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Case Report

Sellar-parasellar epithelioid hemangioendothelioma

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Abstract

Epithelioid haemangioendothelioma is a rare vascular tumor that presents histological features and biological behavior of low-grade malignancy. The authors report a case of malignant sellar-parasellar tumor.

36-year-old female, who had a history of head trauma 16 years before, presented with mild headache, and diplopia, 10 mouths later she presented Rapidly progressive ophthalmologic, ptosis and right amaurosis. CT-scan reveals an intra- or suprasellar mass with non-specific features, with calcifications and bone destruction. She underwent transcraneal partial resection of a suprasellar tumor. This lesion was histological diagnosed as epithelioid haemangioendothelioma that showed papillary endothelial hyperplasia. Immunohistochemically the neoplasm displayed striking positivity for CD31, CD34, EVGF, EVGF-RII and vimentin. The pathogenesis, correlation of histopathologic, radiology, and management of epithelioid hemagioepithelioma are reviewed. EVGF and it receptor can be useful of predictor behavior.

Keywords: Epithelioid hemangioendothelioma; immunohistochemistry, sellar-parasellar tumors, vascular tumors

Sellar-parasellar epitelioid hemangioendoteliyoma

Özet

Epitelioid hemangioendotelioma çok ender görülen histolojik özellik ve biyolojik davranış olarak düşük derece malinite gösteren vasküler bir tümördür. Yazarlar kötü huylu bir sellar-parasellar olgu sunmaktadırlar. Öyküsünde 16 yıl önce geçirdiği bir kafa travması olan 36 yaşında bir kadın, temporal bölgede yoğun ve bunaltıcı bir başağrısı tanımlamaktadır. Egzostrofi ve diplopi ile 10 ay sonra sağ gözde progressif amaroz ile egzoftalmi gelişmiştir. Kraniyal BT sellar ve parasellar bölgede kalsifikasyon ve komşu kemik dokuda harabiyet yapan neoplazmayı görüntülemiştir. Bu lezyon histolojik olarak papiller endotelial hiperplazi gösteren bir epitelioid hemangioendotelioma olarak değerlendirilmiştir. İmmünohistokimyasal olarak neoplazma çarpıcı olarak CD31, CD34, EVGF, EVGF-RII ve vimentin pozitifliği göstermiştir. Patogenez, histopatoloji ile ilişkili olarak epitelioid hemangioepiteliomanın radyolojisi ve tedavisi gözden geçirilmektedir. EVGF ve reseptörünün davranış tahmininde yararı olabileceği vurgulanmaktadır.

Anahtar Kelimeler: Epitelioid hemangioendotelyoma; imünohistokimya, sellar-parasellar tümör, vasküler tümör

INTRODUCTION

The term epithelioid hemangioendothelioma (EHE) was coined by Weiss and Enzinger to nominate a unique vascular tumor with an epithelioid appearance [(1)], is the prototype of a group of vascular tumors, is a borderline or intermediate type characterized by epithelioid or histiocytoid endothelial cells [(2)].

This neoplasm commonly occurs as a soft tissue mass but can be located in other organs, such as; lungs, liver, bones, penis [(2)], etc. Epithelioid hemangioendothelioma of bone is a rare lesion that constitutes less than 1% of primary malignant skeletal neoplasm. Only rare cases arising in the skull have been published [(1)].

Intra-axial involvement of the brain by an epithelioid hemangioendothelioma is rare, and biological properties of the tumor are uncertain. Most of the primary brain manifestations are confined to the cerebral hemispheres [3]. Its intracranial occurrence is rare, and the literature review revealed only 23 cases (14 adults and 9 children) [3-12]. Radiographic images showed a well-demarcated, osteolytic lesion in the skull bone, had sclerotic edges and another had specks of calcification [4-7-10].

Some authors consider that the male-to-femele ratio varies with the tumor location [4-12]. In adults the age range was between 20 and 74 year. EHE may cause symptoms due to space-occupying effects [4-10].

The prognosis of intracranial location has not yet been well defined, despite the favorable outcome noted in the majority of cases; rapid recurrence is possible due to incomplete removal [4-12].

