Med. J. Cairo Univ., Vol. 87, No. 7, December: 4247-4254, 2019
www.medicaljournalofcairouniversity.net

Recent MRI Study of Acute Shoulder Trauma

AYMAN M. IBRAHIM, M.D.*; ALLAM E.S. ALLAM, M.D.* and SHERIF A. KAMAR, M.D.**

The Departments of Radiology and Anatomy**, Faculty of Medicine, Ain Shams University*

Abstract

Background: Magnetic Resonance Imaging (MRI) is considered a reliable technique for the evaluation of the different causes of shoulder pain. The anatomy of the shoulder is unique, with amazing flexibility and range of motion. Many causes of painful shoulder syndrome are there; shoulder impingement come on top of the list, large number of factors could cause shoulder impingement syndrome. Two major categories were identified: structural factors and functional factors.

Aim of Study: Is to review an accurate and highly sensitive diagnostic evaluation of frequently encountered acute traumas of shoulder joint in athletes.

Patients and Methods: 40 patients shared in this study, patients with symptoms of painful shoulder and limited movements of their shoulders to Sport Injuries Orthopedic Clinic. Informed oral consent explaining the procedure details was obtained from all patients prior to inclusion in the study. The privacy of participants and confidentiality of data were guaranteed during the various phases of the study. All patients underwent history taking, clinical provisional diagnosis, radiological investigations in the form of Magnetic Resonance Imaging. Descriptive statistics were done for quantitative data as minimum & maximum of the range as well as mean ± SD (standard deviation). Image analysis was conducted by two radiology fellows, each with an experience in interpretation Musculoskeletal (MSK) MR images, both were blinded to the results and reports and independently evaluated the MR images.

Results: Effusion, Bankart, Hillsachs and Rotator cuff tear were the most frequent MRI findings. Majority of cases had two-three findings. No significant difference according to mode of trauma regarding age and sex. Weight lifting was significantly the most frequent regarding traction mode of trauma; team sport was significantly the most frequent regarding direct impact mode of trauma, while weight lifting and team sport had non-significant difference regarding Fall on Out Stretched Hand (FOOSH).

Conclusion: Careful history taking of the patient like type of the sport, mode of trauma and severity of trauma is a very important tool that can help the radiologist to predict different lesions could be found in the study of each patient and finally reach an accurate diagnosis in an easier way and saving lots of time doing so.

Correspondence to: Dr. Sherif A. Kamar,
E-Mail: Sherif_Kamar@med.asu.edu.eg

Key Words: *MRI – Shoulder – Trauma – Athletes.*

Introduction

NORMAL shoulder function is essential for day-to-day life and many popular sports. Sports medicine practitioners have always been concerned with imaging of the shoulder and its dysfunctions and found it most challenging. Magnetic Resonance Imaging is the modality of choice for evaluation of shoulder, for its multiplanar reformation capability and excellent resolution [1].

Anatomically the shoulder joint is formed of three bones with five articulations. These articulations are glenohumeral, Acromio-clavicular, scapulothoracic, sternoclavicular and coracoclavicular joints. Clavicle is an "S" shape bone, which connects axial to the appendicular skeleton. The clavicle articulates with the sternoclavicular joint medially and acromioclavicular joint laterally [2].

The glenohumeral capsule covers the entire joint; it is attached to the margins of the glenoid cavity proximal to the glenoidal labrum. Inferiorly, it reaches the anatomical neck of the humerus. The joint communicates inferiorly with the subscapular bursa through an opening inferior to the coracoid process [3].

The glenoidal labrum is a fibrocartilaginous structure attached to the margin of the glenoid cavity. It increases the vertical diameter of the glenoid by 75% and the horizontal diameter by 50%. Its base is fixed to the margins of the glenoid cavity, while its free edge is thin and sharp. The tendon of long head of biceps brachii muscle is continuous with the labrum superiorly and blends with the fibrous capsule of the joint. By deepens the articular cavity, the labrum increase the glenohumeral stability and protects boney edge of the glenoid [1].

The Supraspinatus, Infraspinatus, Teres minor and Subscapularis are group of muscles attached to the proximal end of the humerus surrounding the glenohumeral articulation from three directions and called rotator cuff. The fused tendons of these muscles surrounds the glenohumeral articulations ventrally, superiorly and dorsally [4].

