

Beyin Apsesini Taklit Eden Enfekte Metastatik Beyin Tümörü

Infected Metastatic Brain Tumor Mimicking Brain Abscess

Fatih Ersay Deniz<sup>1</sup>, Özgür Demir<sup>1</sup>, Erol Öksüz<sup>1</sup>, Mustafa Berker<sup>2</sup>, Özgür İsmailoğlu<sup>3</sup>,  
Osman Ekin Özcan<sup>2</sup>

<sup>1</sup>Gaziosmanpaşa University,  
Faculty of Medicine, Department  
of Neurosurgery, Tokat, Turkey

<sup>2</sup>Hacettepe University, Faculty of  
Medicine, Department of  
Neurosurgery, Ankara, Turkey

<sup>3</sup>Suleyman Demirel University,  
Faculty of Medicine, Department  
of Neurosurgery, Isparta, Turkey

**Yazışma Adresi:**

**Fatih Ersay Deniz, MD.**

**Adress:** Gaziosmanpaşa  
Üniversite Hastanesi  
Beyin ve Sinir Cerrahisi AD,  
Tokat/Turkey  
Phone: (90) 0 356 2129500/1292

**E-mail:** ersaymd@yahoo.com

**Özet**

Çok sayıda çevresel kontrast tutan lezyonlar, beynin görüntülemelerinde en çok karşımıza çıkan anormalliklerden biridir. Bu durum çeşitli enfeksiyonlar, neoplastik veya vasküler hastalıklar nedeniyle oluşabilir. Neoplastik lezyonları neoplastik olmayan lezyonlardan ayırmak son derece önemlidir. Bu çalışmada çok sayıda serebralabse veya granüloma ön tanısı olan ve ilk cerrahi sonrası serebralabse tanısı alan 39 yaşında bir erkek hastayı sunduk. Hastanın klinik semptomları ameliyat sonrası düzelmedi ve ileri incelemeler sonucunda hastada akciğer karsinomu metastazı tespit edildi. Hastaya yapılan ikinci cerrahi de son tanıyı doğruladı. Doğru ve tam tanı için ileri çalışmalar sonrasında uygun cerrahi planlaması gereklidir. Şu unutulmamalıdır ki; abse ve beyin metastazının birlikteliği mümkündür.

**Anahtar kelimeler:** Metastatik, beyin, tümör, apse.

**Abstract**

Multiple ring-enhancing lesions of the brain are one of the most commonly encountered abnormalities on neuroimaging. These can be caused by a variety of infectious, neoplastic, inflammatory or vascular diseases. Distinguishing non-neoplastic causes from neoplastic lesions is extremely important. This report describes a 39-year-old male patient, who underwent a surgical procedure with the initial diagnosis of multiple cerebral abscess or granuloma and was diagnosed with cerebral abscess after first surgical intervention. His clinical symptoms did not improve postoperatively, and lung carcinoma metastasis was detected after further investigations. Second surgical intervention also confirm final diagnosis. To correctly and completely diagnose patients with multiple intracranial lesions, advanced studies and adequate surgical intervention must be undertaken. It must be kept in minds that abscess and brain metastasis can be concomitant.

**Keywords:** Metastatic, Brain, Tumor, Abscess

## Introduction

Multiple intracranial lesions of the brain may have diverse etiologies and radiological diagnoses can be non-specific. Ring-enhancing lesions in the brain always raise questions among neurosurgeons and radiologists, given the many possible differential diagnoses, it may sometimes be difficult to reach a diagnosis with conventional imaging (1-5). Tuberculoma is still one of the differential diagnosis especially in the endemic regions (5). In clinical practice, it is essential to differentiate between these conditions because their management and prognosis are totally different. Advanced magnetic resonance imaging techniques may be used for diagnosis. The infected metastasis is uncommon enough to be overlooked as a differential diagnosis (6-12). This report presents a case of diagnostic and therapeutic challenge; a patient with multiple intracranial lesions.