Herein we report a 36-year-old female with destructive sellar and parasellar epithelioid hemangioendothelioma.

CASE REPORT

The patient, a 36-year old woman, She reported history of heat trauma 16 year before. She had a two years history of mild headache, reduced vision and diplopia in the right eye. She presented ptosis and progressive right amaurosis developed 10 month before she sought treatment.

The patient was admitted in our Institution with intense headache, nausea and vomiting. On initial examination, she exhibited bilateral sixth cranial nerve paralysis, ptosis on the right eyelid, and decreased visual acuity (4/10 on the right, 7/10 on the left). Fundoscopic examination showed blurring of the left optic disc and papilla stasis on the right. Preoperative endocrine evaluation was normal.

CT-scan and/or MRI s revealed a sellar and suprasellar expanding, initial radiological impression was of cordoma (figure 1A).

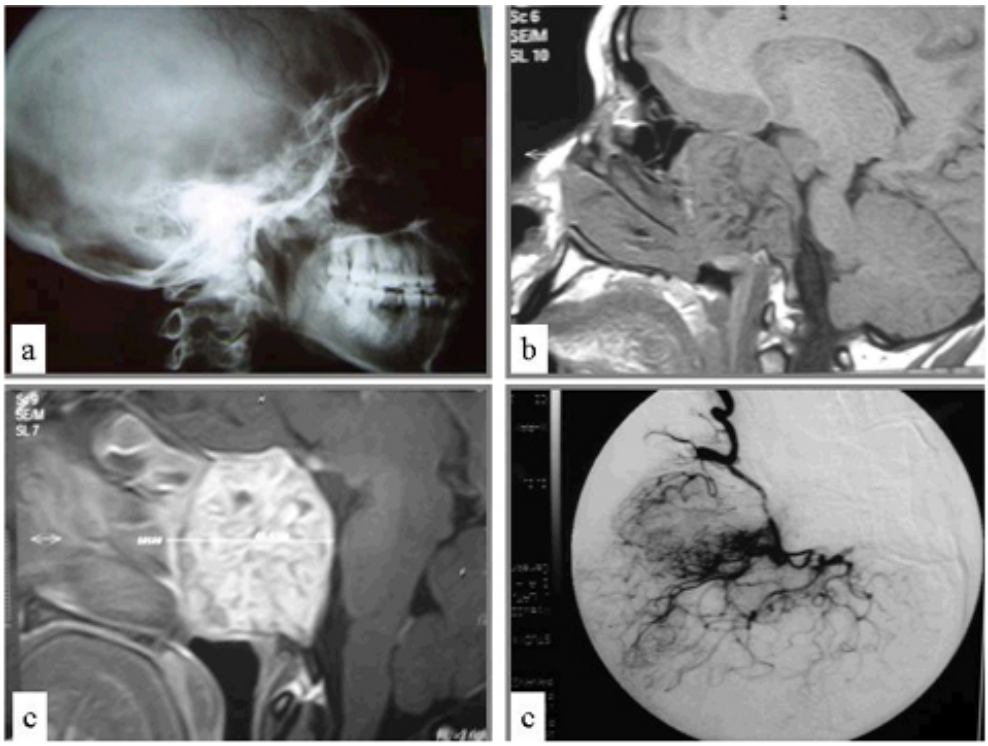

Figure 1a) Lateral cranial plain X-ray showed destructive lesion of the sellar region accompanied by osteolysis. **1b)** MRI-imaging revealed an enlargement of sellar and clivus tumor, it affects the sphenoidal sinus. **1c)**. Close-up of the tumor. **1d)** Lateral angiography's showed complete obstruction of the internal right carotid artery with an adequate flux from the right arterial system to the right through the communicants.

A magnetic resonance imaging (MRI) scan revealed 43 x 42 x 50 mm enhancing homogeneous intra and suprasellar mass with extension into the sphenoid and cavernous sinuses bilaterally; the optic chiasm was not displaced (figure 1b and 1c). Angiography's showed obstruction of the internal right carotid (fig. 1d).

