

CASE REPORT

Osteochondritis Dissecans of the Humeral Head: A Case Report and Review of the Literature

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*Research performed at Shafa Orthopedic Hospital, Tehran, Iran**Received: 12 August 2015**Accepted: 11 July 2016***Abstract**

Osteochondritis dissecans (OCD) is a common joint disorder in knee, ankle and elbow, however it can be rarely found in glenohumeral joint. In this study, we report an asymptomatic case of humeral head OCD, which was detected incidentally following a trauma. X-rays showed an area of lucency around an oval bony fragment measuring about 1 cm on the superior aspect of the humeral head. However, the patient was pain-free and the shoulder range of motion was normal.

Keywords: Glenohumeral joint, Humerus, Osteochondritis dissecans

Introduction

Osteochondritis dissecans (OCD), a form of osteochondrosis, is an articular disorder which can cause advancing destruction in the subchondral bone and overlying cartilage including softening, swelling and detachment (1). The lesion is most commonly found in femoral condyles, talar body and capitulum (2-4). The etiology of OCD is not clearly understood and its treatment can be very challenging for orthopedic surgeons. There are only very limited reports about the OCD of the humeral head, which is generally associated with pain and disability (5-18). Here, we report our observations on a case of OCD of the humeral head in a 37 years old female. The lesion was asymptomatic and diagnosed with radiologic evaluation following a trauma to the arm.

Case presentation

Patient was a 37 years old housewife, right handed, who admitted to emergency department (Shafa Orthopedic Hospital) because of pain in her right shoulder following a recent minor trauma. Routine radiography was performed. An oval radiolucent area in the humeral head was found incidentally [Figure 1]. The shoulder was immobilized for one week using an arm sling and the patient was referred to the shoulder clinic. We visited the patient three weeks after initial trauma. She had no history of shoulder pain or motion limitations and did not remember any previous major



Figure 1. Anteroposterior x-rays of the right glenohumeral joint showing an oval radiolucent area measuring about 1 cm on the superior aspect of the humeral head surrounded by a sclerotic irregular border of the humeral head.

or repetitive trauma. Physical examination revealed no swelling or tenderness around right shoulder. Passive and active shoulder range of motion was equal to the left shoulder. X-rays were reviewed. The findings included an oval central radiolucent lesion measuring

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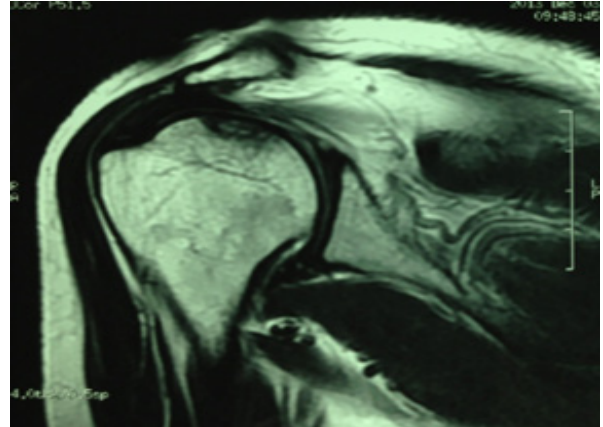
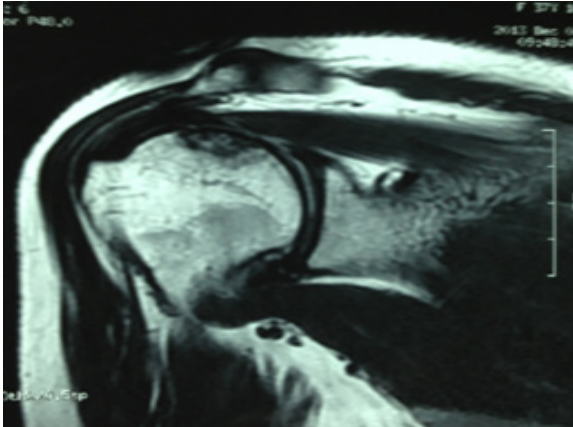


Figure 2. MR imaging of the right glenohumeral joint showing the lesion located at the superior aspect.

about 1 cm on the superior aspect of the humeral head surrounded by a sclerotic irregular border. These features were compatible with OCD of the humeral articular surface. Magnetic resonance imaging showed no intra-articular fluid or bone marrow edema beneath the lesion [Figure 2]. There was no defect of the overlying articular cartilage. The OCD of the humeral head is a rare condition and there is no classification introduced for this complication. Furthermore, we did not arthroscopically observe the lesion, which is necessary for determining the stage of the lesion. However, considering the x-rays and MR images, the lesion seems to be partially detached (stage II). At 6 months follow up, the patient was symptom-free and radiographic findings did not show any changes. No treatment modality was required and the patient was advised to return for annual follow up.