## Case Report

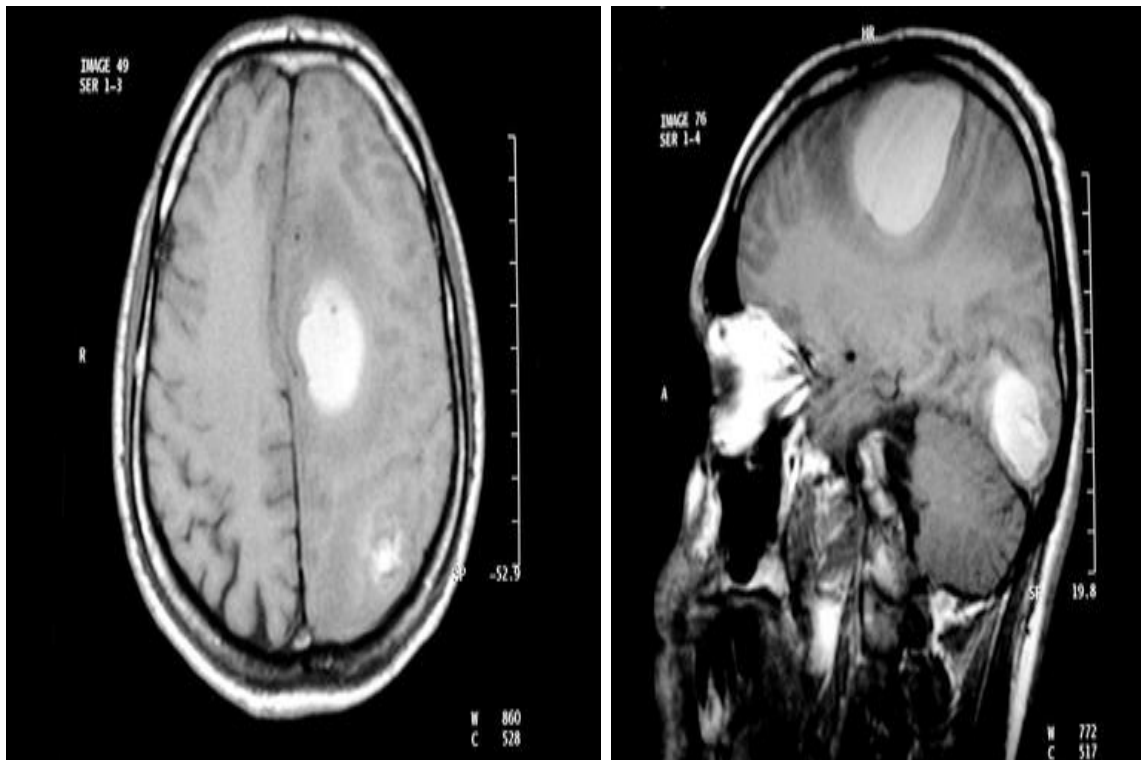
A 39-years-old male patient presented with the complaints of headache and weakness in his right side. His history revealed that he was treated with drug therapy (Isoniazid 1x300 mg, Rifampicin 1x600 mg) for six months after diagnosis of tuberculosis. In MRI T1 weighted images showed three lesions in the left occipital lobe, left frontal lobe and left parietal lobe. Methemoglobin were present

in these lesions. It was reported that the lesions were rim like enhanced after contrast injection at T1 weighted images and also T2 weighted images presented with hypointense rim corresponding to capsule and surrounding edema (Figure 1, 2). The patient underwent operation and left fronto-temporo-parietal craniotomy was carried out, 25cc brown liquid was aspirated and the cavity was irrigated with saline solution. Postoperatively, hemiparesis was observed to improve markedly.

