Case Report

Bifrontal Epidermoid Cyst

Abstract

In this paper, we will present a case of a 63-year-old female with bifrontal epidermoid tumor who has gone under bilateral craniotomy. In a case report study, a 63-year-old female with a chief complaint of progressive headache that has been admitted to Department of Neurosurgery was studied. Magnetic resonance imaging was performed for better evaluation. After detection of bifrontal epidermoid cyst, the patient underwent surgery, and following the surgery, a cut of the tumor has been excised, sent for pathology sampling and reviewed for detection of cyst. Microscopic review of the resected part reported normal brain tissue along with sections containing parts of cyst wall covered by squamous epithelium and huge amount of irregularly stratified keratin within its lumen, which clearly emphasizes on diagnosis of a typical epidermoid tumor. Bifrontal epidermoid cyst is rare, and according to our study, the clinical symptoms and patients imaging were consistent with other studies.

Keywords: *Bifrontal craniotomy, bifrontal tumor, epidermoid tumor, frontal lobe, magnetic resonance imaging*

Bahram Aminmansour, Majid Rezvani, Parvin Mahzouni[1], Amir Mahabadi, Ehsan Mohammad Hosseini

From the Department of Neurosurgery, Isfahan University of Medical Sciences, Alzahra Hospital, [1]Department of Pathology, Isfahan University of Medical Sciences, Isfahan, Iran

Introduction

An intracranial epidermoid tumor is commonly a congenital benign rare tumor with a mesoectodermal origin, consisting a percentage of 1.8% of all space-occupying intracerebral lesions.[1,2] They are also called as cholesteatomas and pearly tumors due to their pearl-like appearance.[3] Any displacement of dorsal midline ectodermal cell during 4th and 5th weeks of embryogenesis period may lead to one of its kind. There might be different sites for the tumor. Cerebellopontine angle, paracellar region, supracellar chiasmatic, diploe and spinal canal and fourth ventricle are common sites of the tumor, from the most common to the very least.[4,5] Multiple intracranial epidermoid tumors have been reported too rarely. In this paper, we will present a case of a 63-year-old female with bifrontal epidermoid tumor who has gone under bilateral craniotomy.

Case Report

A 63-year-old female with a chief complaint of a progressive headache has been admitted to the Department of Neurosurgery. The headache first has been presented 4 months ago. Before that time, the patient had always been symptom-free, following a normal active life. The pain was pulsating, with a concentration in frontal and periorbital area with no particular radiation. When severe, it has been followed by eye irritation and involuntary tearing. Headache was progressive along the day, and most severe at night. The severity of the pain has also been intensified within the recent weeks comparing to time it started. The patient had no history of seizure or convulsion, aphasia, and diplopia. Otherwise, she gave a history of occasional vomiting, nausea, amnesia, and sphincter dysfunction in form of stress incontinency and equilibrium problems. Cerebellar tests were abnormal, and she could not walk on her own. She had a history of left kidney tumor, for which she had undergone partial nephrectomy for about three years ago. Furthermore, she gave a history of controlled diabetes, hypertension, and hyperlipidemia. No history of ischemic heart disease or cerebrovascular attack was mentioned. She had a drug regimen of insulin, losartan, memantine, atorvastatin, zinc plus, magnesium, propranolol, and venlafaxine. In her physical examination, cranial nerves were intact, with a Glasgow Coma Scale of 15/15. Cerebellar tests were abnormal with obvious equilibrium dysfunction and inability to self-manage

How to cite this article: Aminmansour B, Rezvani M, Mahzouni P, Mahabadi A, Hosseini EM. Bifrontal Epidermoid Cyst. Adv Biomed Res 2018;7:77.

Received: May, 2016. **Accepted:** October, 2017.

Address for correspondence:
Dr. Ehsan Mohammad Hosseini, Department of Neurosurgery, Isfahan University of Medical Sciences, Alzahra Hospital, Isfahan, Iran.
E-mail: ehsan_m_hh@gmail.com

Access this article online

Website: www.advbiores.net

DOI: 10.4103/abr.abr_107_16

Quick Response Code:

walk. Both pupils were normal sized, symmetric and reactive to light. Visual acuity was at level of finger count out of three meters distance. Sensory and motor function of the four extremities were normal; and no sensory level was detected. The patient suffered from sphincter dysfunction in the form of stress incontinency.

Magnetic resonance imaging (MRI) was performed for better evaluation. In T1 view a well-defined hypo-signal mass was detected in middle gyrus of each frontal lobe. The same hyper signal mass was detected in T2 view. Two totally discrete heterogeneous intraparenchymal lesions in frontal lobes lateral to falx cerebri was detected in flair view. Slight marginal edema was also seen [Figure 1]. As surgical removal is choice in approach to epidermoid tumors, the patient then underwent bifrontal craniotomy. Bicoronal skin incision was made, and dura was separately opened on the left and right. Since there was no inspection of tumor beyond the cortex, two separate cortical incisions were also made and the two separate tumors were totally resected from the middle gyrus of frontal lobe of both hemispheres. Right after the surgery up to her last visit, the patient has become symptom-free.

