Case Report

Osteoid osteoma of the hook of the hamate presenting as ulnar-sided wrist pain: A case report✩,☆,☆

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ABSTRACT

Osteoid osteomas are benign, typically intracortical lesions most often affecting the diaphyses of long bones. We describe a case involving a 26-year-old male laborer who presented with the insidious onset of ulnar-sided wrist pain. He was diagnosed with and successfully treated with surgical excision for an osteoid osteoma involving the hook of the hamate.

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Introduction

The differential diagnosis for ulnar-sided wrist pain is extensive. The clinical examination is often vague and nonlocalizing. When physical examination alone is insufficient, judicial use of radiographic imaging is often necessary for diagnosis and targeted surgical planning. We present the case of a patient with an osteoid osteoma of the hook of the hamate successfully treated with surgical excision.

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Case Report

A 26-year-old right hand dominant male warehouse worker presented with a 3-month history of atraumatic ulnar-sided left hand pain. His symptoms were exacerbated by heavy lifting with ulnar deviation and awakened him at night. Physical examination demonstrated tenderness in the hypothenar aspect of the hand and pain at the end ranges of wrist flexion and extension. He had discomfort with ulnar deviation but was nontender over the ulnar fovea. He had no instability or pain with lunotriquetral manipulation. The patient was acutely tender to palpation over the pisiform but not over the flexor carpi ulnaris tendon. Capillary refill was incidentally found to be two seconds through the radial artery but eleven seconds through the ulnar artery. This was symmetric to the unaffected contralateral hand. Initial PA and lateral radiographs performed per the standard institutional protocol for ulnar-sided wrist symptoms were normal (Fig. 1a and b). No dedicated carpal tunnel view was obtained due to the lack of hypothenar trauma or mass on clinical examination. An unenhanced magnetic resonance imaging (MRI) scan of the left wrist was ordered to evaluate for a triangular fibrocartilage complex tear and other common etiologies of ulnar-sided wrist pain, which demonstrated marrow edema in the distal pole of the pisiform and distal portion of the hamate, including the hook of the hamate, with surrounding synovitis and overlying subcutaneous edema (Fig. 2a and b). These findings were concerning for an occult fracture. Thus, a computed tomography exam was ordered. This demonstrated an intracortical lesion consistent with an osteoid osteoma in the hook of the hamate with an apparent central nidus and sclerotic center; minimal sclerosis was noted surrounding the lucent nidus. Scattered subcortical cysts were present within the tip of the hook, which were felt to be reactive to the adjacent synovitis seen on MRI (Fig. 3a-d). A trial of ibuprofen 800 mg 3 times daily was initiated. The patient returned a year later, stating that nonsteroidal anti-inflammatory drugs (NSAIDs) were not effectively relieving his discomfort. The proximity of the various carpal bones to neurovascular structures of the hand precluded radiofrequency ablation (RFA) as a safe treatment option. The decision was made to perform an excisional biopsy of the lesion.

The lesion was exposed with a curvilinear palmar incision centered just ulnar to the hook of the hamate. With the ulnar nerve and artery protected, a subperiosteal dissection was performed about the hook, which was excised to a depth of approximately 8 mm. Postoperatively, the patient was placed into a soft, bulky dressing for 2 weeks until suture removal. The pathologic specimen was identified as an osteoid osteoma. Under hematoxylin and eosin staining, at low (4x) magnification, fragments of woven bone associated with a fibrovascular marrow were found adjacent to fragments of mature lamellar trabecular bone transitioning to ligament and periosteal tissues (Fig. 4a). Under higher (20x) magnification, fragments of woven bone were lined by osteoblasts, associated with a fibrovascular marrow with increased fibrosis (Fig. 4b).

At the patient’s first postoperative visit, the bony pain had resolved with only mild periancisional muscular tenderness remaining, for which he was prescribed oral diclofenac 75 mg twice daily as needed and a padded glove to protect the operative site. At 3 months, the patient had mild, but improving weakness of finger abduction and adduction with no additional evidence of ulnar neuropathy. He was prescribed a course of hand therapy. His presenting symptoms had entirely resolved at this point.
Fig. 2 – (a and b) Axial PD fat saturated and T1 MRI images demonstrating bony edema of the hamate, as well as synovitis of the midcarpal joint.

Fig. 3 – (a-d) Axial and sagittal CT images showing a lucent central nidus in the hook of the hamate with a sclerotic central dot, consistent with osteoid osteoma. Minimal sclerotic bone was noted proximal and distal to the lesion (3c and d).
The preferred first-line treatment of osteoid osteomas consists of aspirin or NSAIDs to suppress the prostaglandins. RFA was introduced in 1992 as a nonsurgical treatment modality for tumors in locations greater than 12 mm from neurovascular structures, with up to a one hundred percent success rate in regions as diverse as the fibula and spine, and has gradually become the definitive intervention of choice for most patients during the 21st century [6–8]. Surgical curettage is now generally reserved for patients who fail medical management and are not appropriate candidates for RFA due to anatomical considerations.

Osteoid osteomas of the hamate are an unusual cause of ulnar-sided wrist pain, with only a few reports in the literature [1,3,9,10]. In the case described here, the patient presented with vague, poorly localizing ulnar-sided wrist pain. As with other cases of carpal osteoid osteomas, the computed tomography scan was instrumental in the diagnosis of osteoid osteoma, since the radiographs lacked the necessary detail to detect the lesion [1]. The MRI demonstrated non-specific edema of the hamate, pisiform, and surrounding soft tissues, suggesting a traumatic origin. In retrospect, the patient had several factors which were consistent with osteoid osteoma, including his age and gender, night pain, and lack of significant trauma. However, as in nearly all reported cases of carpal osteoid osteomas, the underlying nonspecific synovitis complicated his clinical picture and made the diagnosis challenging.

In other case series of upper extremity osteoid osteomas, most residual or recurrent tumors occurred in the wrist and hand, presumably due in large part to incomplete excision and the small size of the native bones involved [11]. This patient presented with an osteoid osteoma of the hook of the hamate. As opposed to lesions in most long bones or the spine, RFA was not possible in this case due to the proximity of the ulnar nerve and artery. After an unsuccessful trial of NSAIDs and 1-year duration of symptoms, the patient elected to undergo an excisional biopsy and achieved resolution of his bony pain.

Discussion

Osteoid osteomas are idiopathic benign tumors most commonly affecting the diaphyses of long bones [1]. They are characterized by atraumatic bony night pain and a typical response to aspirin or NSAIDs. There is a 2:1 predilection toward males, with a majority found in patients between the second and third decade of life [2]. They present radiographically as small round, circumscribed intracortical lesions of sclerotic bone surrounding a radiolucent central nidus. This nidus, formed by abnormal osteoid bone, releases pain-producing prostaglandins. Although uncommon in the carpus, six to thirteen percent of osteoid osteomas occur in the hand [3]. They tend to mimic other more common diagnoses in both their clinical presentation and imaging. The differential diagnosis in the wrist includes midcarpal synovitis, fractures, and flexor carpi radialis tendinitis [1]. The complex 3-dimensional anatomy of the carpus can make radiographic identification of smaller lesions difficult, often leading to a delay in diagnosis and treatment [4,5].

Compliance with Ethical Standards

The authors have obtained the patient’s informed written consent for print and electronic publication of the case report. No animal or experimental human subjects were involved in this case report.

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