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Case reports

ETHMOID-SPHENO-PETRO-CLIVAL CHONDROBLASTOMA AND ASOCIATED EPIDURAL ABSCES: *Case report*

ETMOIDNO-SFENO-PETRO-KLIVALNI HONDROBLASTOM SA EPIDURALNIM APSCESOM: *Prikaz slučaja*

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Key words
spheno-petro-clival chondroblastoma, transfacial approach, curettage

Ključne reči
sfeno-petro-klivalni hondroblastom, transfacijalni pristup, kiretaža

Abstract

Chondroblastoma is a rare, usually benign, tumour and represents 1% of primary bone tumours. Skull base chondroblastomas are extremely rare, most frequently located in the squamous part of the temporal bone, as reviewed in the literature. The authors report the first case of chondroblastoma ethmoid-spheno-petro-clival associated with epidural abcces that was treated through curretage of the lesion, and drainage of the abccess and antibiotic treatment. The transmaxillar approach is performed: Lefort one and sagittal maxillar osteotomy. Result of intervention was exelent and no complications trancurred.

Case Report

Fifty four years old woman presented a 10 years history of headache, progressive diplopia, and bilateral 6th cranial nerve weakness. She reported no other health problems. Both CT and MRI revealed extensive midline osteolytic lesion involving the skull base with destruction of paranasal sinuses (maxillary, ethmoid, sphenoid), petrous segment of temporal bone as well as clivus region, extending from the hard palate to the posterior fossa (MRI). Pre contrast immage (fig.1) showed large mass with iso- and hyperintense components compressing the pons. Post-contrast immaging (2a and b) revealed intensification of the isointense portion of this sphenopetroclival mass. The patient was treated surgicaly; transmaxillar approach was performed through Lefort I and sagital osteotomy. Curretage through part of the bone lesión was done, and emptying of the abscess followed by full evacuation of the cheesy content was performed as well. Massive antibiotic treatment was employed. The comparison of pre- and postoperative MRI showed no signs of recurrence (fig. 3a and b).

The patient improved her symptoms, especially headache. Pathological examinations (fig.4) showed pseudochondroblast ovoid cells typical for benign lesion. Wound healing transcurred without comlications (fig.5). In postoperative course, the patient remains in good health without symptoms of recurrence four years after the surgery. The bilateral 6th nerve weakness is stable although not corrected due to this operation (Fig.6). Since this tumour was the benign chondroblastoma, the patient was not submitted to radiotherapy.

DISCUSSION

Chondroblastomas which represent 1% of bone tumors, are benign lesions located in the epiphysis of long bones.[1, 2]

No cases of chodroblastomas of skull base associated with abscesses, or extended above the floor of the skull base compromising the anterior, middle and posterior fossa have not been reported in the literature before. The case presented here is the first one to our knowledge. The cases of chondroblastomas located in the temporal bone in ninety-five

percent of patients were found to have invasion of the middle cranial fossa and 76% were found to have erosion into the superior aspect of the external auditory canal from temporal bone chondroblastoma. The characteristic growth pattern of temporal bone chondroblastoma may result from embryonal or cartilagenous rests entrapped in the tympanosquamous suture line in the middle fossa floor. The symptomatology is related to the location of these lesions. The most common symptoms are headache and diplopia as the case presented here. Other are: cranial nerve palsies, manifested as hoarseness, dysphagia, facial dysesthesia, and hearing loss, and gait disturbances, that may also occur. [3, 4]

Headache may be the result of skull base dura mater irritation or intracranial hypertension. Diplopia, which is present in almost 50% of the cases, is related to involvement of the clivus, with cranial nerve VI compression at the entrance of Dorello's canal, even with minimal tumour mass presence. [5, 6] The epidural abscess pre-pontino could be formed from an infection of the sphenoid sinusitis. It is subsequently encapsulated to form an important extradural bag producing pus-filled mass effect on the cerebral tronco.

Surgical morbidity can be significant, particularly with standard approaches. Raparia et al. reported a neurological complication rate of 33.3% and an incidence of cerebrospinal fluid leakage of 10.3%. [3, 14, 15] Furthermore, total mass resection is achievable in 50% of cases only, and there is no evidence that greater extent of resection improves outcome (fig. 3). Reffering to the location of chondroblastomas in the skull base, some critical structures could be located near the tumors.

Imaging studies have an important role in defining diagnosis and planning the surgical approach (fig. 3). CT scan demonstrates bony destruction of the skull base lateral to the midline; the typical appearance is a destructive lesion with scalloped erosive borders. MRI delineates soft tissue details better and helps to evaluate tumor involvement of neural and vascular structures. The tumor has low- to-intermediate signal intensity on T1-weighted images and high signal intensity on T2-weighted images. The enhancement is usually marked and signal heterogeneity is frequently observed in postcontrast images because of matrix mineralization and prominent fibrocartilaginous elements within the tumor. [12] (fig. 4) Angiographic studies also play an important role, especially in surgical planning, since major vessels could be encased by the tumor.

