causapedia
hakemli olgu dergisi
e-ISSN:2147-2181

Infratentorial Meningioma of Midline Causing Hydrocephalus: CT and MRI Findings

Infratentorial Meningioma of Midline Causing Hydrocephalus: CT and MRI Findings
Radyoloji

Başvuru: 15.01.2014
Kabul: 31.01.2014
Yayın: 06.03.2014

İdil Güneş Tatar[1], Engin Dinç[1], Serdar Korkmaz[1], Aynur Turan[1], Baki Hekimoğlu[1]

[1] Ankara Dışkapı Yıldırım Beyazıt Eğitim ve Araştırma Hastanesi

Özet

Santral sinir sisteminin en sık görülen ekstraksiyel tümörü olan menenjiyom %85-90 sıklıkla supratentorial yerleşim göstermekte olup, insidental olarak saptanır. Bu yazımızda, Acil Servis'e senkop ile başvuran 80 yaşındaki bir erkek hastayı sunmaktayız. Yapılan kranial bilgisayarlı tomografi (BT) ve magnetik rezonans görüntüleme (MRG) incelemelerinde posterior fossa orta hatta yerleşim gösteren ekstraaksiyel lezyon saptanmıştır. Lezyon 4. ventrikülü komprese edip, lateral ventriküllerde dilatasyona sebep olmaktaydı. Lezyonun total eksizyonu gerçekleştirilmiş olup, patolojik inceleme meningotelial (sinsitiyal) menenjiyom ile uyumlu gelmiştir. Bu vaka orta hat yerleşimli infratentorial lezyonların ayırıcı tanısında menejiyomun da düşünülmesi gerektiğini vurgulamaktadır.

Anahtar kelimeler: *Menenjiyom, İnfratentoriyal BT MRG Orta hat*

Abstract

Meningioma, the most common extraaxial tumour of the central nervous system, has supratentorial location in 85-90% of the cases and is usually detected incidentally. In this case we present an 80 year-old male patient who was admitted to the emergency department with syncope. Cranial CT and MRI examinations revealed an infratentorial extraaxial lesion located in the midline of posterior fossa. The lesion caused compression of the fourth ventricule and dilatation of the lateral ventricules. Total excision was performed and pathological examination proved to be meningothelial (syncytial) meningioma. This case signifies to consider meningioma in the differential diagnosis of infratentorial midline lesions.

Keywords: *Meningioma, İnfratentorial CT MRI Midline*

Introduction

Meningiomas, nonglial neoplasms originating from arachnoidal cap cells, are the most commonly seen extraaxial tumors of the central nervous system, constituting 14-20% of all intracranial neoplasms [1]. In 85-90% of the cases they are located supratentorially (45% parasagittal and convexity, 15-20% sphenoid wing, 10 % olfactory groove, 5-10% parasellar) and in 5-10% of the cases infratentorially mostly in the cerebellopontine angle [2]. Many meningiomas are detected incidentally. The most common symptoms are headache (36%), paresia (22%), change in the mental status (21%) and focal neurologic deficits [2]. In this case we report an unusual presentation of an infratentorial meningioma located in the midline of posterior fossa causing hydrocephalus.

Case Report

An 80-year-old male patient was admitted to the emergency department with syncope. He complained of frequent headache in the last six months. Cranial computed tomography (CT) examination revealed a hyperdense mass lesion measuring 4x4 cm located in the midline of posterior fossa causing obliteration of the fourth ventricule and dilatation of the lateral ventricules (Figure 1).