Proximal Humerus Fractures (PHF) occur most commonly in elderly persons. They usually result from a fall onto an outstretched arm (FOOSH). In young adults, direct impacts are a more usual cause. About 85 percent of proximal humerus fractures can be treated conservatively. Occasionally, the axillary nerve or artery may be involved in the lesion; rarely, the brachial artery or brachial plexus may be injured. An anterior or posterior bulge in the shoulder region prior to trauma or tractions may indicate a dislocation. Diffuse Tenderness and swelling often makes it difficult to detect clear point tenderness [5].

The glenohumeral dislocation is the most commonly seen accounting up to 50% of all dislocations, 90% of which are anterior with lesser extent seen posterior. Inferior dislocations are rare and often are accompanied by axillary nerve lesion and fracture of the proximal humeral end. The most common mechanisms of acute dislocation involve some variation of a FOOSH [6].

Amongst patients with shoulder pain, rotator cuff disorders are most frequently implicated, being present in up to 86% of patients [7].

The incidence of traumatic rotator cuff tears is unknown, but it is thought to be relatively uncommon in younger athletes. Rotator cuff tears cover a spectrum of injuries. At one end are relatively high-force injuries to a healthy rotator cuff would typically produce full-thickness tears as significant fall, motor vehicle crash, or shoulder dislocation. Lesser degrees of trauma can cause partial-thickness tears. On the other end of the spectrum are overuse injuries. Traumatic rotator cuff tears can occur at any age. Overuse injuries generally occur in athletes and increase in frequency with advancing age [8].

MRI findings in acute shoulder trauma:

The use of MRI has become routine in the evaluation of musculoskeletal conditions. In young and middle-aged patients who complain of persistent pain and weakness after sustaining a trauma MRI of the shoulder should be highly indicated before repair as they may have a complete rotator cuff tear [9].

The study of choice in the pre-operative evaluation of rotator cuff diseases is MRI due to its high soft tissue resolution and multiplanar reformations. MRI provides useful information about tear dimension, tear depth, tendon retraction, which can influence treatment decision. In addition, MRI also provides information about tendon retraction, muscle atrophy, fatty degeneration and coracoacromial impingement, which may have important prognostic implications [10].

Partial thickness tears are seen on MRI as an interrupted fiber filled with hyper intense signal demonstrated on T2W images. Fat suppressed sequences may increase the lesion conspicuity by better demonstrating the fluid filled tendon defect. Besides tendon defect, additional findings may include surface fraying or changes in tendon caliber. Hyper intensity of Subacromial Subdeltoid (SASD) bursa especially when with joint effusion is highly suggestive for the presence of rotator cuff tear [11].

Traumatic glenohumeral dislocation is commonly associated with variety of bone and soft-tissue injuries which may indicate early surgical intervention [12].

Soft-tissue and osseous Bankart lesions refer to injuries to the anteroinferior glenoid labrum and bony glenoid, respectively. Soft-tissue Bankart is disruption of the anteroinferior capsuloligamentous complex, specifically the middle and inferior glenohumeral ligaments, occurring in up to 85% of cases of traumatic anterior dislocation causing recurrent instability [13].

Osseous Bankart refers to fractures of the anterior inferior glenoid seen in 22-41% of initial anterior dislocations and in up to 73-86% of injuries that develop recurrent instability. The size of the osseous fragment and severity of the anterior glenoid deformity affects the degree of instability. Wedge fracture of the posterolateral aspect of humeral head due to soft cancellous bone of the head under the hard compact bone of the glenoid is termed “Hill-Sachs lesion”. Hill-Sachs lesions are commonly seen in up to 80% of initial anterior dislocations and up to 100% of cases with recurrent instability [14].

Patients and Methods

Type of study: Cross sectional study.

Study setting: The study was conducted at Ain Shams University (ASU) Hospitals.

Study period: 3 to 12 months, onset in September 2018.

Sampling method: This study was performed on simple random sample.

Sample size: 40 patients were included in this study.

Age: Age group ranges from 15 to 35 years (with mean 25.1±5.5).