2.1. Surgery

She underwent fronto-temporal craniotomy of the sellar lesion A vascular mass containing necrotic fragments, which involved the sphenoidal sinus, dura, and destroyed clivus interiorly. There was substantial intraoperative bleeding, and autologous blood transfusion was required, and she dead 12 hours after.

2.2. Histological findings

Histological examination of the tumor demonstrated short strands and solid nests ofrounded to slightly spindled, eosinophilic endothelial cells. Variable proportion of cells showed strinking cytoplasmic vacuolation. The stroma was myxoid-hyalinised with focal mixed inflammatory infiltrate, and numerous elongated vessels lined by a single layer of hobnail endothelial cells, and papillary hyperplasia with hyaline collagenous cores (figure 2c, and 2d), necrosis was observed. Immunohistochemistry revealed neoplastic cells positive for CD31, DC34, EVGF and EVGF-RII. The results of immunohistochemistry and the characteristics of the primary antibodies that we used are listed on Table 1(figures 3).

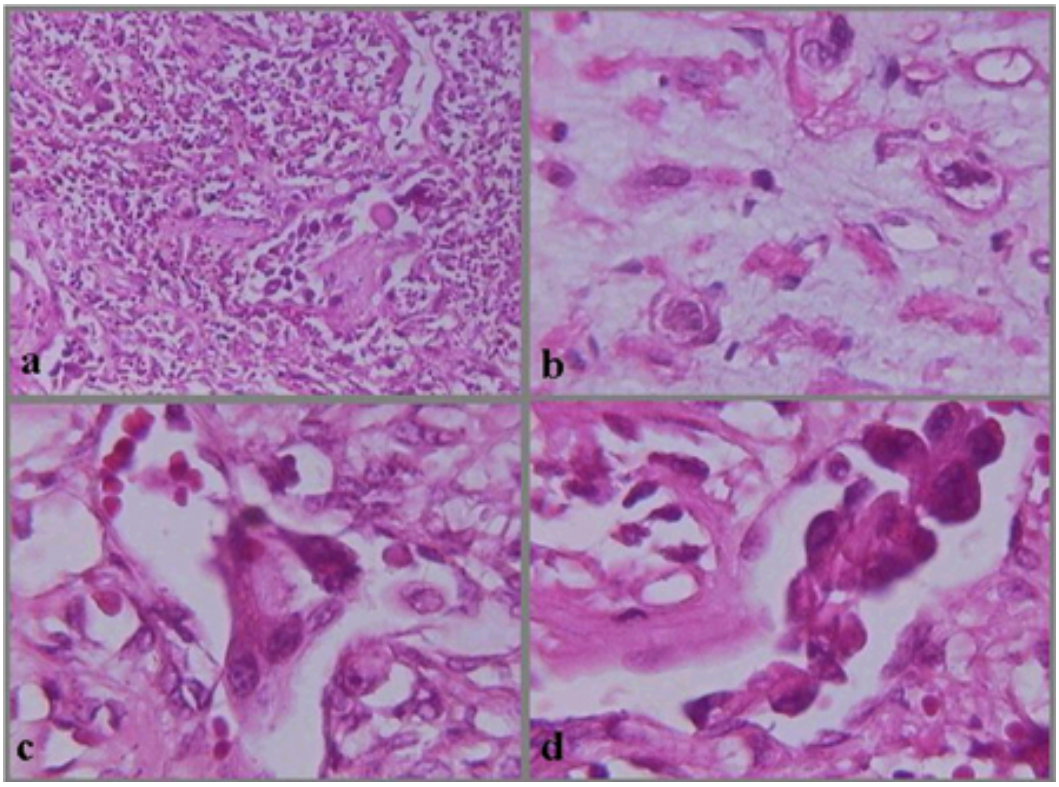

Figure 2a) Histological findings showed a tumor formed short strands and solid nests of rounded to slightly spindled, eosinophilic endothelial cells (H&E original magnification x200). 2b) The stroma was myxoid-hyalinised with numerous elongated vessels lined by a single layer of hobnail endothelial cells. Variable proportion of cells showed strinking cytoplasmic vacuolation (H&E original magnification x 400). **2c and 2d)** Papillary endothelial hyperplasia with hyaline collagenous cores (H&E original magnification x 400).