Sorumlu Yazar: İdil Güneş Tatar, Ankara Dışkapı Yıldırım Beyazıt Eğitim ve Araştırma Hastanesi
idilttr@yahoo.com

causapedia
hakemli olgu dergisi
e-ISSN:2147-2181

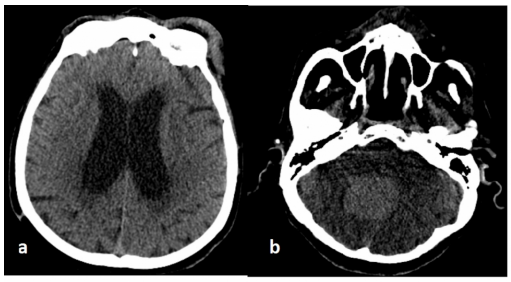

Figure 1
On the axial CT scans dilatation of the lateral ventricules (a) and a hyperdense mass measuring 4 cm located in the midline of posterior fossa causing obliteration of the fourth ventricule (b) is seen.

In the cranial magnetic resonance imaging (MRI) examination the lesion was hypointense on T1 and T2-weighted sequences with homogeneous contrast enhancement on postcontrast T1-weighted sequence (Figure 2).

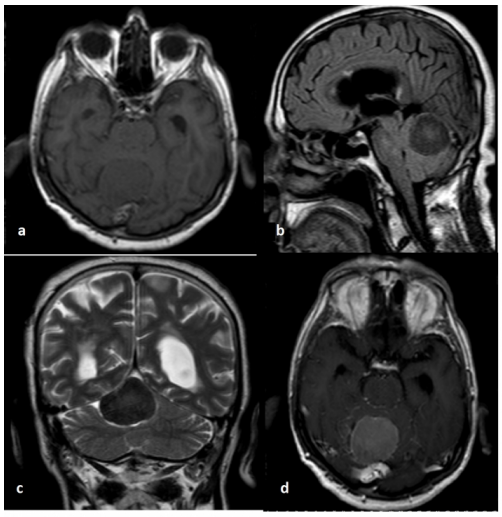

Figure 2
A hypointense lesion is detected in the midline of posterior fossa on T1-weighted axial (a) and sagittal FLAIR (b) sequences which causes dilatation of lateral ventricules. On coronal T2-weighted sequence (c) the lesion is hypointense with a broad base on the tentorium and the adjacent cerebrospinal fluid cleft sign is detected. The lesion shows homogeneous enhancement on postcontrast T1-weighted sequence (d).

The lesion exerted mass affect to the cerebellar vermis. The broad base of the lesion on the tentorium and the presence of adjacent cerebrospinal fluid cleft sign were radiologic signs for the extraaxial origin of the lesion. The radiologic diagnosis was primarily meningioma.

The differential diagnosis of the meningiomas are related to their location. In the cerebellopontine angle acoustic schwannoma; in the parasellar region pituitary macroadenoma and craniopharyngioma and for the lesions elsewhere haemangiopericytoma, granulomas, idiopathic hypertrophic pachymeningitis, extramedullary haematopoiesis, chondrosarcoma and chordoma should be considered. In the presence of hyperostosis fibrous dysplasia and Paget disease should also be kept in mind for the differential diagnosis.

e-ISSN:2147-2181

The mass was totally excised. Pathologic examination revealed meningothelial (syncytial) meningioma without atypical or malignant features which is included in WHO grade 1. The patient was followed up by cranial MRI six months after the operation which revealed no sign of residual lesion.

Discussion

The case reported herein had a very unusual presentation of midline in posterior fossa. In the literature Guan et al. also reported a case of meningioma located in the midline of posterior fossa causing compression of the fourth ventricle resulting in hydrocephalus [3]. In the differential diagnosis of the lesion the authors considered hemangioblastoma and pilocytic astrositoma since the lesion was cystic with a peripheral enhancing nodule. Other than that most of the infratentorial meningiomas have been reported to be located on the posterior surface of the petrous bone and clivus [4,5].

The development of the modern cross sectional imaging modalities have fascilitated the diagnosis of meningiomas. Although MRI is the preferred imaging modality, CT is the mostly utilized method due to its wide spread use and availability in the emergency conditions. CT is superior in demonstrating cortical thickening, increased cortical density due to hyperostosis and the detection of calcifications seen in 25% of the meningiomas. CT is also superior for the evaluation of destruction of the adjacent bone caused by atypical/malignant meningiomas [6].