Gender: No sex predilection.

Inclusion criteria: Patients with symptoms of painful shoulder and limited movements of their shoulders referred from Sport Injuries Orthopedic Clinic.

Exclusion criteria: Patients with symptoms of painful shoulder diagnosed as arthropathy.

Consent: Informed oral consent explaining the procedure details was obtained from all patients prior to inclusion in the study. The study was conducted according to the stipulations of the ASU ethical and scientific committee. The privacy of participants and confidentiality of data were guaranteed during the various phases of the study.

Study tools and study procedures: All patients were subjected to history taking, clinical provisional diagnosis and radiological investigations.

Magnetic resonance imaging:

Devices: MR imaging was performed on high field system (PHILIPS Achieva 1.5 Tesla Dual Gradient) Magnet Units.

Patient position: The patient should be supine with the head directed towards the scanner bore. The preferred positioning of the patient's arm is neutral to slightly laterally rotated. Surface coil (Flexible coils) are those that wrap around and conform to the anatomic area of interest.

Imaging planes and pulse sequences: Preliminary scout localizers in axial, coronal and sagittal planes were done. Each of the patients was examined according to classic MSK MRI protocol as shown below in (Table 1).

The classic MSK MRI study protocol for shoulder is Axial T1 and Proton Density (PD), coronal T1, T2 and PD and sagittal T2 sequences.

Image analysis: Two radiology fellows, each with an experience in interpretation Musculoskeletal (MSK) MR images, were blinded to the results of the radiology reports and independently and retrospectively evaluated the MR images.

Table (1): Showing MRI sequences and planes for patient imaging.

Plane	Sequence	Parameters
Axial	T1	Time: 2.5 TR: 532.9 TE: 18 FOV: 35.7 X 17 Thickness: 4.4
	PD (spir)	Time: 3.25 TR: 1 800 TE: 15 FOV: 35.7 X 17 Thickness: 4.4
Coronal	T1	Time: 2 TR: 478.85 TE: 18 FOV: 35.7 X 17 Thickness: 3.5
	T2	Time: 2.44 TR: 4058.54 TE: 100 FOV: 35.7 X 17 Thickness: 3.5
	PD (spir)	Time: 3.5 TR: 1 800 TE: 15 FOV: 35.7 X 17 Thickness: 3.5
Sagittal	T2	Time: 2.43 TR: 4000 TE: 100 FOV: 35.7 X 17 Thickness: 4.4

Statistical analysis:

The collected data were coded, tabulated, and statistically analysed using IBM SPSS statistics (Statistical Package for Social Sciences) software Version 18.0, IBM Corp., Chicago, USA, 2009.

Descriptive statistics were done for quantitative data as minimum & maximum of the range as well as mean ± SD (standard deviation) for quantitative normally distributed data, median and 1 st & 3 rd inter-quartile range for quantitative non-normally distributed data, while it was done for qualitative data as number and percentage.

Inferential analyses were done for quantitative variables using Shapiro-Wilk test for normality testing, ANOVA test for more than two independent groups with normally distributed data and Kruskal Wallis test with post hoc Dunn's test for more than two independent groups with non-normally distributed data.

In qualitative data, inferential analyses for independent variables were done using Fisher's exact test for variables with small expected numbers with post hoc Bonferroni test. The level of significance was taken at p-value <0.050 is significant, otherwise is non-significant.

Results

Statistical results:

Descriptive statistics of the studied cases:

Table (2): Demographic characteristics of the studied cases.

Variables	Mean ± SD	Range
Age (years)	25.1±5.5	17.0-39.0
	N	%
Sex:		
Male	37	92.5
Female	3	7.5
Sport type:		
Gymnastics	26	65.0
Football	5	12.5
Kung Fu	5	12.5
Handball	3	7.5
Motor cycle	1	2.5
Sport classification:		
Weight lifting	26	65.0
Team Sport	8	20.0
Martial Arts	5	12.5
Racing	1	2.5
Mode of trauma:		
Traction	30	75.0
Direct impact	6	15.0
FOOSH	4	10.0

Total = 40.

The majority of cases were males. Weight lifting was the most frequent sport type. Traction was the most frequent mode of trauma.

