

Osteoid Osteoma of the Scapular Neck: A Cause of Long-lasting Unexplained Pain

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Learning Point of the Article:

Osteoid Osteoma should always be in the differential diagnosis of any patient presenting with long lasting shoulder pain.

Abstract

Introduction: Osteoid osteoma (OO) is a common tumor of the diaphysis of long bone, where the reported incidence is up 10% of all benign bone tumors. Its presence in flat bone is seldom mentioned in literature and can be misleading when the bone involved is in proximity to a zone of wide variety of possible pathology. We report a case of a young patient with OO in a very rare location of the body –the scapular neck – that was misdiagnosed for a long period of time before receiving adequate therapy.

Case Report: A 20-year-old female patient presented to the clinic with chronic left shoulder pain. During the past 2 years, she received medical and physical therapy, to deal with different diagnosis such as cervical spine pathology, muscular spasm, and rotator cuff disease. However, she did not improve. At time of presentation to our clinic, radiographs of the shoulder were done and turned to be inconclusively normal. After negative magnetic resonance imaging of the cervical spine, a computed tomography scan of the shoulder was done and showed a round well-defined lesion localized in the scapular neck with a focal lucent nidus within surrounding sclerotic reactive bone measuring 8.5 mm in largest diameter, compatible with OO. Bone scan showed increased uptake. The patient was given aspirin in an intention to test and treat. The patient had dramatic pain relieve at first, which confirmed the diagnosis of OO. But then, pain became unremitting, so a decision was made for radiofrequency ablation of the lesion which gave excellent results.

Conclusion: OO is a common benign neoplasm with high variable clinical picture and anatomic localization. Despite being more common in long bone, flat bone OO localization should be always kept in mind. Careful history and physical examination should be done for each patient presenting with unexplained pain; night pain should always raise suspicion of this condition. Radiographs are not always conclusive, and the patient with high suspicion of this condition should undergo more investigation to make the diagnosis.

Keywords: Osteoid osteoma, shoulder pain, scapular neck.

Introduction

Osteoid osteoma (OO) is a benign bone forming tumor characterized by painful lesion and specific imaging features [1]. It is the third most common benign tumor of bone, constituting 12% of them [2], and affecting patients during their second decade of life [3]. OO can be present at variable location, with the most common site being lower extremities [1]. Its presence in flat bone – in the scapula specifically –

represents a very rare localization that is seldom mentioned in literature [4,5].

Night pain is a highly sensitive symptom that can be present in up to 95% of cases where its presence should increase index of suspicion of OO even if the localization was atypical [1]. Diagnosis can be challenging and involves a careful history, proper imaging, and high index of suspicion. We presents herein, an extremely rare case of scapular neck OO, that was

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Author's Photo Gallery



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Figure 1: Anteroposterior radiograph of the left shoulder showing no suspicious lesion along the shoulder girdle.

