



A STUDY OF ROLE OF MRI IN ROTATOR CUFF INJURY:

Radiodiagnosis

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ABSTRACT

Rotator Cuff injury is one of the most common injuries that is often neglected and often fibrosis of muscles are encountered when the patient actually comes for a review. It causes a lot of morbidity and loss of useful work hours, thus resulting in the great economic losses the patients. This study is intended to check the role of MRI in rotator cuff injury.

KEYWORDS

MRI, Rotator Cuff, Injury, Role.

INTRODUCTION:

Four short muscles around the joint namely subscapularis, supraspinatus, infraspinatus and teres minor, blends with the fibrous capsule and act as musculo-tendinous rotator cuff, the tonic contractions of the four muscles which is popularly called as the rotator cuff keeps the ball of the humerus in contact with the socket¹.

Rotator Cuff injury is one of the most common injuries that is often neglected and often fibrosis of muscles are encountered when the patient actually comes for a review. It causes a lot of morbidity and loss of useful work hours, thus resulting in the great economic losses the patients².

When the muscles that are involved in the stability of such an important joint is affected, it is bound to cause both monetary and emotional disturbances to the family. One gold standard method to diagnose the Rotator Cuff injury is MRI. The MRI is the choice to diagnose the soft tissue injuries and the patient is doubly benefitted because of the non-ionising property of the MRI. The study puts in an effort to understand the role of MRI in rotator cuff injury.

AIMS AND OBJECTIVES:

To study the role of MRI in diagnosing the rotator cuff injury.

MATERIALS AND METHODS:

This study was done in Great Eastern Medical School and Hospital. The study was done from Jan 2018 to July 2018. The study was done in the Department of Radio diagnosis and thirty patients were selected for the same.

Inclusion Criteria:

1. Patients with Rotator cuff injuries/Pathology
2. Age of the patient in between 20 to 50 years. This was done to eliminate the age related bias.

Exclusion Criteria:

1. Patients who were having metallic implants
2. Patients who had metallic stents and pacemakers.
3. Multiple tendon injuries were not taken.

RESULTS:

Table 1: Distribution of tendon injuries/Pathologies

Tendon	Frequency	Percentage
Supraspinatus	28	93.33%
Subscapularis	02	6.66%
Infraspinatus	Nil	--
Teres Minor	Nil	--

Graph 1: Distribution of tendon injuries/Pathologies

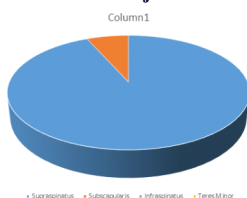


Table 2: Test of Significance

Supraspinatus Injury	X-Value	P-Value (<0.05)
28	0.625	0.0003

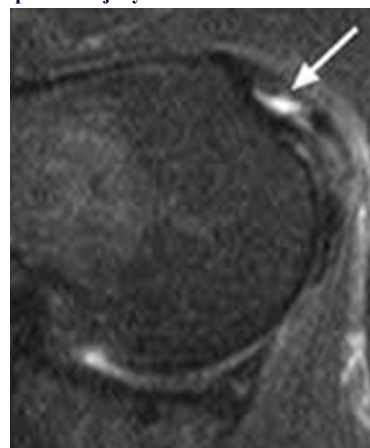
This is statistically significant.

Table 3: Pathologies of the supraspinatus Injuries

Supraspinatus Injury	Frequency
Tendinosis	02
Partial Tear	21
Complete Tear	01
Fibrosis	04

Discussion:

Image 1: Supraspinatus injury on MRI



The supraspinatus arises from the medial 2/3rd of the supraspinous fossa of the scapula and from the dense fascia which covers the muscle. The muscle is inserted to the upper flattened area of the greater tubercle of the humerus. The muscle is supplied by the supra-scapular nerve of the brachial plexus. It is an initiator of abduction of the shoulder joint to the extent of first 15 degrees. It also maintains the stability of the joint.

The subscapularis originates from the anterior surface of the scapula and is inserted into the lesser tubercle of the humerus. It maintains the stability and also helps in the medial rotation of the shoulder.

The infraspinatus originates from the infraspinous fossa of the scapula and is inserted in the greater tubercle. It also maintains the stability of the shoulder and helps in the lateral rotation of the shoulder.

The teres minor originates from the posterior side of the scapula from the lateral border and is inserted in the greater tubercle. It also maintains the stability of the shoulder and helps in the lateral rotation of the shoulder. The last two muscles help in laterally rotating the humerus without which above head abduction of the shoulder would be impossible.

According to Mall Na et al³, 84% of the supraspinatus was injured in his study, 78% of the subscapularis was injured in the study, 39% of the infraspinatus was injured in the study and none of the teres minor were injured. According to Alexandre L et al⁴, 100% of the supraspinatus, 20% of the subscapularis and the 60% of the infraspinatus was injured. According to Sugaya H⁵ et al only 27.4% of the subscapularis were injured in his study. According to Kumar G et al⁶ only supraspinatus was injured in 81% of the cases. According to Shruthi GT et al⁷, 97% of patients suffered from the supraspinatus injury, 17% from the subscapularis and 7% suffered from the infraspinatus injury.

According to Lohr and Uhthoff et al⁸ 32% of the patients suffered from the partial tears of the supraspinatus injury and none from complete tears. According to Fukuda⁹ 45% of the patients suffered from the partial tears and none of the patients suffered from the complete tears.

Our study stands in agreement with the other study. Our study is unique that for the first time single tendon injuries are extensively studied.

CONCLUSION:

MRI is a very sensitive method to pick up the single tendon injuries and thus considered as the gold standard.

REFERENCES:

1. Fehring EV, Sun J, VanOeveren LS, et al. Fullthickness rotator cuff tear prevalence and correlation with function and co-morbidities in patients sixty-five years and older. *J Shoulder Elbow Surg* 2008;17(6):881-885.
2. Milgrom C, Schaffler M, Gilbert S, et al. Rotator-cuff changes in asymptomatic adults. The effect of age, hand dominance and gender. *J Bone Joint Surg Br* 1995;77(2):296-298.
3. Mall NA, Lee AS, Chahal J, et al. An evidence based examination of the epidemiology and outcomes of traumatic rotator cuff tears. *Arthroscopy* 2013;29(2):366-376.
4. Lädermann A, Denard PJ, Kolo FC. A new tear pattern of the rotator cuff and its treatment: Fosbury flop tears. *Int J Shoulder Surg* 2015;9(1):9-12.
5. Arai R, Sugaya H, Mochizuki T, et al. Subscapularis tendon tear: an anatomic and clinical investigation. *Arthroscopy* 2008;24(9):997-1004.
6. Kumar G, Phatak SV, Lakhkar B, et al. Diagnostic role of magnetic resonance imaging in rotator cuff pathologies. *J Datta Meghe Inst Med Sci Univ* 2017;12(1):7-10.
7. Shruthi GT, Amith R, Chowdhary AS, et al. Role of MRI in rotator cuff injuries. *J. Evid. Based Med. Healthc.* 2018; 5(32), 2394-2401. DOI: 10.18410/jebmh/2018/494
8. Lohr JF, Uhthoff HK. Epidemiology and pathophysiology of rotator cuff tears. *Orthopade* 2007;36(9):788-795.
9. Fukuda H. Partial-thickness rotator cuff tears: a modern view on Codman's classic. *J Shoulder Elbow Surg* 2000;9(2):163-168.