Benign meningiomas are round or elongated extraaxial masses which are isodense to the cerebral cortex on CT images, and isointense on T1and T2-weighted MRI sequences. The broad dural base, sharp margin between the mass and the deplased brain parenchyme, presence of the adjacent cerebrospinal fluid cleft sign are important in determining the extraaxial origin. Although meningiomas usually have homogeneous internal structure on precontrast images and show homogeneous contrast enhancement on postcontrast images, they may appear heterogeneous due to necrosis, calcification and lipid content. The localization of the meningiomas are typically restricted by the dural attachments. Invasion of the dural sinus, narrowing or thrombosis of the arteries, compression to the cranial nerves are significant complications which should be known preoperatively.

Advanced imaging techniques have started to be utilized to characterize meningiomas in more detail. Intraaxial oedema can be observed adjacent to the meningioma which has been thought to be primarily related to the release of vascular endothelial growth factor [7] and it has been shown to be associated to the increased recurrence risk in literature [8,9]. On the diffusion weighted MRI presence of restricted tumoral diffusion have also been linked to aggresivity and recurrence of the meningiomas which can be detected in tumors with high cellularity [10]. Perfusion MRI can also be used to differentiate benign versus malignant meningiomas. The vascularization of the benign meningiomas are from the external carotid arteries via the dural branches which do not have blood brain barrier. As the meningiomas grow in size they can develop vascularization from the pial parenchymal branches which have blood brain barrier. Pial-cortical vascularization mostly support aggressive meningiomas with high recurrence potential while dural-meningial vascularization indicate benign meningiomas.

Most of the meningiomas are benign and classified as WHO grade 1 whereas atypical meningiomas are classified as WHO grade 2, malignant meningiomas are classified as WHO grade 3 and meningiomas which show sarcomatous change are classified as WHO grade 4 [11].

References

1. Filippi CG, et al. Appearance of meningiomas on diffusion-weighted images: correlating diffusion constants with histopathologic findings. AJNR Am J Neuroradiol. 2001 Jan;22 (1): 65-72.

e-ISSN:2147-2181

2. Greenberg H, Chandler WF, Sandler HM. Brain tumors. USA: Oxford University Press, 1999 ISBN:019512958X
3. Guan TK, et al. Infratentorial benign cystic meningioma mimicking a hemangioblastoma radiologically and a pilocytic astrocytoma intraoperatively: a case report. J Med Case Rep. 2013 Mar 28;7(1):87.
4. Helie O, et al. Magnetic resonance imaging and meningiomas of the posterior cerecral fossa, 31 cases. J Neururadiol. 1995 Dec;22(4):252-70.
5. Desgeorges M, Sterkers O. Anatomo-radiological classification of meningioma of the posterior skull base. Neurochirurgie. 1994;40(5):273-95.
6. Pieper DR, Al-Mefty O, Hanada Y, Buechner D. Hyperostosis associated with meningioma of the cranial base: secondary changes or tumor invasion. Neurosurgery. 1999;44(4):742–6.
7. Pistolesi S, et al. Meningioma associated brain oedema: the role of angiogenic factors and pial blood supply. J Neurooncol. 2002; 60(2):159–64.
8. Vignes JR, et al. Peritumoral edema and prognosis in intracranial meningioma surgery. J Clin Neurosci. 2008;15(7):764–8.
9. Simis A, et al. Peritumoral brain edema in benign meningiomas: correlation with clinical, radiologic, and surgical factors and possible role on recurrence. Surg Neurol. 2008;70(5):471–7.
10. Nagar VA, et al. Diffusion-weighted MRI: diagnosing atypical or malignant meningiomas and detecting tumor dedifferentiation. AJNR Am J Neuroradiol. 2008;29(6): 1147–52.
11. Louis DN, et al. WHO classification of tumours of the central nervous system. WHO. (2007) ISBN:9283224302

Information Presentation

Bu vaka Ulusal Manyetik Rezonans Derneği 18. yıllık toplantısında (2013)'da bildiri olarak sunulmuştur.