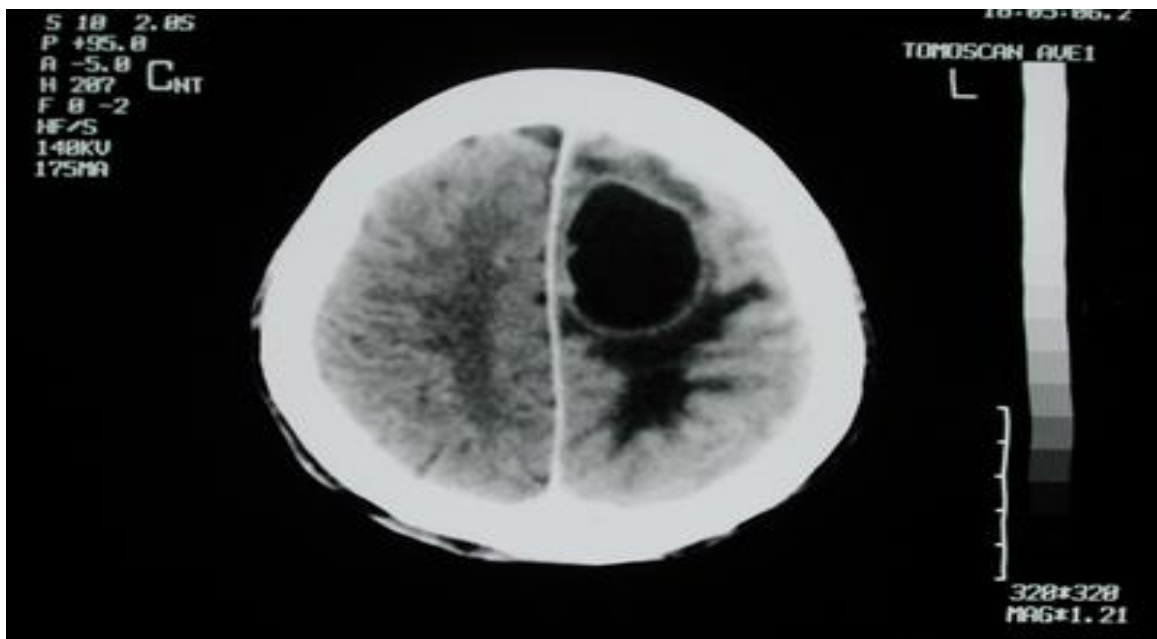
In the microscopic investigation of the aspirated specimen, total cell number was found to be very high and white cell count was 13,000/mm<sup>3</sup>. Although MRI was consistent with tuberculosis, other etiological factors could not be excluded and sulbactam-ampicillin 4x1.5 gr. was instituted.

In the microbiological culture of the aspirated sample, staphylococcus hominis was isolated. Acid-fast stain and tuberculosis polymerase chain reaction were found to be negative.

The patient was discharged with instructions to continue antibiotic regimen for five weeks with the diagnosis of brain abscess. One week after discharge, patient presented with complaints of increasing right hemiparesis, motor dysphasia and deterioration of general well-being. The possibility of inadequate abscess treatment was addressed; Vancomycin and Meropenem were commenced. Computed tomography images showed rim like enhancing lesions revealing intracerebral abscess and subfalcian herniation (Fig. 3).



**Figure 1, 2.** Preoperative MRI scan of head. T1 weighted axial and sagittal images showed hyperintense lesions in frontal and occipital lobes.



**Figure 3.** CT scan of head before second operation. Contrast enhanced CT image showed intraparenchymal rim like e

In the second neurosurgical intervention, entry through previous incision was accomplished and the cyst was drained by cortical incision to the frontal cortex under existing sutures. Inspection of the cyst wall under surgical microscope revealed pink-purple tumor tissue and excision was carried out.

In the tomographic investigation of the thorax, a mass with cavitation at the diameter of 2.5 cm was seen in the upper segment of the left lung and parenchymal nodule at the size of approximately 2.5 cm in the upper lobe, apical segment of right lung. In the pathological examination, carcinoma metastasis was found. Patient was discharged after radiotherapy was planned.

## **Discussion**

The opinion varies regarding the therapeutic and diagnostic approaches to intracranial multiple lesions. In open surgical interventions, it is essential to get specimens from both the fluid and solid tissue. If there is no solid tumor, it is important to obtain multiple specimens from the cyst wall and suspected tissues (7). In single or multiple intracranial masses, particularly in high grade glial tumor and metastasis, milky degeneration occurring due to necrosis, may lead the lesion to be mistaken for abscess during surgery<sup>10</sup>. Furthermore, brain metastasis may be misinterpreted as tissue necrosis rather than abscess when there is liquified material present<sup>12</sup>. Actually, in the present case, cyst aspiration was regarded as adequate in the first operation upon consideration of the abscess perioperatively. Results of microscopic and microbiological examination of the specimens favored a diagnosis of abscess. Nevertheless, when lesions did not improve with medical

treatment, the second surgical intervention was performed. Visual examination of tumor tissue of the cyst wall by surgical microscope and pathological investigation of the specimen established an accurate diagnosis.