Table (3): MRI findings of the studied cases.

Findings	N	%
Effusion	28	70.0
Bankart	21	52.5
Hillsachs	19	47.5
Rotator cuff tear	19	47.5
AC lesions	5	12.5
Bony Bankart	3	7.5
ALPSA	1	2.5
GLAD	1	2.5
SLAP	1	2.5
PHF	1	2.5
Number of lesions:		
1	7	17.5
2	15	37.5
3	11	27.5
4	6	15.0
5	1	2.5
	Median (IQR)	Range
Number of lesions	2.0 (2.0-3.0)	1.0-5.0

Total = 40.

Effusion, Bankart, Hillsachs and Rotator cuff tear were the most frequent MRI findings. Majority of cases had two-three findings. Majority of cases had moderate severity.

Comparative statistics of the studied cases:

Table (4): Comparison according to mode of trauma regarding demographic characteristics.

Variables	Traction (N=30)	Direct im. (N=6)	FOOSH (N=4)	*p*
Age (years)	25.3±6.0	24.0±2.7	24.5±5.4	^0.853
Sex:				
Male	27 (90.0%)	6 (100.0%)	4 (100.0%)	§1.000
Female	3 (10.0%)	0 (0.0%)	0 (0.0%)	
Sport classification:				
Weight lifting	24 (80.0%)a	0 (0.0%)b	2 (50.0%)ab	§
Team sport	2 (6.7%)a	4 (66.7%)b	2 (50.0%)b	<0.00 1*
Martial arts	4 (13.3%)a	1 (16.7%)a	0 (0.0%)a	
Racing	0 (0.0%)a	1 (16.7%)a	0 (0.0%)a	

^: ANOVA test.
§: Fisher's Exact test with post hoc Bonferroni test.
Significant. Homogenous groups had the same letter "a,b".

No significant difference according to mode of trauma regarding age and sex. Weight lifting was significantly the most frequent regarding traction mode of trauma; team sport was significantly the most frequent regarding direct impact mode of trauma, while weight lifting and team sport had non-significant difference regarding.

Table (5): Comparison according to mode of trauma regarding MRI findings.

Variables	Traction (N=30)	Direct im. (N=6)	FOOSH (N=4)	*p*
Effusion	22 (73.3%)	2 (33.3%)	4 (100.0%)	§0.072
Bankart	14 (46.7%)	5 (83.3%)	2 (50.0%)	§0.3 12
Hillsachs	10 (33.3%)a	6 (100.0%)b	3 (75.0%)ab	§0.002*
Rotator cuff tear	18 (60.0%)a	0 (0.0%)b	1 (25.0%)ab	§0.013*
AC lesions	5 (16.7%)	0 (0.0%)	0 (0.0%)	§0.750
Bony Bankart	1 (3.3%)	1 (16.7%)	1 (25.0%)	§0.149
ALPSA	0 (0.0%)	0 (0.0%)	1 (25.0%)	§0.100
GLAD	1 (3.3%)	0 (0.0%)	0 (0.0%)	§1.000
SLAP	1 (3.3%)	0 (0.0%)	0 (0.0%)	§1.000
PHF	0 (0.0%)	0 (0.0%)	1 (25.0%)	§0.100
Number of lesions	2.0 (2.0-3.0)	2.0 (1.8-3.3)	3.0 (3.0-3.8)	^0.192

^: Kruskal Wallis test.
§:Fisher's Exact test with post hoc Bonferroni test.
Significant. Homogenous groups had the same letter "a,b".

Hillsachs was significantly the most frequent lesion regarding direct impact trauma, followed by, FOOSH and significantly the least regarding traction type of trauma. Rotator cuff tear was significantly the most frequent regarding traction trauma, followed by, direct impact and significantly the least regarding FOOSH.

Illustrative cases:

Case (1):

Patient history and data:

Male patient 26 years old, martial arts player (Kung Fu) was presented to the MRI Unit with acute right shoulder pain and inability to move it

one week after having shoulder dislocation after being subjected to severe traction trauma on the right upper limb. The dislocation was corrected immediately after the trauma under orthopedic consultation, and the patient was instructed to investigate the cause of persistent pain.

