

Bilateral Glenoid Osteochondritis Dissecance Detected on MR Arthrogram

Abdullah Al-Mulhim^{1*}, Mishal Al-Shalan² and Alia Al-Barwan³

¹Radiology Demonstrator, Dammam University, Saudi Arabia

²Head section of MSK radiology, King Faisal Specialist Hospital and Research Center, Saudi Arabia

³Khoulia Hospital, Sultanate of Oman, Saudi Arabia

Abstract

OCD classically occur in convex articular surfaces. The femoral condyles, humeral capitulum and humeral head are the most common affected sites. It rarely involves the glenoid and the diagnosis requires a high index of suspicion. The pathological process and imaging findings are almost similar in all sites but most of the literature focused in the knee joint.

The radiographic diagnosis might not be straight forward, and the use of CT scan with or without intra articular contrast and magnetic resonance imaging helps to establish the stability status. The mostly used treatment of stable lesions is conservative treatment and arthroscopic surgical management is preserved for unstable lesions.

Introduction

True osteochondrosis must be differentiated from ossification variants. Normal variation in epiphyseal ossification centers are incidental cases [1], bilateral symmetrical and asymptomatic most of the time however, this normal variant eventually progress to OCD especially if the fragmentation is extensive.

Glenoid OCD is a rare entity with few case reports isolated in the literature. Unlike other locations, glenoid OCD [2] bony involvement is theorized to have less traumatic effect because most of the energy is being absorbed in the adjacent muscles and ligaments. In this report we documented a case of bilateral OCD of glenoid with different staging.

Objectives

To report the rare case of bilateral Osteochondritis Dissecance (OCD) in young non athletic boy and to review the latest literature, updates for similar findings in the glenoid articular surface.

Case Report

An 18 years old male presented to the orthopedic clinic complaining of bilateral, occasionally painful shoulder clicking that is aggravated by repetitive movement. He presented to the radiology department at King Faisal Specialist Hospital and Research Center and a Magnetic Resonant Arthrogram of both shoulders was performed. Consent was obtained from the patient for publication of this report.

Methods

Fluoroscopic guided injection of diluted Gadolinium contrast was performed. The mixer contains 0.1 ml of Gadolinium (Dotarem), 2 ml of xylocaine containing 1% epinephrine and 17 ml of sterile water. Then an MR arthrogram was obtained with coronal T2WI, axial, sagittal and coronal T1WI with fat suppression. Axial oblique T1WI fat saturated sequence in Abduction- External Rotation (ABER) was also performed [3].

The right shoulder exam was performed in Trio Tim 3 Tesla Siemens and using axial T1WI with fat saturation (TE11/TR315, ST3.5, Matrix 320×240, FOV 16). Coronal T1WI (TE12/TR354 ST3), Sagittal T1WI with fat sat (TE11/TR368 ST3), Coronal T2WI (TE84/TR3940 ST3 Matrix 384×257).

The left shoulder exam was performed in 1.5 Tesla GE Medical Systems And using axial T1WI fat saturation (TE9/TR483, ST3 Slice

Spacing 4 mm, Matrix 320×244, FOV16), [4,5] Coronal T1WI with fat sat (TE8/TR633), Sagittal T1WI with fat sat (TE9/TR500), Coronal T2WI (TE97/TR3583, ST3, Slice Spacing 3.3 Matrix 384×256), Axial oblique T1WI with fat sat in ABER position (TE7.7/TR683 Spacing 3.3, ST3, FOV 16 Matrix 320×224).

The images were evaluated by three musculoskeletal radiologists using GE healthcare PACS (Centricity Radiology RA1000).

Results

The left shoulder showed an osteochondral defect measuring 3×5 mm in the central portion of the glenoid articular surface and containing tiny low signal intensity loose body which is surrounded by intra articular contrast [6]. The right shoulder showed an osteochondral defect with similar dimensions that is filled completely with intra articular contrast.

These findings are consistant with grade 3 OCD of the left shoulder (Figure 1) (detached in situ fragment) and stage 4 OCD (Figure 2) in the right shoulder (completely detached fragment) [7].

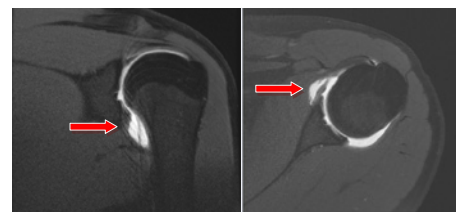


Figure 1: Coronal and Axial T1WI fat sat MR Arthrogram of the left shoulder showing an osteochondral glenoid defect harboring a low signal intensity, non-displaced loose body surrounded by contrast material indicating grade 3 OCD.

