Incidentally Detected Osseous Hemangioma of the Femoral Head: Conservative Management of a Rare Case with Review of the Literature

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Learning Point of the Article:

Osseous hemangioma of the femoral head is rare, but characteristic CT and MRI findings can establish a confident diagnosis and support conservative surveillance in asymptomatic lesions.

Abstract

Introduction: Osseous Hemangiomas (OH) are benign vascular lesions of the skeleton. They are mostly seen in the craniofacial bones but rarely noted in the appendicular skeleton. OHs in the long bones usually present with pain, swelling in the soft tissues, or pathological fractures.

Case Report: We report an uncommon case of an asymptomatic OH of the femoral head in a 56-year-old woman, detected incidentally during imaging following a fall. The OH had typical radiological characteristics on computed tomography and magnetic resonance imaging (MRI) scans, which was managed conservatively with clinical and radiological surveillance. At 6-month MRI follow-up, the lesion remained stable without progression. At 18-month clinical follow-up, the patient remained pain-free, mobilized independently without walking aids, and had no limitation in her activities of daily living. OH of the femoral head are exceedingly rare.

Conclusion: Recognition of their typical imaging features may facilitate a non-invasive diagnosis and avoid an unnecessary biopsy or surgical intervention. We also provide a brief review of the literature to highlight the clinical and radiological spectrum of this uncommon entity.

Keywords: Osseous hemangioma, femoral head, conservative management, magnetic resonance imaging, case report.

Introduction

Osseous hemangiomas (OH) are benign lesions that account for only 1% of primary bony neoplasms [1]. They represent disorganized and expansive proliferation of blood vessels with blood contained in the thickened trabecular architecture. Predominantly found in the vertebrae and craniofacial bones, which account for about three-quarters of the incidence. Primary hemangioma of the long tubular bones is a rare entity [2]. Based on the anatomical location, they can be classified as medullary (55%), periosteal (33%), and intracortical (12%). In the long bones, they can be located in the diaphysis (78%), the metaphysis (12%), or the epiphysis (10%). Although OH in the axial skeleton are commonly asymptomatic, they usually present with pain, swelling, and pathological fracture in the appendicular skeleton, depending upon the size and site of the lesion [3,4]. We present a rare case of an asymptomatic OH located in the anteroinferior quadrant of the femoral head. To the best of our knowledge, this represents only the second reported solitary hemangioma in this juxta-articular location.

Case Report

A 56-year-old lady presented with pain in the left hip and lower back, following a fall at home. On physical examination, the left hip movements were difficult to assess due to the severe pain. She

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Figure 1: Plain radiograph of the right hip in anteroposterior view showing a lucent lesion in the inferior quadrant of the femoral head with a sclerotic margin.

had an antalgic gait, and the pain worsened with weight-bearing. Neurologic evaluation revealed no sensory or motor deficits. She reported no previous symptoms involving the right hip. Although initial radiographs could not exclude an occult neck of femur fracture, they incidentally demonstrated a well-circumscribed lytic lesion over the right head of the femur (Fig. 1). Computed tomography (CT) scan of the right hip revealed a lucent lesion adjacent to the fovea capitis showing typical "polka-dot" appearance of the trabeculae along the axis of the neck with a sclerotic rim (Fig. 2). Magnetic resonance imaging (MRI) was performed to further investigate both hips, which ruled out an occult neck of femur fracture in the left hip. In the right femoral head, MRI demonstrated a well-defined osteolytic lesion measuring 12 mm craniocaudally × 14 mm mediolaterally × 17 mm anteroposteriorly, with a peripheral sclerotic rim. The lesion extended into the articular surface infra-foveally on the non-weight-bearing part of the head, which may explain her absence of right hip pain. On axial images, hyperintense spots within a hypointense background representing thickened trabeculae could be seen within the lesion as honeycombed septations. It appeared to be hypointense on T1-weighted, hyperintense on T2-weighted with a sclerotic rim, regular margins with a narrow zone of transition (Fig. 3 and 4). Based on characteristic imaging findings, a radiological diagnosis of an infra-foveal intraosseous hemangioma was made. As the lesion was asymptomatic, demonstrated characteristic benign imaging features, and did not involve the weight-bearing dome, conservative management with clinical and radiological surveillance was agreed. The patient was counseled regarding the diagnosis and advised to return if she developed right-hip pain, impaired mobility, or other new symptoms.

At 6-month follow-up, MRI demonstrated a stable appearance of the lesion without interval progression (Fig. 5). At 18 months, the patient remained asymptomatic, mobilized independently without walking aids, and reported no limitation in her activities of daily living.

