Intraosseous Skull Cavernous Hemangioma

A 31-year-old man presented with a progressive swelling on the right frontal skull that has been present for the last 2 months. Physical examination revealed a palpable mass in the right frontal region. The scalp over the lesion was normal without adhesion to the mass. Neurologic and general examination was normal.

Skull radiograph revealed radiolucent defect in the right frontal bone. CT scan showed the lucent intradiploic mass as an irregular reticular pattern. On MRI, the tumor had a heterogeneous hypointense structure with speculated bony mass on T1-weighted images and hyperintense signal on T2-weighted. The lesion was enhanced after administration of gadolinium.

Discussion:

Skeletal cavernous hemangiomas (CH) are rare, accounting for only 0.7% of all osseous neoplasms. Primary intraosseous CH of the skull are benign tumors that account for 0.2% of all bone tumors and 10% of benign skull tumors. They are most frequently found in the calvarium, particularly in the parietal and frontal bones. They affect the diploe, causing an expansion of the outer table to a greater extent than the inner table and therefore producing a palpable lump. CH tend to be solitary lesions; however, multifocal cavernous hemangiomas have been reported. Intraosseous CH are slow-growing lesions and typically occur in women in the second through fourth decades. The symptoms are usually pain and visible or palpable bony hard mass, slowly growing, covered by normal skin. It grows slowly and usually is asymptomatic; thus, most patients seek medical attention when the mass has reached 1–2 cm. Neurologic deficits are unusual because these tumors tend to expand externally, but intracranial expansion has been reported.

Histopathologically, intraosseous hemangiomas are classified as venous, cavernous, or capillary type, according to their vascular network. The cavernous hemangioma is composed of large thin-walled vessels and sinusoids lined with a single layer of endothelium whereas the capillary hemangioma is formed by a small fine vascular network filled with blood.

Skull radiographs usually show a lytic lesion with a sclerotic rim in a honeycomb or sunburst-like appearance. Classically, these lesions appear as an expansive, well-circumscribed area of rarefaction with a sunburst pattern of...
trabeculations radiating from a common center. These characteristics are better defined on CT, especially for smaller lesions that are not obvious on plain radiographs. The CT scan revealed an intradiploic lytic mass with rarefaction and a honeycomb pattern. There is usually no reactive sclerosis at the margins. The signal characteristics on MRI are variable. The lesion usually appears mottled and heterogeneous with both increased and decreased signal intensities on both T1- and T2-weighted images. The signal depends on the quantity of slow-moving venous blood. On T1-weighted imaging, smaller lesions tend to have increased intensity, whereas larger lesions typically show low signal intensity within the trabeculae. On T2-weighted imaging, areas of increased signal intensity correspond to slow flow or pooling of blood. CH typically enhance after administration of gadolinium. Angiography of larger hemangiomas typically demonstrates a hypervascular lesion and a delayed blush with feeding arteries but no draining veins
The differential diagnosis includes osteoma, aneurismal bone cyst, giant cell tumor, fibrous dysplasia, sarcoma, menigioma, metastatic disease, Paget disease, dermoid and epidermoid cyst.
The preferred treatment is complete tumor removal with normal bony margins

Differential Diagnosis List: Intraosseous Skull Cavernous Hemangioma

Final Diagnosis: Intraosseous Skull Cavernous Hemangioma

References:


Figure 1

Description: Radiolucent osteolytic lesion in the right frontal bone
Origin:
Description: Lytic lesion with a honeycomb appearance in the right frontal bone

Origin:
Description: Heterogenous hypointense with speculated bony mass in the right frontal bone extracranial extension Origin:
Description: Lesion of high signal intensity Origin:
Description: Lesion of high signal intensity Origin:
Description: The lesion was enhanced after administration of gadolinium

Origin:
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Origin: