PRIMARY HEMANGIOMA OF THE SKULL

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Hemangiomas are benign vascular tumors that may involve any part of the body. Primary osseous hemangiomas occur more frequently in the spine and less commonly in the skull. Toynbee 1845¹ was the author of the first report in English, a case of hemangioma of the skull bones. We report a rare case of skull cavernous hemangioma that was considered initially as prostate tumor metastasis.

CASE
In February 2007, a 73-year-old white man had a sudden onset of dizziness and reading difficulty. He was on drug treatment for arterial systemic hypertension, and had undergone surgical treatment for prostate malignancy eight years previously, with seemingly adequate control. Computed tomography (CT) (Fig 1) and magnetic resonance imaging (MRI) (Fig 2) showed an ischemic area on the left occipital region and an intraosseous expansive lytic lesion on the right frontotemporal region, without signs of brain tissue involvement. There were no symptoms attributable to the osseous lesion. The hypothesis was a metastatic lesion from the prostate tumor.

In March 2007, he underwent right frontotemporal craniec- tomy with en bloc resection of the osseous lesion, followed by cranioplasty with acrylic cement.

Histopathology of the surgical sample showed primary os- seous cavernous-type hemangioma.

DISCUSSION
Hemangiomas are benign vascular neoplastic disorders. Histopathology classifies hemangiomas as venous, cavernous, and capillary, according to the predominant vascular network². Although cavernous hemangiomas more often involve the brain parenchyma, skull bones may also be affected. Intraosseous hemangiomas are relatively rare, and the spine is the most commonly involved site, followed by the skull bones. Hemangiomas of the skull represent 0.2% of all osseous tumors²⁴, and 10% of all the benign tumors of the skull²³.

In a review undertaken by Heckl and coworkers⁵, covering the period from 1975 to 2000, cavernous hemangiomas of the skull involved the frontal, temporal, and

Fig 1. (A) Bone window CT showing “honeycomb” osseous lesion. (B) Pre-operative CT showing an expansive intraosseous lesion on the right frontotemporal region, and an ischemic area on the left occipital region.
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Fig 2. (A) Nonenhanced T1-weighted MRI showing a right frontotemporal osseous lesion and an ischemic area on the left occipital region. (B) Gadolinium-enhanced T1-weighted MRI showing heterogeneous uptake by the osseous lesion, a finding pointing to a vascular origin.

Fig 3. Histological section showing large partially blood-filled vascular spaces. No cellular atypia.

parietal bones, in decreasing order. In another review, undertaken by Barnes in 1985, the frontal bone was also the most frequently involved site, followed by the parietal bone and the zygomatic process.

Our patient had right frontotemporal involvement.

Although cavernous hemangiomas of the skull are more prevalent in middle-aged women, the exact gender distribution has not been clearly established. Intraosseous cavernomas are extremely benign, slow-growing, mostly asymptomatic tumors. The main complaint is an aesthetic embarrassment, sometimes a mass effect being present. Patients may rarely present with an associated epidural hematoma or subarachnoid hemorrhage.

Hemangiomas tend to be solitary lesions, but there have been reports of widespread body involvement, a situation termed angiomatosis.

Skull radiography usually shows lytic lesions with sclerotic borders and a “honeycomb” appearance.

CT is an excellent investigation, as it allows detailed characterization of the cortical and trabecular bone to be made. Although the appearance on CT may vary, an expansive lesion with thin borders and intact internal and
external skull plates is the most common finding. According to Heckl and coworkers, external plate erosion, associated with external tumor expansion, and preservation of the internal plate are the most common radiological findings. Yet, in our case there was obvious erosion of the internal plate, with more prominent tumor extension to the inside of the skull, but without any direct or indirect mass effect on the brain. The external plate was also eroded, but without significant alteration of the skull outline.

MRI investigation is important because of its potential to show soft tissue lesions. MRI signal intensity depends on the amount of venous stasis in the lesion and also on the rate of transformation of red marrow into yellow marrow. While T1-weighted sequences may give high or low intensity signals, water-sensitive sequences, such as T2 and FLAIR, commonly give high intensity signals. Banerji and coworkers, in 1994, suggested that early focal contrast uptake by the lesion, with subsequent diffusion to the entire affected area, would be characteristic of osseous angiomas. Because it can identify relative changes in the lesion blood flow (a vascular blush, for example), MRI may also suggest the vascular nature of the lesion (Fig 2).

Cerebral angiography is important for surgical planning of smaller lesions and embolization of larger ones. Local vascularization increase and the feeding pedicles, without a large draining vein, may be identified. In some cases, angiography fails to distinguish the feeding vessels, but when they are identified, the middle meningeal artery and the superior temporal artery are the most commonly involved vessels.

Although surgery is the treatment of choice, it is not always necessary. Indications for surgery include: correction of compressive effects, hemorrhage control, and aesthetic improvement, besides cases like ours, in which metastasis, or when the imaging findings are not specific, preoperative diagnosis is difficult, histopathology being essential. Surgery is indicated to differentiate it from metastasis, or when there are aesthetic or compressive issues. En bloc resection must be attempted, because relapse is rare when this surgery is successful.

REFERENCES