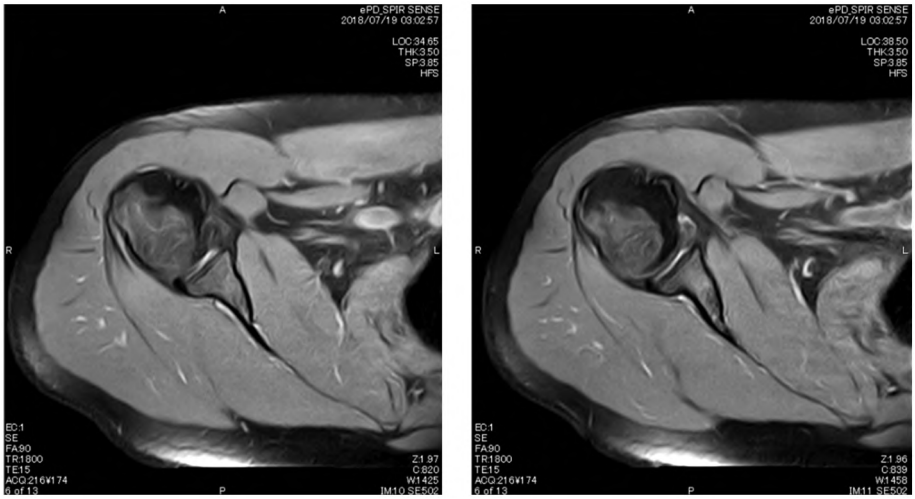

Fig. (1): PD SPIR axial cut of the right shoulder showing antero-inferior labral separation surrounded by minimal amount of joint effusion (red arrow) denoting "Bankart's lesion" of the glenoid.

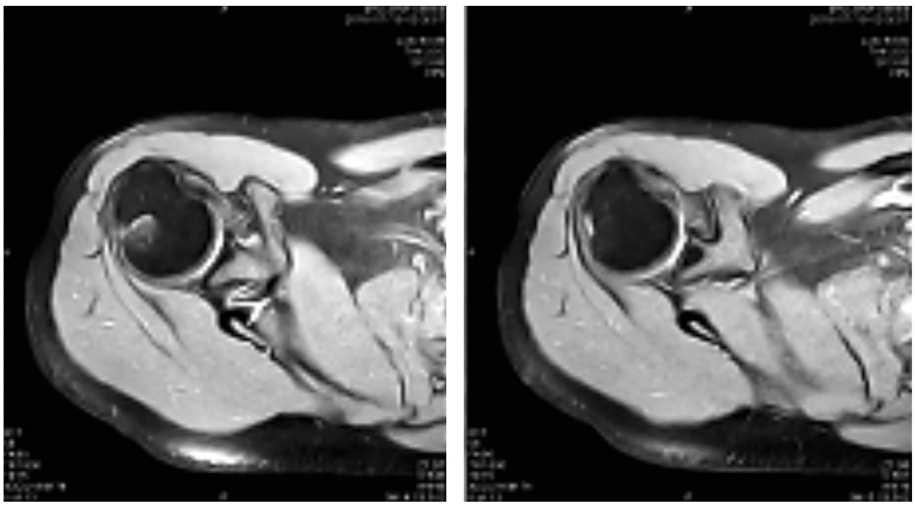

Fig. (2): PD SPIR axial cut of the right shoulder showing small depressed fracture of the posterior-superior aspect of the humeral head with change in the signal intensity of the bone marrow contusion (red arrow) denoting "Hillsachs fracture".

MRI examination showed:

- Torn anterio-inferior glenoid labrum surrounded by minimal altered signal intensity in the PDWI denoting minimal effusion (Bankart's lesion).
- Posterior-superior small depressed fracture of the humeral head associated with altered signal intensity in the PDWI of the bone marrow denoting of marrow contusion (Hillsachs fracture).

Case (2):

Patient history and data:

Male patient 22 years old, gymnastics trainer who was subjected to severe traction on his right shoulder during heavy weight left, which he couldn't handle. 2 weeks later he was referred to the MRI Unit to investigate his should due to unrelieved continuous pain and inability to move it properly.

Fig. (3): PD SPIR coronal cut of the right shoulder showing altered signal intensity of the upper part of the supraspinatus muscle (red arrow).