Discussion

The first report of an OH in the appendicular skeleton was by Hitzrot in 1917, who described them as rare, benign, slow-growing vascular tumors of the bone. Embryologically, they are derived from hemangioblasts characterized by vascular hyperplasia with thin-walled sinusoids [5]. OHs of the axial skeleton are common and incidental, as opposed to OH of the appendicular skeleton, which account for only 15–20% and are more likely to be symptomatic. Interestingly, Kaleem et al. [6] reviewed all previously reported cases of solitary skeletal hemangiomas of the extremities in the English literature in 2000 and concluded that even experienced radiologists rarely encountered OH of the long tubular bones. In their series of 114 cases, none of the OH were mentioned to be located in the proximal femur [2, 6]. To the best of our knowledge, we report only the second case of solitary hemangioma located juxta-articularly in the femoral head. Chawla et al. [7] in 2006 presented a case of symptomatic OH in a middle-aged man, which involved the articular surfaces; it was managed with

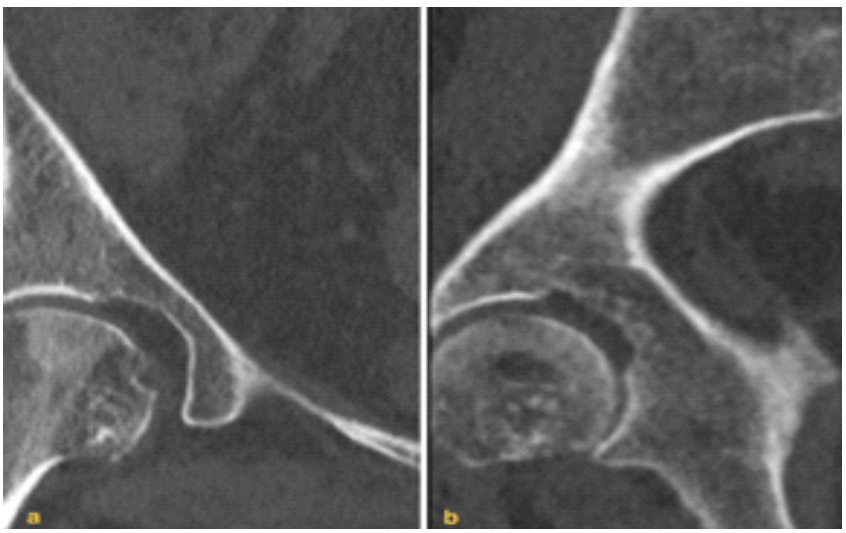


Figure 2: Coronal computed tomography images of the right hip in the (a) coronal and (b) sagittal planes demonstrating a medullary osseous hemangiomas occupying the medial aspect of the femoral head with extension into the inferior quadrant. The lesion is parallel to the long axis of the femur, expansile, lytic, and has a regular margin with a narrow.



Figure 3: Magnetic resonance imaging images of the right hip in the axial plane in (a) T1-weighted turbo spin-echo image demonstrating hypointense signal with spiculated bony trabeculae which are characterized by elevated signals within the dark cortex and in (b) T2-weighted spectral attenuated inversion recovery image sequences demonstrating marked hyperintensity correlating to the fluid content within the lesion.

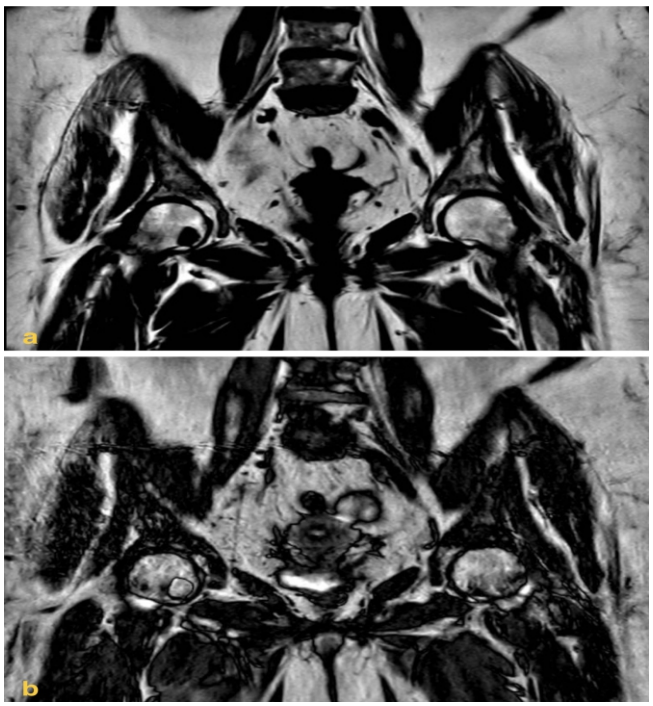


Figure 4: Coronal magnetic resonance imaging of the right hip demonstrating (a) low signal intensity on T1-weighted imaging and (b) high signal intensity on T2-weighted imaging, consistent with the characteristic appearance of an intraosseous hemangioma.

excision and uncemented total hip arthroplasty. Unlike other primary bony tumors, OHs typically have a female preponderance, with a female-to-male ratio of 3:2. They are most commonly encountered in middle age [3]. Our patient, a 56-year-old woman, was therefore within the commonly reported demographic group.