Table I. Immunohistochemistry and primary antibodies used.

Antibody	Results	Source	Clone	Dilution
CD34	Positive	DAKO	Qbend10	1:100
CD31	Positive	DAKO	JC70A	1:100
EVGF	Positive	BioGenex	AbNo360P	1:100
EVGF-RII	Positive	BioGenex	Flt-1	1:150
GFAP	Negative	DAKO	6F2	1:50
EMA	Negative	DAKO	E29	1:100
Cytokeratin	Negative	DAKO	MNF116	1:150
Vimentin	Weak	DAKO	V9	1:50
S-100 protein	Negative	DAKO	S100	1:100
Desmin	Negative	DAKO	D33	1:100
Synaptophysin	Negative	DAKO	A0010	1:100
NEE	Negative	DAKO	RN4	1:100

EVGF.- Endothelial vascular growth factor, EVGF-RII, Endothelial vascular growth factor receptor, tyrocine kynase(Flt-1). GFAP.- Glial fibrillary acidic protein.
EMA.- Epithelial membrane antigen, NEE.- Neuron specific enolase.
DAKOcytomation. Carpintery cal.

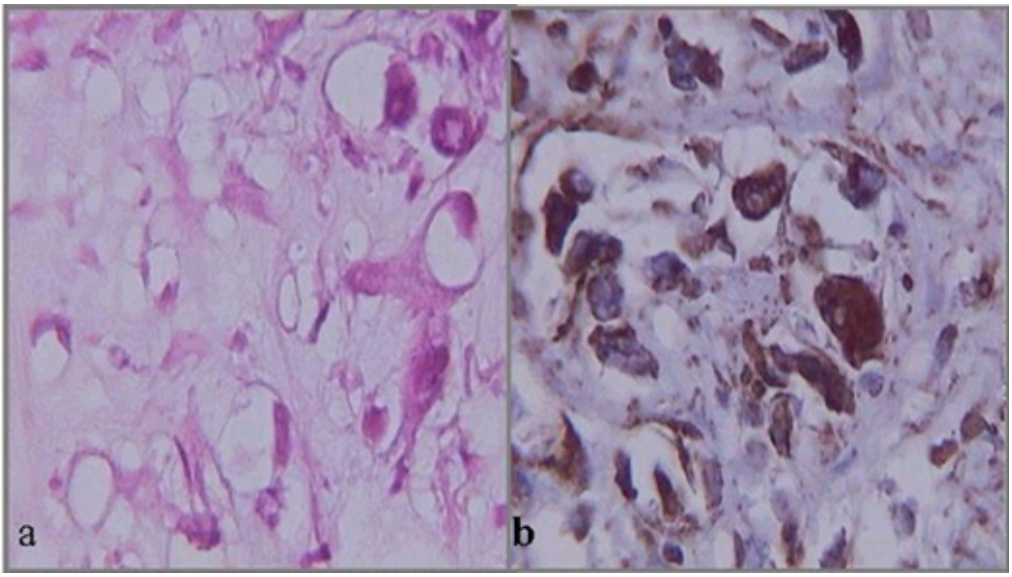

Figure 3a) Immunohistochemistry revealed neoplastic cells and lumina positive for DC34 (original magnification 40x), EVGF positive cell (original magnification x 400).

2.3. Postmortem study

Autopsy findings include; Brain coronal section showed edema, without intraparenchymatous neoplasm (fig. 4a), gross examination of the skull base revealed a tumor affecting sellar-parasellar area and cavernous sinus and thrombosis in right carotid artery (Fig. 4b).