Fig. (4): T2W sagittal cut of the right shoulder hyper intense signal of the posterior-superior aspect of the supraspinatus muscle (red arrow).

MRI examination showed:

- Partial tear involving the posterior-superior aspect of the supraspinatus muscle tendon.
- The infraspinatus, teres minor, and subscapularis muscles and tendons are intact, within normal limits in signal intensity and morphology.

Discussion

The majority of the cases reported in the current study were males of age average of 25 years old. There was no statistical significant difference in the mode of trauma and severity of the lesions regarding age and sex. Same findings were reported by Kraeutler et al., 2018, **[1я** who stated that when analyses were limited to sex-comparable sports, no significant difference existed during the study of epidemiology of shoulder dislocation in college students.

Through the current study, the focus was on finding a correlation between the classification of sport, mode of trauma and the outcome injury affecting the shoulder putting in consideration and anatomical variations. Accordingly, weight lifting was the most frequent sport followed by team sports. Weight lifting was significantly the most frequent susceptible to traction mode of trauma (especially over use); and rotator cuff tear was significantly the most frequent outcome to traction mode of trauma. Therefor a strong correlation between weight lifting, traction and rotator cuff (supraspinatus) lesion was proved. Moreover, most of the cases were presented in a solitary lesion or associated with mild degree of effusion or bursitis denoting a mild severity. In 2013, Kukkonen **[4]** reported that several theories had been proposed as etiologic factors for Rotator Cuff (RC) tear. Extrinsic theory referred to the mechanical abrasion

of the RC tendons by the surrounding anatomical structures. RC tears had been related to the morphology of the acromion and the association between large lateral extension and RC tear was controversial.

On the other hand, team sport was significantly the most frequent susceptible to direct impact mode of trauma; and Hillsachs fracture was significantly the most frequent lesion regarding direct impact trauma, followed by, FOOSH, and significantly the least regarding traction type of trauma (severe sudden traction type reported with martial arts). Moreover, most of the cases were presented by multiple lesions denoting moderate or high severity. According to patients' history gathered from all the studied cases, after subjecting to sever sudden traction trauma, direct impact or even FOOSH during their training, gleno-humeral dislocation was the most common outcome causing Bankart labral tear solitarily or combined with Hillsachs humeral fracture. In 2018, Nadler **[16]** reported that an anterior dislocation typically occurs when the arm is twisted while it is stretched straight out. This usually happens during a sports training, such as throwing balls, falling after tackling or attempting to block another player in martial arts. According to the direction of impact; a direct impact to the shoulder can result in anterior or posterior glenohumeral dislocation.

Conclusion:

Although MRI examination is the gold standard for diagnosing different athletic MSK lesions of the shoulder, careful history taking of the patient like type of the sport, mode of trauma and severity of trauma is a very important tool that can help the radiologist to predict different lesions could be found in the study of each patient and finally reach an accurate diagnosis in an easier way and saving lots of time doing so.

References

1- DOSHI R., MAHESHWARI S. and SINGH J.: MR anatomy of normal shoulder. Musculoskeletal Imaging, 12 (2): p. 261-6, 2002.

2- MARIEB E.N. and HOEHN K.: Chapter 8: Joints. Anatomy and Physiology, 3rd ed. United States: Pearson Benjamin Cummings, p. 239-40, 2007.

3- PALMER W.E., CASLOWITZ P.L. and CHEW F.S.: MR Arthrography of the shoulder: Normal intraarticular structures and common abnormalities. AM. J. Roentgenol., 164, p. 141-6, 2000.

4- KUKKONEN J.: Degenerative rotator-cuff tear results and prognostic factors of arthroscopic repair. University of Turku and Turku University Hospital, p. 12-15, 2013.

5- CROSBY L.A. and NEVIASER R.J.: Proximal Humerus Fractures. Springer International Publishing Switzerland, DOI. 10.1007/978-3-3 19-08951-5_2, 2015.

6- ABRAMS R. and AKBARNIA H.: Dislocation, Shoulder (Humerus). Treasure Island (FL): StatPearls Publishing, StatPearls [Internet], 2018.