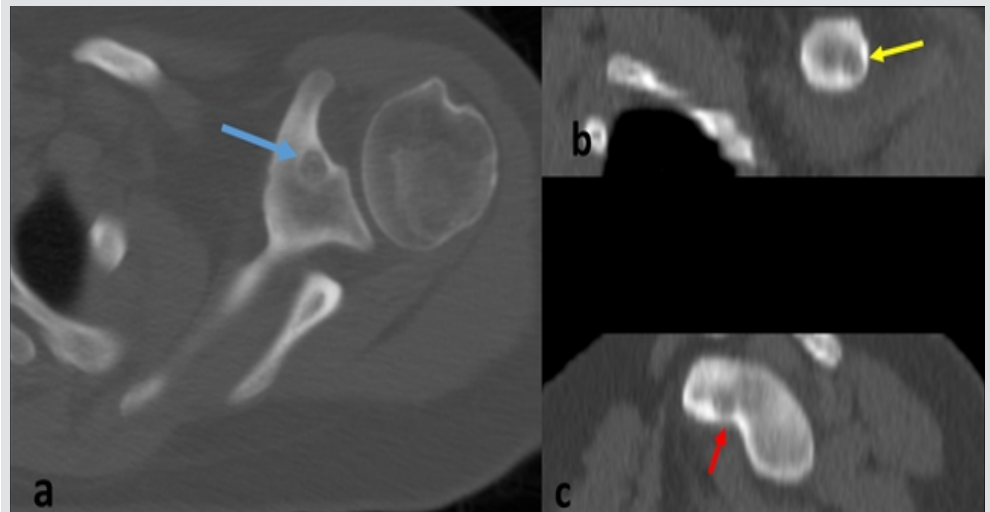


Figure 2: Axial view (a) of computed tomography scan of the left shoulder showing a round well-defined lesion localized in the scapular neck with a focal lucent nidus within surrounding sclerotic reactive bone measuring 8.5 mm in largest diameter (blue arrow), compatible with osteoid osteoma. (b) Coronal view showing the same lesion (yellow arrow). (c) Sagittal view.

misdiagnosed for a long period of time before receiving adequate diagnosis and treatment.

Case Report

A 20-year-old female patient presented to the clinic with chronic left shoulder pain. History goes back to 2 years before presentation, when the patient presented at night, to an emergency department, where he was diagnosed as having “simple” muscular spasm, so he was treated with muscle relaxant and painkillers. However, after 1 month of therapy, the patient did not improve, so he was sent for orthopedic specialist for investigation. Unfortunately, the patient was continuously given symptomatic treatment over a long period of time base on a diagnosis of cervical spine pathology, muscular spasm, and rotator cuff disease. He received medical and physical therapy over 2 years without improvement. At time of presentation to our clinic, radiographs of the shoulder were done and turned to be inconclusively normal (Fig. 1). Hence, a magnetic resonance imaging (MRI) of the cervical spine was done to rule out congenital cervical stenosis or disc herniation, but it turned out to be normal. When asked about the onset of pain, he complained of increased pain intensity at night. That is why; a

computed tomography (CT) scan of the shoulder was done and showed a round well-defined lesion localized in the scapular neck with a focal lucent nidus within surrounding sclerotic reactive bone measuring 8.5 mm in largest diameter, compatible with OO (Fig. 2). Bone scan was also done and showed focal uptake localized at the scapular spine (Fig. 3). The patient was given aspirin in an intention to test and treat. The patient had dramatic pain relieve at first, which confirmed the diagnosis of OO. But then, pain became unremitting. The patient was diagnosed as having scapular neck OO refractory to medical treatment that is why, a decision was made for radiofrequency ablation of the lesion which gave excellent results.

After 3 years, the patient is still free of symptoms without any morbidity or recurrence.

Discussion

OO is a benign osteoblastic bone tumor, characterized by a wide variety of clinical presentation depending on the affected site [1]. Improvement of histological studies yielded to the description and characterization of this lesion on 1935; in fact, it was easily misdiagnosed as inflammation or infection before its

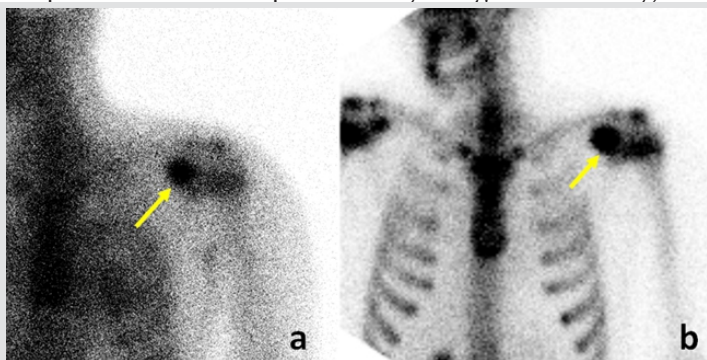


Figure 3: (a and b) Bone scan showing typical increased focal uptake localized at the scapular spine (yellow arrows) [5].

