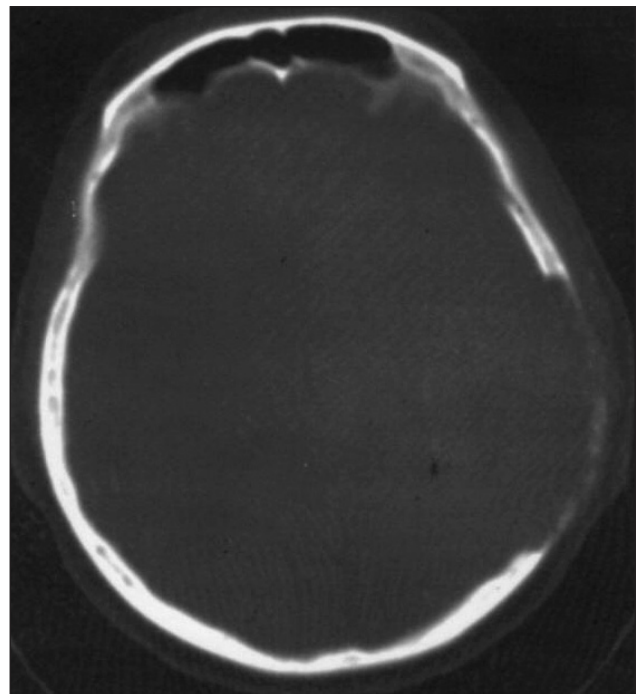
## CASE REPORT

A 68-year-old woman was admitted to our hospital with the new onset of headache, speech disturbance, progressive right hemiparesis and confusion. The history revealed a nephrectomy procedure that had been performed 20 years ago due to renal neoplastic etiology. Cranial CT scan revealed a heterogenous high-density, well-demarcated enhancing extra-axial mass of the left temporoparietal convexity with a partially calcified dural basis and extensive calvarial defect suggestive of meningioma (Figure 1 and 2). Magnetic Resonance Imaging (MRI) could not be performed because of the presence of an MRI-incompatible knee prosthesis. A craniotomy widely surrounding the defective bony area was performed to remove the large mass that was extensively attached to the dura mater. After the tumor was removed totally, duraplasty and cranioplasty procedures were performed for reconstruction. Operative features revealed a dura-based and bone-destructive tumor indicating a meningioma. However, the pathological examination of the mass showed a malignant metastatic carcinoma with necrotic foci and mitotic figures (Figure 3). Tumor cells invaded all layers of the calvarium and dura. Immunohistochemical examination of the mass, dura and bone showed metastatic carcinoma immunopositive for pancytokeratin, EMA and S-100. Weak staining was seen for vimentin while CD68 and CD34 immunostatin were negative. Retrospective investigation of the pathology records of the patient revealed that the primary focus of carcinoma was within the kidney. The postoperative examination revealed multiple micronodular lesions in the lung with thorax CT, indicating lung metastasis. The patient recovered from the preoperative

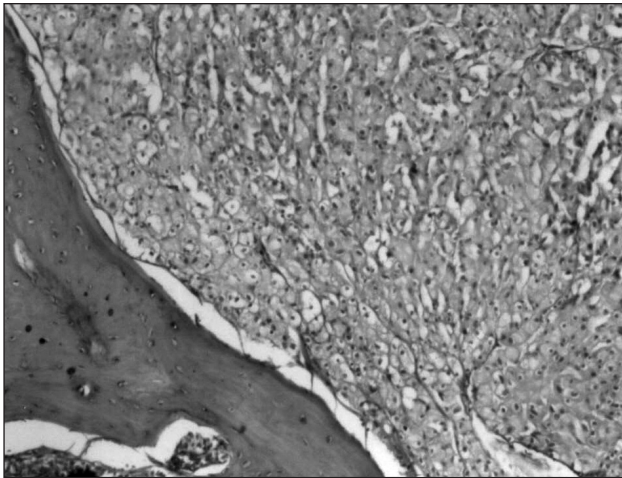
neurological deficits with excellent results. The patient was referred to the oncology department for additional treatment protocols.



*Figure 1: Axial CT scan showing left temporoparietal, well-demarcated, partially calcified and heterogenous large mass invaded to the cranium suggestive for meningioma.*



*Figure 2: Axial CT scan bony picture showing extensive cranial bony defect due to metastatic invasion.*



**Figure 3:** Histopathologic appearance of cranial metastatic carcinoma invaded to the bone. (X20 magnification, Hematoxylin Eosin staining)

## DISCUSSION

The extra-axial and dura-based location of metastatic tumors may cause confusion with a meningioma during radiological diagnosis. Entities mostly associated with meningiomas such as calcified nature, dura-based location, dural tail, skull erosion, well-demarcated contour and heterogenous enhancement can make preoperative differential diagnosis between a metastatic brain tumor and meningioma difficult (11). However, these radiological features are not pathognomonic for meningioma. A number of neoplastic and non-neoplastic entities that radiologically mimic meningioma have been reported (3). Metastatic brain tumors may also be calcified and should be considered in the differential diagnosis of calcified intracranial lesions. It is commonly accepted that the tail sign is highly suggestive but not specific for meningioma (2,10).

In contrast, a previous report revealed a case of malignant meningioma mimicking a solitary brain metastasis in a patient with renal cell carcinoma (12). Although such misleading situations are rarely diagnosed, it is essential for the utmost care to be used during clinical diagnosis and both primary and metastatic tumors should be considered when a solitary brain lesion is encountered.

Dural metastases are mostly indistinguishable from meningiomas using conventional radiological modalities like CT and MRI. Kremer et al. reported that relative cerebral blood volume (rCBV) mapping

can provide additional information by demonstrating a low rCBV which may be suggestive for metastasis (6). As the radiological aspects are confusing and not specific, the extra-axial mass in patients with a tumor simulating meningioma should be carefully investigated. A thorough detailed clinical evaluation may reveal likely diagnostic possibilities. We emphasize the importance of "suspecting" metastatic disease in all patients with a solitary dural mass simulating meningioma.

A brain metastasis rather than a "coincidence" of a primary brain tumor like meningioma should be considered in all patients with prior resection of renal cell carcinoma who experience the onset of neurological disease even after a prolonged disease-free interval. Solitary brain metastasis of renal cell carcinoma with a latency period of more than 10 years after nephrectomy has been very rarely reported in the literature (7,9). The long interval of latency may be attributed to the slow growing characteristic of renal cell carcinoma and the fact that renal cell carcinoma is under the influence of host immunity (7). This is the first report of a case with renal cell carcinoma describing the first solitary metastatic brain lesion located extra-axially that occurred 20 years after nephrectomy.

Review of the literature revealed that the two cases of metastatic renal cell carcinoma mimicking intraventricular meningioma have been reported (5,8). The presented case is also unique as a mass simulating a large convexity meningioma with extensive dural and calvarial involvement.

## CONCLUSION

Careful vigilance in patients with a history of cancer and imaging evidence of dura-based lesions are critically important to enable timely intervention even after a prolonged disease-free interval. The radiological features of metastatic brain tumors may thus closely resemble those of meningioma. The radiological and clinical aspects that warrant the diagnosis of meningioma should be considered to be "only neoplastic" until histologically proven otherwise. The definitive diagnosis of a meningioma should be established only after the histopathological report has been analyzed.

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