

# Intracranial metastasis from adenocarcinoma of prostate: case report

Prostat adenokarsinomunun intrakraniyal metastazı: Olgu sunumu

**Gamze GÖKÖZ DOĞU,<sup>1</sup> Metin ÖZKAN,<sup>2</sup> İsmail KOÇYİĞİT,<sup>2</sup> Ahmet Candan DURAK,<sup>3</sup> Özlem ER,<sup>2</sup> Mustafa ALTINBAŞ<sup>4</sup>**

<sup>1</sup>Department of Medical Oncology, Kayseri Training and Research Hospital, Kayseri;

<sup>2</sup>Department of Medical Oncology, Erciyes University M.K. Dedeman Oncology Hospital, Kayseri;

<sup>3</sup>Department of Radiology, Erciyes University Faculty of Medicine, Kayseri;

<sup>4</sup>Department of Medical Oncology, Yıldırım Beyazıt Oncology Hospital, Ankara, all in Turkey

Although adenocarcinoma of the prostate has significant propensity for metastatic involvement of the bone and other organ systems it rarely invades the brain parenchyma. A 70-year-old man with prostate cancer was admitted to the hospital because of sudden onset of neurological signs. Computed tomography scan demonstrated a large hyperdense dural metastasis with hyperostosis in the left frontal region. Here we report a case of a large dural based metastasis from adenocarcinoma of the prostate, clinically and radiographically mimicking a meningioma. Additionally, in this case report the implications of dural-based intracranial lesions in patients with prostate cancer is discussed and the current literature for dural metastases is reviewed.

**Key words:** Brain metastasis; computed tomography; meningioma; prostate cancer.

Prostat adenokarsinomu kemik ve organ tutulumu için belirgin metastatik bir potansiyel taşırken, beyin parankimini nadiren tutar. Prostat kanserli 70 yaşında erkek hasta hastanemize akut başlangıçlı nörolojik semptomlar nedeniyle başvurdu. Bilgisayarlı tomografi incelemesinde, sol frontal yerleşimli olan ve hiperostosisin eşlik ettiği hiperdens dural metastazlar saptandı. Bu makalede, prostattan kaynaklanan, klinik ve radyolojik olarak meningioma benzeyen büyük bir dura tabanlı metastatik kitlesi olan bir olgu sunuldu. Ek olarak, literatürde bildirilen dural metastazlar ve prostat kanserinde dura tabanlı intrakraniyal lezyonlar tartışılmıştır.

**Anahtar sözcükler:** Beyin metastazı; bilgisayarlı tomografi; meningioma; prostat kanseri.

The proportion of prostate adenocarcinomas with metastasis at diagnosis is reported to be 30-40%. On the other hand, in approximately 1% of patients with localized cancer, existing metastasis is missed at diagnosis.<sup>[1]</sup> Cases of diffuse intracranial metastasis due to prostate adenocarcinoma are quite rare in the literature. Specifically, cases with hyperdense metastasis with cranial hyperostosis are extremely rare. Here we report a case of prostatic adenocarcinoma in which intracranial hyperdense lesions are detected radiologically with

accompanying hyperostosis in the adjacent cranial bone. Additionally, the literature is reviewed for pathological conditions which may mimic dural metastases that should be considered in differential diagnosis.

## CASE REPORT

A 70-year-old male patient presented in the emergency room with signs of sudden onset left hemiplegia and aphasia. Of significance in his medical history was that he had undergone a trans-

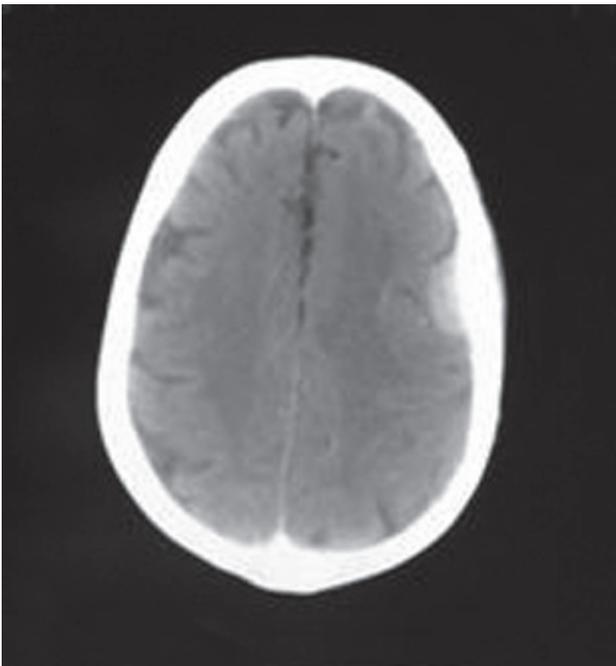
urethral resection in another hospital 3 years ago for prostatic adenocarcinoma. Postoperatively, the patient started receiving a combination of antiandrogen therapy with a GnRH agonist. Two years after the diagnosis the patient underwent cystoscopic drainage due to infravesical obstruction. Bone scintigraphy performed at that time demonstrated diffuse metastasis and thus zoledronic acid was added to the patient's therapy. After six months bilateral orchiectomy was also performed. He was on antiandrogen therapy for approximately 6 months when he was referred to our hospital, three years after the initial diagnosis, due to acute left hemiplegia and aphasia, other than that, the patient's physical examination did not reveal any significant pathology.