OHs in the appendicular skeleton can be classified anatomically as medullary, cortical, and periosteal. Medullary OHs can be further subcategorized as diaphyseal (48%), metadiaphyseal (30%), metaphyseal (12%), metaepiphyseal (4%), epimetadiaphyseal (3%), epiphyseal (1.5%), and involving the entire length of the tubular bone (1.5%) [8]. In this case, the lesion was medullary and epiphyseal in nature. The radiological appearance of osseous hemangiomas in long tubular bones is variable and may be non-specific. Plain radiographs may demonstrate a well-defined osteolytic lesion with a "honeycomb" or "soap-bubble' appearance. On CT images, a characteristic "polka-dot" appearance corresponds to vertically thickened trabeculae. MRI provides further characteristic evidence, especially in diagnostic dilemmas, to distinguish it from other differentials, such as intrahemangioma cyst, fibrous dysplasia, and giant cell tumor. Signal intensity on T1-weighted images varies according to the proportion of fat and vascular tissue, whereas T2-weighted images generally demonstrate high signal intensity because of the lesion's vascular or fluid-rich components.

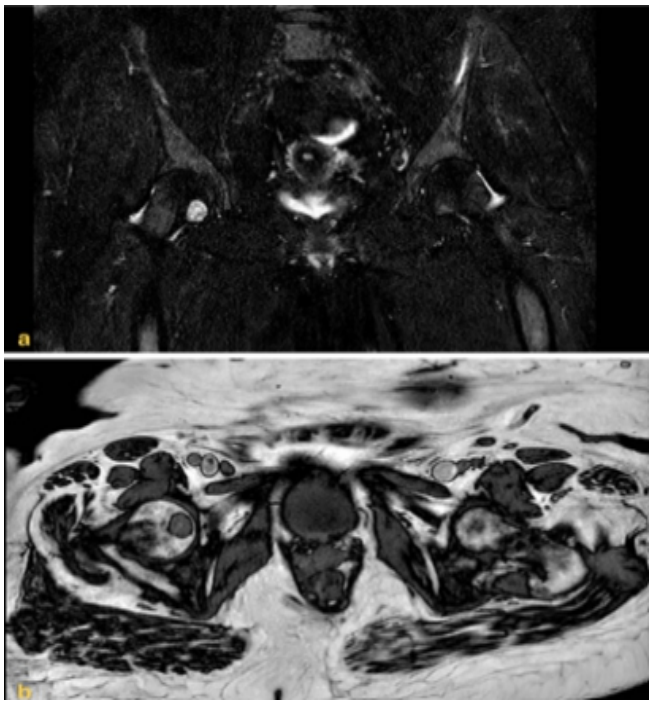


Figure 5: Six-month follow-up coronal magnetic resonance imaging in the (a) coronal and (b) (axial) planes demonstrating stable appearance of the infra-foveal intraosseous hemangioma without interval progression or aggressive imaging features.

The present case findings are consistent with a characteristic case of OH at an atypical location. The peculiarity is its asymptomatic presentation, albeit its location in the weight-bearing axis of the body. Pathological fracture has been reported in appendicular lesions and often requires prophylactic fixation [7,8,9]. In the present case, a radiological diagnosis of intraosseous hemangioma was made on the basis of the characteristic CT and MRI appearances. Histological confirmation was not pursued because the lesion was asymptomatic, well defined, surrounded by a sclerotic margin, and lacked aggressive imaging features. The potential risks of biopsy of a vascular lesion were considered to outweigh the likely diagnostic benefit. MRI provides excellent soft-tissue contrast and multiplanar assessment; however, histological confirmation should be considered when imaging findings are atypical, the lesion is symptomatic or progressive, or malignancy cannot be confidently excluded [10].

Conclusion

OH of the femoral head are exceptionally rare and may be discovered incidentally during imaging for unrelated conditions. Recognition of characteristic benign imaging features may prevent misdiagnosis and unnecessary invasive intervention. In carefully selected asymptomatic patients without aggressive radiological features, conservative management with clinical and radiological surveillance may be appropriate.

Clinical Message

Recognition of the characteristic CT and MRI features of intra-OH can facilitate a confident radiological diagnosis and avoid unnecessary biopsy or surgical intervention in carefully selected asymptomatic patients.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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