Lateral leg pain

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Answer:

Diagnosis: Solid variant of aneurysmal bone cyst.

Discussion

AP radiograph demonstrates a well-defined, expansile, lytic lesion of the proximal fibula with marginal sclerosis, while MRI demonstrates a solid, enhancing lesion with a single small focus of cystic signal abnormality. Histopathology demonstrates multinucleated giant cells seen in a background of spindle cells.

The solid variant of aneurysmal bone cyst (S-ABC) is a rare entity, constituting 5–7.5 % of all ABCs [1, 2]. The term S-ABC was first introduced by Sanerkin et al. in 1983, when the authors described solid lesions with the same histological features seen in the walls of ABCs [3]. Like ABC, S-ABC was previously considered a non-neoplastic, reactive lesion, but recent studies have shown that pathogenesis may relate to cytogenetic abnormalities, specifically chromosomal translocations involving the *USP6* gene [4–6]. The mean age at presentation of S-ABC is typically in the second or third decade, and is slightly more prevalent in females. Pain, swelling, and/or palpable mass are common presenting symptoms. S-ABC of the spine can produce radiculopathy. S-ABC tends

to occur in the face and spine, femur and tibia, and short tubular bones of the hands and feet [1, 2, 5, 7]. When occurring in the mandible, maxilla, hands, or feet, S-ABC may be referred to as “giant cell reparative granuloma” [4, 5, 7].

Similar to ABC, S-ABC typically presents on radiographs as a geographic, lucent, expansile lesion with endosteal scalloping or cortical thinning without matrix mineralization. S-ABC demonstrates a narrow zone of transition with marginal sclerosis, which may be complete in more than half of cases [1, 2, 4, 7, 8]. In long bones, S-ABC is often eccentric and most commonly involves the metaphysis. In the spine, S-ABC typically occurs in the posterior elements.

At MRI, S-ABC demonstrates homogenous decreased signal on T1-weighted sequences without internal hemorrhage. On T2-weighted imaging, S-ABC appears mostly solid with moderately increased signal and scattered cystic areas of fluid signal [7–9]. However, in contrast to ABC, these cystic areas are less common and do not demonstrate septations or fluid-fluid levels typical of ABC [7, 9]. Following contrast administration, S-ABC demonstrates diffuse uniform enhancement, rather than peripheral/septal enhancement commonly seen with ABC [7–9].

The differential diagnosis for S-ABC may include ABC, giant cell tumor, chondroblastoma, and telangiectatic osteosarcoma [5, 7, 8]. While S-ABC may be difficult to distinguish from ABC clinically or radiographically, there are characteristic differences on MRI discussed above. GCT occurs in slightly older patients, most often involves the epiphysis, and less commonly demonstrates marginal sclerosis. Chondroblastoma demonstrates chondroid mineralization and signal intensity, involves the epiphysis, and usually incites marked inflammation. Telangiectatic osteosarcoma often has a wide zone of transition with cortical disruption, aggressive periosteal reaction, and soft tissue mass.

Due to symptoms and potential for growth, S-ABC is often treated with curettage and bone grafting, as in this patient

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[7–9]. In conclusion, when evaluating an expansile, lytic lesion in a young patient, S-ABC should be considered when radiographs are suggestive of ABC, but MRI demonstrates a solid mass with homogeneous enhancement rather than cystic spaces with fluid-fluid levels.

Conflict of interest The authors have no financial disclosures or conflicts of interest to report.

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