Computed tomography (CT) demonstrated bilateral intracranial extra-axial hyperdense lesions. Computed tomography scan with intravenous contrast agent revealed diffuse involvement of lesions in the left frontal region leading to hyperostosis in the adjacent cranial bone (Figures 1 and 2). A well

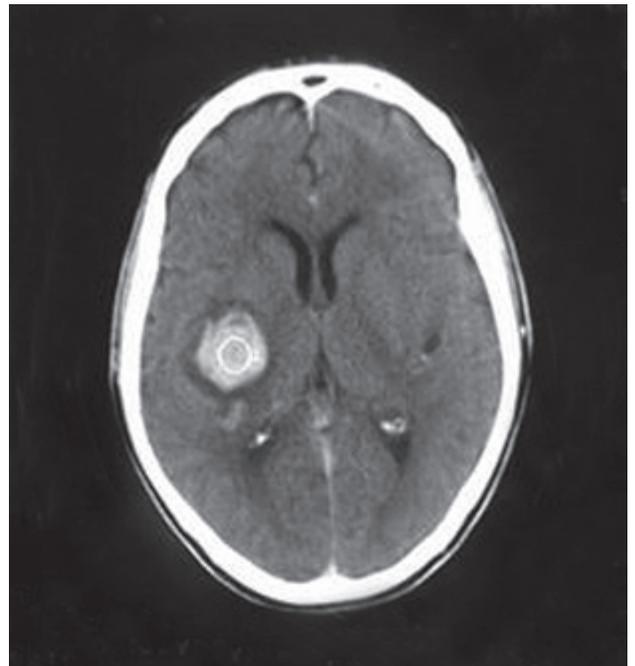
circumscribed mass lesion causing vasogenic oedema in the surrounding tissue was detected in the insula and basal ganglia regions of the right hemispheric area. Anti-oedema therapy with concurrent radiotherapy was started. Palliative radiotherapy received WBRT in daily 2 Gy fractions to a total of 30 Gy in 10 fractions over 2 weeks. The patient started speaking and moving his extremities by the end of the first month of therapy.

## DISCUSSION

Prostatic adenocarcinoma is the most common type of cancer seen in men over 50 years of age. Usually the involvement of the central nervous system is the result of spinal cord compression following metastasis to the bone.<sup>[2]</sup> Prostatic adenocarcinoma may exhibit a quite different metastatic behaviour compared to other urogenital system tumors. Local invasion precedes the involvement of pelvic lymph nodes. Besides lymphatic circulation, prostate cancer may also spread through the Batson's plexus or the pelvic venous plexus which is associated with the systemic circulation.<sup>[3]</sup>



**Fig. 1.** Computed tomographic images of a cerebral mass simulating meningioma, which was localized in left frontal hemispheric region and caused hyperostosis in the adjacent cranial bone.



**Fig. 2.** Computed tomographic images of a cerebral mass which was localized in right hemispheric region and caused a vasogenic oedema effect with contrast media enhancement.

Brain metastasis in the adenocarcinoma of the prostate is seen only in 1% of all cases and subdural and parenchymal metastasis is reported to be rare due to the barrier effect of the dura.<sup>[4-6]</sup> In autopsy series, the incidence of cranial involvement in malignancies is reported as 17%. Isolated meningeal involvement constitutes approximately 1% of these lesions.<sup>[7]</sup> Although meningiomas can be differentiated by their clinical and radiological properties, some other pathological conditions may mimic these lesions. Benign, inflammatory, infectious and also malign lesions may lead to this clinical condition. Ependimomas, xantastrostomas, plasmocytomas, lymphomas, leiomyosarcomas, cancers of the prostate, colon, gall bladder, lung, kidney, breast and thyroid gland, adenoid cystic cancers, neuroblastomas, melanomas, cancers with unknown primary tumors, chondromas and solitary fibrous tumors, are among these pathological conditions.<sup>[8-25]</sup> Additionally, other relatively rare conditions including actinomycosis tuberculosis, sarcoidosis, subdural hematoma, HIV infection, and other non-malign causes such as Rosai-Dorfman's and Castleman's disease may lead to this clinical condition. Meningioma-like lesions are rarely seen in old patients with prostatic cancer. Classical incidental meningioma and metastatic spread due to other malignancies is even rarer in this age group.<sup>[11,26]</sup> The presence of brain metastasis in patients with prostatic adenocarcinoma is usually accompanied by other organ metastases and is associated with a poor prognosis.

In conclusion, not only metastatic tumors, but also non-malignant conditions should be considered in cancer patients presenting with neurological signs and a cerebral mass simulating meningioma. Biopsy should be performed for differential diagnosis, as appropriate. In this case biopsy could not be performed since the patient did not give consent. The patient died 4 months after the development of the brain metastasis.

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