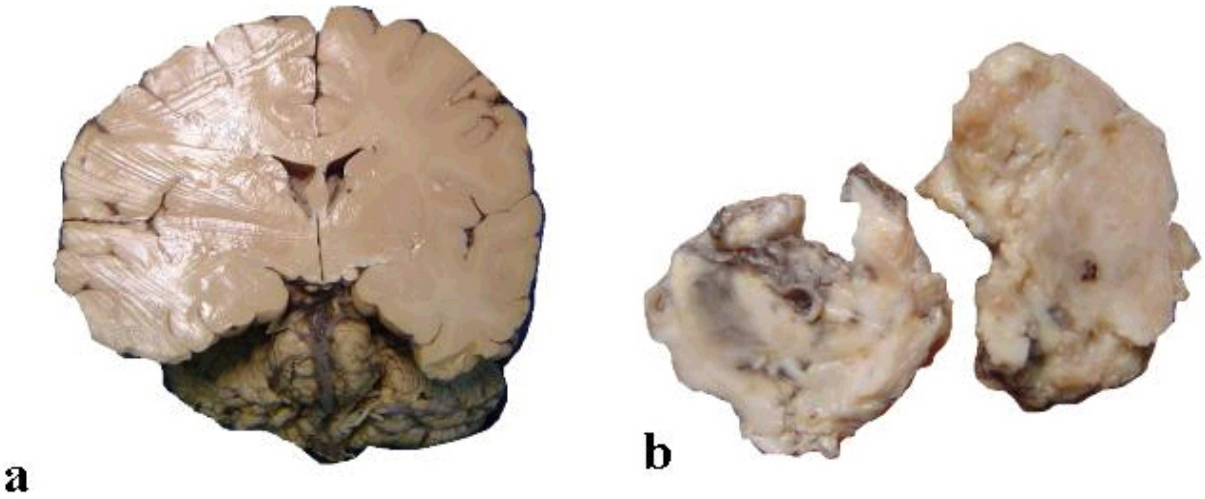

Figure 4a) Brain coronal section with edema, without neoplasm. 4b) Section of skull bone showed a tumor, it was gray, soft, and infiltrative.

DISCUSSION

The heterogeneity of tissue types in the cranium base gives rise to a diverse group of benign and malignant neoplasms with vastly different prognoses, the distinct clinic pathologic features of some of the unique and problematic neoplasms of this region.

Intraoperative observations cannot easily distinguished carcinoma, metastasis carcinoma vs other malignant tumor from epithelial hemangioendothelioma. However, in our case the tumor had completely eroded to the bony sellar floor with marked enlargement, which was rater atypical adenoma. Profuse bleeding from metastatic carcinoma, pituitary carcinoma or vascular adenoma is well known may occur.

Vascular tumors represent one of the largest groups among soft tissue tumors. They are histological and clinically heterogeneous and, considering their ubiquity, are not all well understood [(12)].

It was not until the 1880s to use of the term hemangioendothelioma was introduced, Enzinger and Weiss utilized the term to describe the small subset of vascular tumor, which did not fit neatly into either the benign or malignant categories at that time [(1)]. By the time of the second edition of Enzinger and Weiss published in 1988 the term “hemangioendothelioma” had become more firmly established to describe this intermediate group of vascular lesion and them entities of epithelioid hemangioendothelioma, spindle cell hemangioendothelioma and malignant endovascular papillary angioendothelioma were included under this heading.[(2)] In the most recent revision of WHO classification (2002) the term of “hemangioendothelioma” is no longer regarded as strictly defining a specific group of lesions with intermediate behavior but, insteat, is now used to describe lesion which would fall into the locally aggressive, rarely metastasizing and frankly malignant categories [(12)] which help to reflect the spectrum of behavior in this group of lesion. Many of the tumor types in this category are very uncommon. Although well known to occur also in lung, liver, bone, and

less often in other organs, almost any anatomic location may be affected [2]. Involvement of the cranium is very rare. We have found less than twenty-three cases involving the skull and cranium bone in the English literature [4-8,10,12], (see table II), it may occur at any age, but it occurs most common between the second and third decades of life [3-9].

Table II: Cases reported of epithelioid hemangioendothelioma in base of cranium.