Table 1: Summary of cases of osteoid osteoma (OO) of the scapula found on PubMed using the keywords “OO” and “scapula”

Report	Year	Age	Location	Treatment
Cohen <i>et al.</i> [1]	1983	-	Scapula (2 cases)	Surgical resection
Mosheiff <i>et al.</i> [4]	1991	18 years old	Glenoid subchondral area	CT-guided needle biopsy
Malavolta <i>et al.</i> [5]	2015	36 years old	Glenoid subchondral area	Arthroscopic resection
Dussaousis <i>et al.</i> [8]	1998	23 years old	Scapular neck	CT-guided laser excision
Ishikawa <i>et al.</i> [9]	2005	17 years old	Scapular neck	Surgical resection
Rouhani <i>et al.</i> [10]	2014	25 years old	Scapular neck	Surgical resection
Ghosh <i>et al.</i> [11]	2012	12 years old	Scapular body	CT-guided radiofrequency ablation
Pourfézi <i>et al.</i> [12]	2012	34 years old	Scapular neck	Surgical resection
Akaya <i>et al.</i> [13]	2017	14 years old	Scapular body	Surgical resection
Rubab <i>et al.</i> [14]	2017	46 years old	Acromion	-
Present case	2020	20 years old	Scapular neck	CT-guided radiofrequency ablation

Pourfézi *et al.* reported the presence of 12 other cases before 2012 (not mentioned in table) [12]. CT: Computed tomography



description by Jaffe who confirmed the absence of any inflammation or infection in the histological analysis, and the presence of highly cellular area containing vascular tissue and immature bone and osteoid [6].

The mean age of diagnosis of OO is the second decade of life with male predominance (two to three times more frequently diagnosed in males) [3].

The most frequent affected site is lower extremities, mainly the proximal femur, and to a less extent the tibia, the spine, and the remainder of the femur [7]. OO can rarely involve flat bones, of which scapular involvement is an extremely rare location [1]. In a study of 95 cases, Cohin et al. have only found two cases of OO involving the scapula [1]. Afterward, several cases reports were presented in the literature (Table 1) [1, 4, 5, 8, 9, 10, 11, 12, 13, 14].

OO is characterized by a small radiolucent nidus, usually <1–1.5 cm in diameter. The nidus is usually characterized by the secretion of high levels of prostaglandins and in a less frequency secretion of osteocalcin [1].

Patients with OO can either be asymptomatic or can present with progressive increasing pain that mainly worsens at night and not be related to activity and can be relieved by nonsteroidal anti-inflammatory medications (i.e., prostaglandin inhibitors).[1, 15].

The diagnosis of OO relies on history, physical examination, and the radiographic appearance of the lesion. On radiographs, OO appears as small round intracortical lucency with sclerotic margin, which may contain in some cases small central sequestrum [16].

However, in 25–40% of cases, the diagnosis cannot be made by radiographs because of the location of the tumor (spine, scapula, or iliac bone) or due to cortical thickening that can obscures the nidus mainly in the shaft of a long bone such as the tibia or femur. Furthermore, it can be blunted and obscured on

MRI due to juxtacortical soft-tissue edema and can appear similar to stress reaction or infection or malignancy. In such cases, CT is the best modality for identification and diagnosis of OO [17].

The treatment of OO relies on the presence or absence of symptoms. Observation with serial examinations and imaging every 4–6 months is an option for asymptomatic lesions or even mildly painful lesions that are well tolerated or can be controlled with nonsteroidal anti-inflammatory agents. Symptomatic lesions causing intolerable pain, limp, scoliosis, or decrease range of motion of the affected site should be treated. Surgical resection, radiofrequency ablation, cryotherapy, or MRI-guided high-intensity focused ultrasound are all options for symptomatic OO [18, 19, 20].

Concerning the prognosis of OO, if untreated, it can spontaneously resolve over several years. Surgical removal of the nidus generally results in resolution of symptoms but it can recur if not completely removed [21, 22].

Conclusion

OO is common benign bone tumor that deserves special attention careful history and physical examination should be done for each patient presenting with unexplained pain; night pain should always raise suspicion of this condition. Radiographs are not always conclusive, and the patient with high suspicion of this condition should undergo more investigation to make the diagnosis.

Clinical Message

Shoulder pain can be due to wide variety of differential diagnosis. Clinician should be aware of the possible presence of OO at this location to allow early diagnosis, decreasing the time span before adequate treatment is given.

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