Discussion

OCD usually involves knee, talus and capitulum (2-4), but rarely is reported in other areas such as glenohumeral joint. We performed the searching about the similar reports in different databases including PubMed and Google Scholar with no limitation regarding the date. To the best of our knowledge and effort, only 15 reports of glenohumeral OCD were found (5-18). Humeral head OCD even has been also reported in dogs (19). The reports revealed that the lesion was mostly found in young or middle age males in dominant upper extremity and the major symptom was progressive pain and motion limitation in glenohumeral joint. The most common site was anterosuperior followed by superior and posterosuperior portion of the humeral head (15).

Etiology of the OCD is controversial and a combination of acute trauma, repetitive microtrauma, abnormal ossification, and local circulation disturbance had been suggested as predisposing factors. In the literature, there are some reports about the humeral head OCD with no history of any trauma (5, 7, 15, 17).

The diagnosis of humeral head OCD is made based on the imaging studies or arthroscopy in suspected cases. For major reported cases, plain radiography showed a

lytic lesion with irregular sclerotic border in humeral head (5, 7, 8, 10, 15). The lesion may be found in any aspect of the humeral head such as the superior (5, 6), posterosuperior (7, 10, 18), mediolateral (8), anterosuperior (9, 11-13) and posteromedial (14) aspects. Debeer and Brys reported a case of OCD in the central zone of the humeral head (15). Only in one report, the lesion was observed in the glenoid cavity (16). However, in the case reported by Mahirogullari et al, comparative anteroposterior and lateral x-rays of both shoulders were completely normal. They recommended to perform more detailed imaging studies with MRI or CT scanning in the presence of long lasting undiagnosed shoulder pain (18).

Hill-Sachs fracture, avascular necrosis (AVN) and rare disorders such as fibrocartilaginous chondrodysplasia are considered as differential diagnoses (please indicate for what complication). Hill-Sachs fracture is a cortical depression in the posterolateral aspect of the humeral head and results from forceful impaction of the humeral head against the glenoid rim when glenohumeral joint dislocates. The history taking and imaging findings are useful in differentiating the Hill-Sachs lesion from humeral head OCD. Humeral head AVN is a rare cause of shoulder pain. Trauma is the most common cause but there are some factors that may cause atraumatic including corticosteroid administration, alcohol consumption, sickle cell disease and systemic diseases such as rheumatoid arthritis and systemic lupus erythematosus (20-22).

The treatment options include rest and immobilization (5, 12, 13) curettage, drilling of the lesion and the excision of the loose bodies (7-9, 11, 14, 16, 18), which have provided satisfactory outcomes. However, Johnson and Warner reported a case of humeral head OCD with a large lesion in which the curettage and drilling was not sufficient and the bone defect was filled using osteochondral allograft (10).

In our patient, OCD of the humeral head was found incidentally in a middle-aged woman who was evaluated radiologically due to a shoulder trauma. The lesion was in dominant upper extremity and she had no previous

complaint of pain or motion limitation. The lesion was seen as a 1×1 cm oval-shaped osteochondral fragment, which was not completely detached from its crater on the superior articular surface of the humeral head. The borders were sclerotic in plain radiography. We did not consider any treatment option for our patient because she had no symptoms such as pain or limitation of the shoulder range of motion. Only annual evaluation of the lesion was recommended to the patient.

OCD is a common injury in some areas of the body; however, it is a rare injury in glenohumeral joint. Therefore OCD diagnosis in glenohumeral joint necessitates strong clinical suspicious and a penetrating look.