Following the surgery, a cut of the tumor has been excised, and sent for pathology sampling. Microscopic review of the resected part reported normal brain tissue along with sections containing parts of cyst wall covered by squamous epithelium and huge amount of irregularly stratified keratin within its lumen which clearly emphasizes on diagnosis of a typical epidermoid tumor [Figure 2].

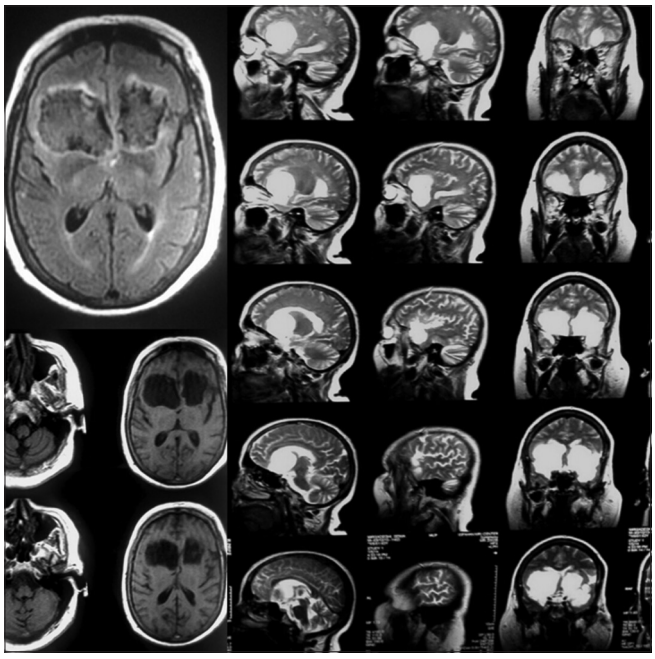

Figure 1: Magnetic resonance imaging of the patient with bifrontal epidermoid cyst; in T1 view two discrete, well-defined hypo-signal intraparenchymal mass in middle gyrus of both frontal lobe, lateral to falxcerebri is seen. The same hyper signal mass is detected in T2 view. Slight marginal edema can also be viewed

Discussion

Epidermoid tumor is a lesion with benign course and nature. It represents less than 2% of intracranial tumor. Intracerebral location of these lesions is rare and comprises about 1.5% of all intracranial tumors.[3] Intracranial epidermoid tumors are originated from misplaced entrapped ectodermal cells within the time of neural tubal closure during 4th and 5th weeks of embryogenesis that leads to an epithelial inclusion, growing and giving rise to epidermoid cysts and tumors.[5] Based on their place, they are divided into four categories, retrocellar cerebellopontine angle, parasellar-sylvian fissure, suprasellar chiasmatic and basilar posterior fossa, from the most common site to the very least.[4,5] Because they almost always grow along cisternal areas of the brain, it might take a long time to be clinically presented and diagnosed.[6,7] They remain asymptomatic for many years and first diagnosed by mass effect symptoms when the first tumor has grown giant. Headaches, cranial nerve deficits, cerebellar symptoms, seizures, raised intracranial pressure are other common late onset symptoms. Recurrent aseptic meningitis may also occur but not that often. Hydrocephalus is very rare, due to the slow growth pattern of the tumor. It has a peak incidence during the fourth decade and most of the patients with intracranial epidermoid tumor have an age range of 20–40.[7] The tumor has a pearl-like appearance, and in some texts it is mentioned to be a beautiful tumor which is the result of desquamation of keratin and cholesterol within its wall.[3] When the tumor is extensive, there is less tendency for its surgical radical removal, especially when adhered to pia mater. The most common differential diagnosis for epidermoid tumor includes arachnoidal cysts, hamartomatous lipomas, dermoid cysts, cystic neoplasms, neurocystocercosis, and neuroenteric cyst which can be differentiated by brain computed tomography scan and MRI.[3,5-9]

Surgical approach has always been introduced as the choice treatment for epidermoid tumors.[5,10,11] Site and

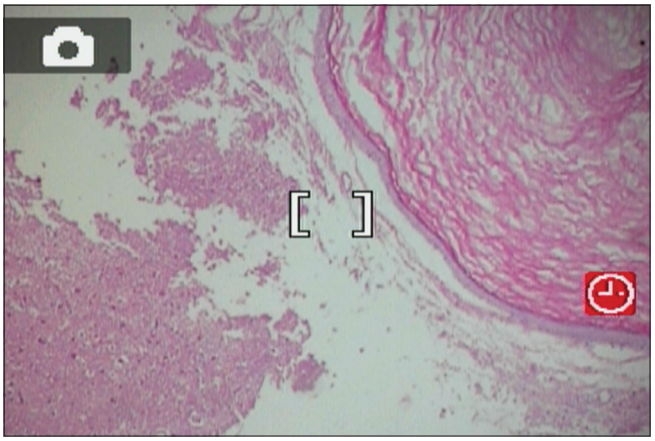

Figure 2: Histopathology if patient with bifrontal epidermoid cyst; some normal brain tissue with cyst wall covered by squamous epithelium and huge amount of irregularly stratified keratin within its lumen which clearly emphasis on diagnosis of a typical epidermoid tumor