Authors/Reference	Localization	age/gender	Excision	Bleeding	Follow-up	Radiotherapy
Peal et al.(8)	Sellar/parasellar	73/male	Subtotal	Yes	Tumor	Yes
Phookan et al.(10)	Cavernous sinus	36/male	Total	non	4 months	Non
Rushing et al. (5)	Clivus	38/femele	Total	yes	Tumor	Yes
Joo et al.(9).	Sphenoid bone	29/femele	Total	non	Dead 6 months	Non
Aditya et al.(7).	Sellar/parasellar	4 cases (4-45)	Total	yes	Variable	Non
Hamlat et al. (6)	Infundibular	53/male	Total	yes	Stable, cyst tumor	Yes
Baehring et al. (4)	Sellar/parasellar	36/male	Subtotal	yes	Dead 6 months	Non
Watanabe T.(14)	petroclival	45/female	Subtotal	yes	non	yes
Adler et al.(13)	Skull base/spinal	16/male	Subtotal	yes	Dead	---

Immunohistochemical study is helpful in confirming the diagnosis by identifying factor VIII-related antigen, CD34 and CD31, which are a marker for vascular endothelial cell [1,12]. Also, ultrastructuraly studies confirm the endothelial origin of the tumor [1].

EHE is distinguished from hemangioma by the more primitive vasoformative appearance and infiltrative growth [12]). Angiosarcoma is separated from this tumor by nuclear anaplasia, conspicuous anastomosing vascular channels and brisk mitotic activity [12].

The epithelioid endothelial cells have minimal reactivity for CD34, small number of epithelioid endothelial cells expressed; cytokeratins, least focal muscle-specific actin-positive myopericytic cells were present bordering the endothelial cells [2].

The endothelial cells were immunoreactive to EVGF and EVFR-II. The most important responses, to EVGF and its receptors; is keeping with its role as an angiogenic factor, inducted by hypoxia, and may be, we can use as predictor of poor prognosis in vascular tumors. However the most primary EHEs of the brain appear to carry rather favorable prognosis [2-4].

The differential diagnosis of intracranial EHE is distinguished by its well-formed, canalized vessels and often lobular architecture includes; angiosarcoma, metastasis carcinoma, chordoid meningioma, and various sarcomas which an epitelioid apparence [2]. Intracellular vacuoles indicate primitive lumen formation, this appearance is frequently confused with the mucin vacuoles of Adenocarcinoma [1], but the vacuolar contents of EHE do not stain epithelial mucin. The stroma of EHE varies from highly myxoid myxofibromatous, and hyaline [1,12]. EHE should be differentiated from myxoid chondrosarcoma; characteristic histological features of cartilaginous tumor cells are often seen in myxomatous chondrosarcoma [1,12]. Other common intracranial vascular tumors, such hemangioblastoma, hemangiopericytoma, meningiomas with significant vascular component are included in the differential diagnosis of EHE [1,12].

High grade mixoid liposarcoma is some times mistaken for EHE, but differs by the presence of thin-walled arborising vessels, the usual presence of convincing lipoblast and negative for endothelial markers [1,12].

Papillary endothelial hyperplasia is morphologic feature; is similarly and consist primarily of small papillae with hyaline cores associated with adjacent thrombus and often show eosinophilic fibrin in their core [1,12]. Angiosarcoma, hemangioma may have papillary structures [1,12].

Recent data highlight the importance of distinguishing chordoma and chondrosarcoma of the skull. Among the less common, aggressive tumor entities in this anatomical region [(2)], infiltrating pituitary adenoma/pituitary carcinoma, pituitary sarcomas, superficial malignant gliomas, rhabdomyosarcoma.[(1)] etc.

The clinical and radiographic findings are similar to those seen in other cerebral tumors, often delaying diagnosis and treatment and subsequently jeopardizing prognosis [(1,12)].

The appearance of surrounding bony structure and rich vascularity are important findings for the differential diagnosis. Neuroimaging revealed an expansile, homogeneously enhanced intraosseous mass with bony shell and honeycomb configuration.[(14)] Epithelioid hemangioendothelioma should be added to the differential diagnosis for lytic lesions of bone that are clustered in the same anatomic region and that might also present with visceral involvement.[(13)]

CONCLUSION

A case of epithelioid hemangioepithelioma is presented with histological features of papillary endothelial hiperplasia of the sellar-parasellar tumor in a 36-year-old female, with history of head trauma. Immunohistochemistry was reactive to CD34, EVGF and EVFG-RII. To our knowledge those findings has been not noted in this type of vascular tumor previously. Involvement of the cranium is very rare.

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