Furthermore, its location may prevent the lesion to detect on plain x-rays and complementary radiologic studies may be required in symptomatic patients. The lack of knowledge about the glenohumeral OCD resulted in controversial opinions for treatment ranging from

immobilization to osteochondral allograft. Our patient showed that glenohumeral OCD can be asymptomatic for years which seems do not require any particular treatment modality.

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References

1. Shea KG, Jacobs JC Jr, Carey JL, Anderson AF, Oxford JT. Osteochondritis dissecans knee histology studies have variable findings and theories of etiology. *Clin Orthop Relat Res* 2013;471(4):1127-36.
2. Talusan PG, Milewski MD, Toy JO, Wall EJ. Osteochondritis dissecans of the talus: diagnosis and treatment in athletes. *Clin Sports Med* 2014;33(2):267-84.
3. Nissen CW. Osteochondritis dissecans of the elbow. *Clin Sports Med* 2014;33(2):251-65.
4. Carey JL, Grimm NL. Treatment algorithm for osteochondritis dissecans of the knee. *Orthop Clin North Am* 2015;46(1):141-6.
5. Anderson WJ, Guilford WB. Osteochondritis dissecans of the humeral head. An unusual cause of shoulder pain. *Clin Orthop Relat Res* 1983;(173):166-8.
6. Ganter M, Reichelt A. Osteochondrosis dissecans of the humeral head. *Z Orthop Ihre Grenzgeb* 1996;134(1):73-5
7. Hamada S, Hamada M, Nishiue S, Doi T. Osteochondritis dissecans of the humeral head. *Arthroscopy* 1992;8(1):132-7.
8. Ishikawa H, Ueba Y, Yonezawa T. osteochondritis dissecans of the shoulder in a tennis player. *Am j Sports Med* 1988;16:547-550.
9. Itoh K, Ishii S, Usui M. osteochondritis dissecans of the humeral head. *Katakansetu* 1989;13:68-73.
10. Johnson DL, Warner JJ. Osteochondritis dissecans of the humeral head: treatment with a matched osteochondral allograft. *J Shoulder Elbow Surg.* 1997;6:160-163.
11. Miller LF, Hilkevitch A. Osteochondritis dissecans of the shoulder. *Am J Roentgenol Radium Ther* 1950 Feb;63(2):223-7.
12. Petrini A, Grassi G, Zaccaria CP. Osteochondrite dissecante della testaomerale. *Chir Org Mov* 1984;59:83-85.
13. Pydisetty RV, Prasad SS, Kaye JC. Osteochondritis dissecans of the humeral head in an amateur boxer. *J Shoulder Elbow Surg* 2002;11:630-632.
14. Salmon MJ. Osteochondrite dissequante du coude et de l'épaule. *Bull et Mem Soc Anat de Paris* 1923;93:608-612.
15. Debeer P, Brys P. Osteochondritis dissecans of the humeral head: clinical and radiological findings. *Acta Orthop Belg* 2005;71(4):484-8.
16. Gogus A, Ozturk C. Osteochondritis dissecans of the glenoid cavity: a case report. *Arch Orthop Trauma Surg* 2008;128(5):457-60.
17. Lunden JB, Legrand AB. Osteochondritis dissecans of the humeral head. *J Orthop Sports Phys Ther* 2012;42(10):886.
18. Mahirogullari M, Chloros GD, Wiesler ER, Ferguson C, Poehling GG. Osteochondritis dissecans of the humeral head. *Joint Bone Spine* 2008;75(2):226-8.
19. Bruggeman M, Van Vynckt D, Van Ryssen B, Bolln G, Chiers K, Gielen I, et al. Osteochondritis dissecans of the humeral head in two small-breed dogs. *Vet Rec* 2010;166(5):139-41.
20. Usher BW Jr, Friedman RJ. Steroid-induced osteonecrosis of the humeral head. *Orthopedics* 1995;18(1):47-51.
21. Pognard A, Flouzat-Lachaniette CH, Amzallag J, Galacteros F, Hernigou P. The natural progression

of symptomatic humeral head osteonecrosis in adults with sickle cell disease. J Bone Joint Surg Am 2012;94(2):156-62.

22. Harreld KL, Marker DR, Wiesler ER, Shafiq B, Mont MA. Osteonecrosis of the humeral head. J Am Acad Orthop Surg 2009;17(6):345-55.