size of the surgical incision and whether it is going to be partially or totally resected is determined based on size, place, and invasion of tumor, sometimes planned beforehand and then changed to modification at the table. Since the tumor is benign with almost no extent invasion, total removal in form of posterior fossa approach has always been accepted.[9,10] Microscopic meticulous sharp dissection to remove every tiny bit of the tumor capsule has been strongly emphasized on, to prevent recurrence unless adhered to vital cerebrovascular structures. However, decompression and coagualation of the capsule residue is what is commonly practiced.[3,7,11,12]

Since the tumor has a benign nature, the patient prognosis is excellent unless particular intra- and post-operation complications occur. Recurrence due to partial removal or capsule residue is a common complication. Cranial nerve dysfunction and cerebrovascular events due to the insinuating growth pattern of the tumor into brain cisterns and adhesion to nerves and vessels has also been commonly reported. For the same reason, radical removal would be challenging. The capsule has to remain intact within the process of removal to prevent spillage of cyst content; otherwise chemical meningitis might arise. In case, the capsule is ruptured, emergent admission of corticosteroids could be helpful.[2-4,6-9,11,12]

Postsurgical follow-up is crucial to be excise and in short-term for early diagnosis of recurrence. MRI is the best para-clinic test. If diagnosis of recurrence is confirmed, revision is indicated only if the patient is symptomatic since changes into malignancy is pretty rare.[9,11]

Conclusion

In the article above, we have tried to give a review of intracranial epidermoid tumors, their main characteristics, as well as the best approach to maximum life expectancy and quality for the patient. This case report mentioned a bifrontal epidermoid tumor, very rare condition that underwent surgery and we discussed its prognosis of surgery. Although radical resection can be followed by higher mortality and morbidity rate, particularly if the tumor is giant or adhered to tricky brain structures, partial removal could result in recurrence. Therefore, the decision is always left to surgeon's experience and qualification as well as the application of imaging and other possible radiologic methods to give a better insight of the very precise characteristics of the tumor in each and one case, which as every surgeon knows could be unique. Even if every possibility is considered beforehand, unpredicted new things can happen at the table of the surgery, something the neurosurgeon knows best.

Financial support and sponsorship

The authors have no financial interest and have not received any grants from an institute or organization for this study.

Conflicts of interest

There are no conflicts of interest.

References

1. Martin G, Netsky M.D. Epidermoid tumors, review of the literature. Surgical Neurology. 1988;29:477-83.
2. Hsieh CH, Huang KM, Kao MC, Peng S, Wang CC. Hemorrhage in intracranial epidermoid cyst. J Formos Med Assoc 1996;95:173-5.
3. Iaconetta G, Carvalho GA, Vorkapic P, Samii M. Intracerebral epidermoid tumor: A case report and review of the literature. Surg Neurol 2001;55:218-22.
4. Ulivieri S, Oliveri G, Filosomi G, Miracco C. Intracranial epidermoid cyst: Case report. Ann Ital Chir 2008;79:445-6.
5. Hossini A, Lakhdar F, Gana R, Maaqili MR, Saïdi A, Jiddane M, *et al.* Epidermoid cyst of the cisterna magna and the fourth ventricle: Report of four cases. Neurochirurgie 2012;58:358-63.
6. Khan HA, Sobani ZA, Siddiqui AA. Epidermoid cysts in the frontal lobe – A case series. JPMS: VOLUME 1, ISSUE 3 (OCTOBER-DECEMBER, 2011). Available from: www.jpmsonline.com
7. Abedi E, Frable MA. Epidermoid cyst of the frontal bone masquerading as frontal sinusitis. Laryngoscope 1984;94:545-6.
8. Albanese V, Tomasello F, Picozzi P, Sampaolo S, Spadaro A. Paramedian hourglass epidermoid extending above and below the tentorium. Surg Neurol 1982;18:356-63.
9. Bostrom E. About the pale epidermids, dermoids, and lipomas and dural dermis. Path. und path. Zentralbl Pathol Anat 1897;8:1-98.
10. Bailey P. Cruveilhiers tumeur perlees. Surg Gynecol Obstet 1920;31:390-401.
11. Cushing H. A large epidermal cholesteatoma of the parieto-temporal region deforming the left hemisphere without cerebral symptoms. Surg Gynecol Obstet 1922;34:557-66.
12. Berger MS, Wilson CB. Epidermoid cysts of the posterior fossa. J Neurosurg 1985;62:214-9.