The current golden standard for cranial chondroblastoma treatment is resection, in order to obtain the definitive tissue diagnosis and reduce the tumor bulk, the approach selection is principally determined by the primary direction of tumor growth and the involved cranial nerves (fig. 3). Bloch and Parsa pointed out that tumors involving the petrous apex and upper third of the clivus, with extension anteriorly into Meckel's cave or the cavernous sinus, should be accessed through a frontotemporal orbitozygomatic approach or middle-fossa craniotomy with subtemporal dissection. Posteriorly and inferiorly directed tumors going below the internal acoustic canal are usually addressed through a retrosigmoid or transpetrosal approach. Large tumors may require a combined petrosal/middle-fossa approach or a staged procedure. Alternative approaches include transfacial, transbasal, transmaxillary, transoral, transfacial, endoscopic endonasal transoral and transsphenoidal approaches (fig. 3). [11] The majority of open approaches can reach one segment of complex chondroblastomas, leaving large residual tumors in other compartments. In our case we electus transfacial corridor (Le Fort I osteotomy, maxillary swing, and midface degloving), transsphenoidal microsurgical route, with excellent exposure of the lesion to perform curettage of the bone injury and the emptying of the abscess. Complete resection of these tumors is virtually impossible for the commitment of all vascular and nervous structures into and out of the base. Pathologic analysis of the bone lesion confirmed that it was a Chondroblastoma (fig. 4) and culture of the abscess was positive for sphtafilococus mitis, received treatment with aumentine for three months.The patient improved clinically symptoms disappeared headache, however, sixth nerve paresis remained stable, the patient currently does in the normal life and annual inspections mediamnte CT and MRI have detected no residual lesion growth, in this if not ne gave radiotherapy as indicated by some authors.

Neuromonitoring and image guidance are performed in all cases, aiding the surgeon to improve resection while minimizing damage (fig. 6). An endoscopic endonasal approach (EEA) may not be the perfect approach for achieving total resection of tumors in these complex cases every single time. However, we believe that an abordaje trans facial, trasesfenoidal, trasbasa allows better overall tumor exposure and optimized conditions for superior resection. The alternative to endonasal resection of these lesions would entail a retrosigmoid approach or a variation of a transpetrous approach; these techniques will eventu- ally reach the tumor but will also require incising 2 areas of dura (posterolateral and ventral), traversing a significant portion of disease-free cisternal space, and navigating be- tween the narrow windows provided by the cranial nerves.

The differential diagnosis includes chondrosarcoma, skeletal eosinophilic granuloma, giant cell tumor, hemangioma of bone, and osteomyelitis. Other considerations are degenerative cysts of osteoarthritis (eg, subchondral cysts, geodes – massive coral like spongious bone acumulation), intraosseous ganglion, and avascular necrosis.

CONCLUSION

Chondroblastoma of the skull base, developed in described patient, affecting maxillary, sphenoid and ethmoid sinuses, propagating into the floor of the anterior fossa, the floor of the middle fossa and the floor of the posterior fossa, also accompanied by a giant epidural abscess is very exceptional, and seldom mentioned or reported after reviewing the literature. The treatment is surgical and medical (antibiotic therapy). The approach is the choice of surgeon, however, it is believed that the transfacial, transmaxillar, transsphenoid and finaly transclival (in this sequence) is excellent for this type of lesion.

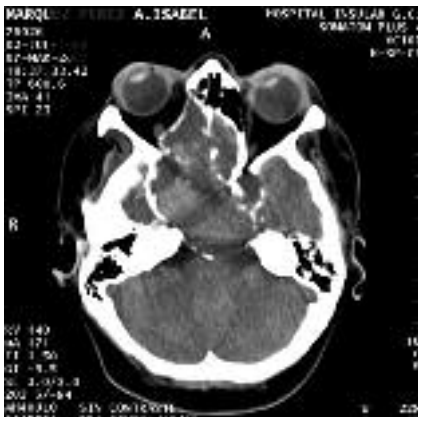
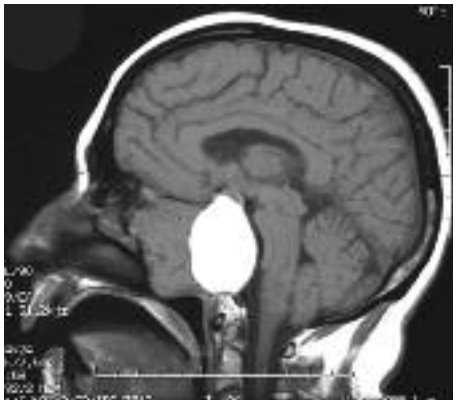


Fig. 1 *Preoperative CT: extensive midline osteolytic lesion involving the skull base producing destruction of the clivus, extending from the hard palate to the posterior fossa*