7- SHARMA G., BHANDARY S., KHANDIGE G. and KABRA U.: MR Imaging of Rotator Cuff Tears: Correlation with Arthroscopy. J. Clin. Diagn. Res., 11 (5): p. 24-7, 2017.

8- SAMBANDAM S.N., KHANNA V., GUL A. and MOUNASAMY V.: Rotator cuff tears: An evidence based approach. World J. Orthop., 6 (11): p. 902-18, 2015.

9- GEARY M.B. and ELFAR J.C.: Rotator Cuff Tears in the Elderly Patients. Geriatr. Orthop. Surg. Rehabil., 6 (3): p. 220-4, 2015.

10- MORAG Y., JACOBSON J.A., MILLER B., MAESENEER M., GIRISH G. and JAMADAR D.: MR Imaging of Rotator Cuff Injury: What the Clinician Needs to Know. Radiographics, 26 (4): p. 1045-65, 2006.

11- STRUDWICK M.W., ANDERSON S.E., DIMMICK S., SALTZMAN M.D. and HSU W.K.: The Pearls and Pitfalls of Magnetic Resonance Imaging of the Upper Extremity. Journal of Orthopaedic & Sports Physical Therapy, 41 (11): p. 861-72, 2011.

12- CHUNG H., YOON Y.S., SHIN J.S., SHIN J.J. and KIM D.: Chronic Irreducible Anterior Dislocation of the Shoulder without Significant Functional Deficit. Clin. Orthop. Surg., 8 (3): p. 333-8, 2016.

13- KOMPEL A.J., LI X., GUERMAZI A. and MURAKAMI A.M.: Radiographic Evaluation of Patients with Anterior Shoulder Instability. Curr. Rev. Musculoskelet. Med., 10 (4): p. 425-33, 2017.

14- GYFTOPOULOS S., ALBERT M. and RECHT M.P.: Osseous Injuries Associated With Anterior Shoulder Instability: What the Radiologist Should Know. American Journal of Roentgenology, 202: p. 541-50, 2014.

15- KRAEUTLER M.J., CURRIE D.W., KERR Z.Y., ROOS K.G., MCCARTY E.C. and COMSTOCK R.D.: Epidemiology of Shoulder Dislocations in High School and Collegiate Athletics in the United States: 2004/2005 Through 2013/2014. Sports Health, 10 (1): p. 85-91, 2018.

16- NADLER L.: Dislocated Shoulder Symptoms, Causes & Treatment Options. buoyhealth.com , 2018.

دراسة حديثة للتصوير بالرنين المغناطيسى لإصابة الكتف الحادة

يتكون الكتف من ثلاثة عظام وخمسة مفاصل. تعد وظيفة الكتف العادية ضرورية للحياة اليومية والعديد من الرياضات الشعبية. هناك العديد من آسباب متلازمة الكتف المؤلمة. تعد إصابات الكتف شائعة حيث تمثل ما يصل إلى ٢٠٪ من جميع الإصابات الرياضية. هذه الإصابات تشكل عبئاً هاماً على الرياضيين المصابين وآسرهم. تشمل الجوانب السريرية لإصابات الكتف الكسور الترقوية، والكسور العضدية القريبة، والخلع العضدى الغليانى، وإلتواء الآخرمى الترقوى، وتمزق الكفة المدورة.

لا يوجد فرق كبير بين الجنسين خلال الدراسة فيما يتعلق بتدريب وإصابات نفس النوع من الرياضة. رفع الآثقال هو النوع الرياضى الآكثر شيوعاً الذى يعانى من إعتلال الكتف بسبب نوع الجهد الزائد من صدمات. فى حين آن الرياضة الجماعية هى النوع الرياضى الآكثر شيوعاً الذى يعانى من إعتلال الكتف بسبب الصدمة المباشرة للكتف آو الوقوع على يد ممدودة.

التصوير بالرنين المغناطيسى هو وسيلة رائعة وفعالة لتقييم مفصل الكتف. يمكن تشخيص جميع الحالات بشكل صحيح مهما كان إضطراب الكتف. آخذ التاريخ الدقيق قبل دراسة التصوير بالرنين المغناطيسى هو آداة مفيدة لإكمال الدراسة.