When contemplating surgical intervention for single or multi-cystic, necrotized, degenerative intracranial lesions, it is necessary to examine the cyst cavity with the surgical microscope and to obtain specimens from cyst wall and suspicious looking tissues. If stereotactic biopsy is planned, care should be taken in the choice of lesions: diagnostically valuable lesions should be biopsied (1). The co-existence of abscess within a metastasis of one or more of the lesions should also be considered. When multiple intracranial masses are identified radiological; abscess, metastasis, multicentric or multiple gliomas are primarily considered (3,7). In differential diagnosis, tuberculoma should also be considered especially in the endemic areas and in patients with the history of tuberculosis<sup>5</sup>. In vivo MR spectroscopy can also be used in the differential diagnosis of cystic intracranial masses (3,9,11). Before definitive diagnosis, it is reasonable to biopsy or remove a lesion (2,4,6,8). It should also be considered that a brain metastasis can also be infected.

## **References**

1. Chaddock WM, Roycroft D, Brown MW. Multicentric glioma as a cause of multiple cerebral lesions. *Neurosurgery*. 1983;13(2):170-5.
2. Chan JH, Tsui EY, Chau LF, Chow KY, Chan MS, Yuen MK, Chan TL, Cheng WK, Wong KP. Discrimination of an infected brain tumor from a cerebral abscess by

- combined MR perfusion and diffusion imaging. *Comput Med Imaging Graph.* 2002;26(1):19-23.
3. Dev R, Gupta RK, Poptani H, Roy R, Sharma S, Husain M. Role of in vivo proton magnetic resonance spectroscopy in the diagnosis and management of brain abscesses. *Neurosurgery* 1998; 42 (1): 37-42.
  4. Garg RK, Desai P, Kar M, Kar AM. Multiple ring enhancing brain lesions on computed tomography: an Indian perspective. *J Neurol Sci* 2008;266:92-6.
  5. Kamiya K, Yamashita N, Nagai H, Mizawa I. Intracranial tuberculoma with difficult preoperative diagnosis. Case Report. *Neurol Med Chir* 1991; 31 (13): 991-4.
  6. Kotwica Z, Papierz W. Cerebral and cerebellar glial tumors in the same individual. *Neurosurgery.* 1992;30(3):439-41.
  7. Little AA, Gebarski SS, Blaivas M. Nontuberculous Mycobacterial Infection of a Metastatic Brain Neoplasm in an Immunocompromised Patient. *Arch Neurol.* 2006;63(5):763-5.
  8. Nakamura H, Tanaka H, Ibayashi S, Fujishima M. A case of intracranial tuberculoma early diagnosed by open brain biopsy. *No To Shinkei.* 2001;53(4):387-90.
  9. Ng WP, Lozano A. Abscess within a brain metastasis. *Can J Neurol Sci.* 1996;23(5):300-2.
  10. Rémy C, Grand S, Lai ES, Belle V, Hoffmann D, Berger F, Estève F, Ziegler A, Le Bas JF, Benabid AL, Décorps M, Segebarth CM. 1H MRS of human brain abscesses in vivo and in vitro. *MagnReson Med.* 1995;34(4):508-14.
  11. Sakai H, Kawano N, Okada K, Tanabe T, Yada K, Yagishita S. A case of pleomorphic xanthoastrocytoma. *No ShinkeiGeka* 1981; 9 (13): 1519-24.
  12. Sudhakar K.V, Agrawal S, Rashid M.R, Hussain N, Gupta R.K. MRI demonstration of haemorrhage in the wall of a brain abscess: possible implications for diagnosis and management. *Neuroradiology.* 2001;43(3):218-22.