*Corresponding author: Abdullah Al-Mulhim, Radiology Demonstrator, Dammam University and Musculoskeletal Radiology Fellow, King Faisal Specialist Hospital and Research Centre, Saudi Arabia, Tel: +966569908288; E-mail: dr.aalmulhim@gmail.com

Received October 29, 2012; Accepted December 04, 2012; Published December 08, 2012

Citation: Al-Mulhim A, Al-Shalan M, Al-Barwan A (2013) Bilateral Glenoid Osteochondritis Dissecance Detected on MR Arthrogram. OMICS J Radiology. 2: 110. doi:10.4172/2167-7964.1000110

Copyright: © 2013 Al-Mulhim A, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

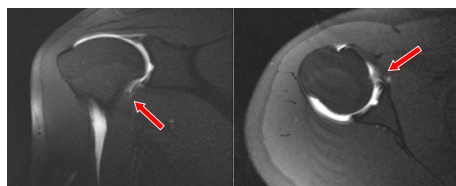


Figure 2: Coronal and axial T1WI fat sat MR Arthrogram of the right shoulder demonstrating a similar osteochondral glenoid defect that is completely filled with contrast material indicating grade 4 OCD.

No definite rotator and non rotator cuff abnormality was depicted. The glenohumeral ligaments and other supporting structures were intact and there were no signs of capsular injury.

Discussion

Typically an osteochondrosis dissecans occurs in the region of a convex articular surface, with the medial femoral condyle being the most common location. Two theories help to explain the etiology of OCD. The first suggests the presence of poor vascular supply to the concave articular surfaces as compared to the convex surfaces. The other theory claims that the basic instability of the shoulder joint protects the bone against the occurrence of the lesion through the function of the muscle-ligament structures, softening much the traumatic forces thereby saving the glenoid from injuries. However, the exact of an OCD has not been clearly established.

An important mimicker is the presence of accessory ossification center of the glenoid. At birth most of the scapula is ossified. There are two separate centers for the glenoid; an upper glenoid center which gives rise to the base of the coracoid and the upper third of the glenoid, and a lower glenoid center which is horseshoe-shaped, giving rise to the lower two thirds of the glenoid. Both the upper and lower centers typically fuse by the age of ten to twelve years. After they fuse a small depression is noted mainly at the articular cartilage coverage which represents the central glenoid region [8].

A focal thickening of the subchondral bone in the mid aspect of the glenoid with thinning of overlying cartilage is considered a normal variant and named tubercle of Assaki.

The radiological appearance and classification is similar in most of the involved joints and different imaging modalities can be used to convey the abnormality to the clinician. Investigation of the cartilage and subchondral bone in young patients with mechanical pain should not be confined to the convex articular surfaces, although these are more likely to sustain trauma-related damage.

A wide spectrum of clinical signs may be evident including joint effusion, painful articular movements, clicking or locking. And among most of the cases repetitive movements elicits and exaggerates the pain yet, the condition might be painless. A spectrum is seen ranging from subchondral edema, subchondral fracture and fragmentation with or without displacement of an osteochondral fragment. Nevertheless, healing may occur initially.

Conventional radiographs are often diagnostic and the covering articular cartilage can be assessed by CT scan and MRI especially with

use of intra articular contrast. It is important to assess the viability of the overlying cartilage and with a loose osteochondral fragment is present and addressing its size and location.

Classically, the non-weight-bearing medial femoral condyle is the location in 85% of cases of OCD of the knee. OCD must be ruled out in the contra lateral joint, because 20–30% of cases are bilateral [3].

We have not come across any papers that mention the presence of bilateral glenoid OCD in the literature of radiology. Until 2006 only 13 cases were mentioned in the English literature and none presented with bilateral disease.

References

1. Chu PJ, Shih JT, Hou YT, Hung ST, Chen JK, et al. (2009) Osteochondritis dissecans of the glenoid: a rare injury secondary to repetitive microtrauma. *J Trauma* 67: E62-E64.
2. Koike Y, Komatsuda T, Sato K (2008) Osteochondritis dissecans of the glenoid associated with the nontraumatic, painful throwing shoulder in a professional baseball player: a case report. *J Shoulder Elbow Surg* 17: 9-12.
3. Gogus A, Ozturk C (2008) Osteochondritis dissecans of the glenoid cavity: a case report. *Arch Orthop Trauma Surg* 128: 457-460.
4. Rossi F, Dragoni S (2006) Osteochondrosis dissecans of the shoulder glenoid fossa diagnosed in four throwing athletes. *J Sports Med Phys Fitness* 46: 111-115.
5. Berthelot JM, Huguet D, Bertrand-Vasseur A, Gouin F, Prost A, et al. (2000) Chondritis dissecans of concave articular surfaces (acetabulum and glenoid fossa). Two case reports. *Joint Bone Spine* 67: 238-241.
6. Exner GU, Meyer C, Elsig JP (1991) [Osteochondrosis dissecans of concave joint surfaces: roof of shoulder joint, tibial plateau, distal tibia]. *Z Orthop Ihre Grenzgeb* 129: 302-304.
7. Shanley DJ, Mulligan ME (1990) Osteochondrosis dissecans of the glenoid. *Skeletal Radiol* 19: 419-421.
8. Quan AW, Beall DP, Berry ER, Ly JQ, Sweet CF, et al. (2005) A case of osteochondritis dissecans in rickets. *Emerg Radiol* 11: 219-221.