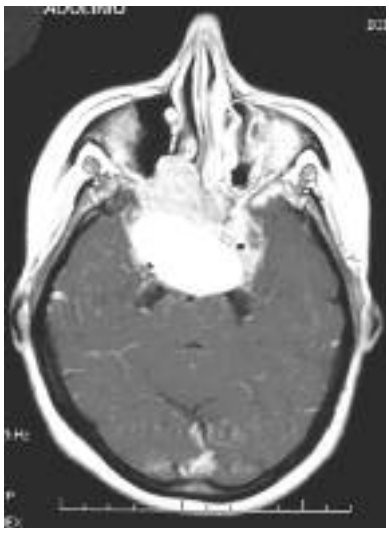
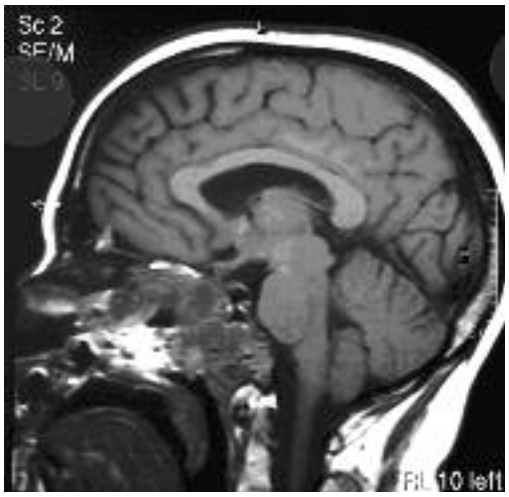


Fig. 2a-b. MRI: *Pre-contrast (a) large mass with iso- and hyperintense components compressing the pons. Post-contrast (b) enhancement of the initially isointense portion of this sphenopetroclival mass*



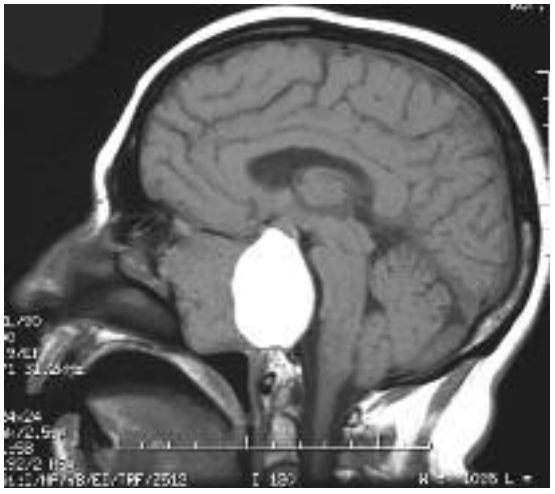


Fig 3a.b *Follow-up MRI: Comparision of pre and postoperative images: no signs of recurrence*

Fig. 4 *Surgical specimen*

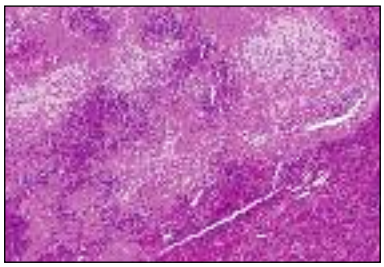


Fig. 4 *Pathohistology HE x10-ovoid pseudochondroblastic cells*

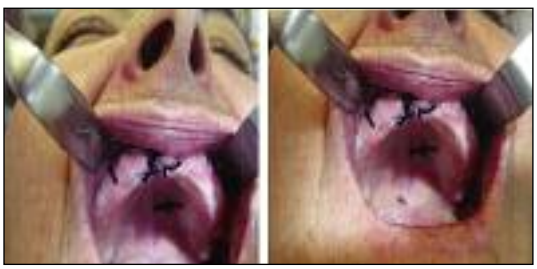


Fig. 5 *Postoperative view of the closed wound*

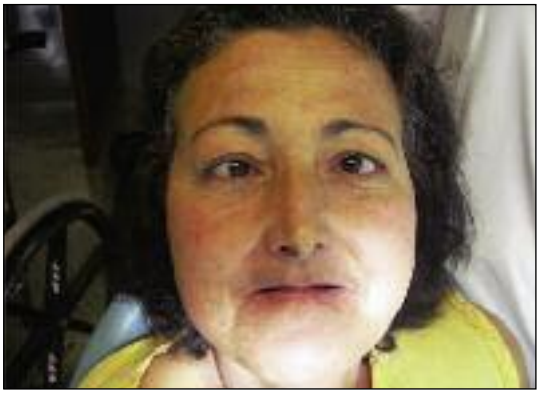


Fig.6. *The weakness of 6th cranial nerves is not corrected by this operation*

Sažetak

Hondroblastom je redak, obično benigni, tumor koji predstavlja 1% primarnih koštanih tumora. Hondroblastomi baze lobanje su jako retki, najčešće lokalizovani u skvamoznom delu temporalne kosti. Autori su prvi put opisali etmoidno-sfeno-petro-klivalni hondroblastom praćen epiduralnim apscesom koji je lečen kiretažom lezije, drenažom apscesa i antibioticima. Leziji se pristupilo transmaksilarno – učinjena je levostrana i sagitalna osteotomija maksile. Rezultat osteotomije je bio odličan, bez ikakvih komplikacija.

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