



CROSS SECTIONAL STUDY TO ASSESS THE DIAGNOSTIC ROLE OF HIGH RESOLUTION ULTRASOUND IN EVALUATION OF SHOULDER PAIN IN COMPARISON WITH MRI.

Radio-Diagnosis

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ABSTRACT

Background: Shoulder pain is third most common presenting complaint due to which a person visits Orthopedic clinic [1] and referred to the radiodiagnosis department for the shoulder USG and MRI. **Aims and Objectives:** This study aims to assess the accuracy of high resolution ultrasound with MRI findings as gold standard.

Materials and method: 150 patients with shoulder pain referred to Department of Radiology fulfilling the inclusion criteria were included in the study. USG shoulder and MRI was performed and findings were recorded.. **Results:** Amongst 150 patients, 105 were males(70%) and 45 were female(30%).The patient age ranged from 14 years to 80 yr. rotator cuff tears was the far most common pathology detected by USG ,later confirmed by MRI . **Conclusion:** The present study concludes that USG is as sensitive and specific to MRI in detection of shoulder joint pathology as compare to MRI.

KEYWORDS

rotator cuff tears , USG , MRI

INTRODUCTION :

Shoulder pain is third most common presenting complaint due to which a person visits Orthopedic clinic [1] and referred to the radiodiagnosis department for the shoulder USG and MRI. Tendon inflammation, tendon tear, adhesive capsulitis, paralabral cysts, bursitis, acromioclavicular joint arthropathy, joint instability, arthritis, fracture are common causes of shoulder pain. Other less common causes include infections and nerve related conditions. The rotator cuff disorders constitute the most common cause of painful shoulder [2,3].

Shoulder joint is the commonest joint to undergo musculoskeletal (MSK) USG examination . USG of shoulder is simple, cheap, fast and non-invasive imaging technology for the detection of shoulder joint pathologies causing shoulder pain . Dynamic examination of shoulder can be carried out in multiple planes and areas of concern can be focused promptly to make a diagnosis. USG can be done of the contralateral shoulder as well because in 30% cases pathology is detected in contralateral shoulder also.Magnetic resonance imaging (MRI) has extensive contrast resolution which allows extensive non-invasive evaluation of the soft tissues. Details of the rotator cuff pathology, including the size of the tear, extent of retraction, and amount of muscle atrophy are provided by the MRI aid surgical planning.

MATERIALS AND METHODS:

The present study was hospital based cross-sectional study conducted on 150 patients in Department of Radiodiagnosis, SMS Medical college, Jaipur. After approval from ethics committee, patient referred from Department of orthopedics with shoulder pain were included in the study. USG was performed with using Hitachi and Toshiba Xario200 ultrasound machine MRI was performed using 3T MRI Phillips Ingenia machine.

Technique:

Slice thickness: 3 mm, interslice gap 0.3 mm

Axial PDFS sequences
Coronal PDFS and T2W sequences
Sagittal PDFS and T1 W sequences.

RESULTS:

- The study was conducted in 150 patients amongst which 105 were male(70%) and 45 patients were female(30).

- The range of age was 14 to 69 years .Most of the patients being in the age group of >50 years.
- Most common pathology detected with USG was was rotator cuff tears , later confirmed by MRI.
- Supraspinatus tendon was in involved in 70 % cases , infraspinatus in 8% cases, and subscapularis in 22% cases, teres minor was not involved in any case of our study.
- Acromio-clavicular joint arthritis was present in 40% cases.
- USG was 80% sensitive in detecting partial thickness and 94% sensitive in detecting full thickness tears of supraspinatus muscle.
- USG was 46 % sensitive in detecting partial thickness and 100 % sensitive in detecting full thickness tears of subscapularis muscle.
- USG was 75 % sensitive in detecting partial thickness and 100 % sensitive in detecting full thickness tears of infraspinatus muscle.

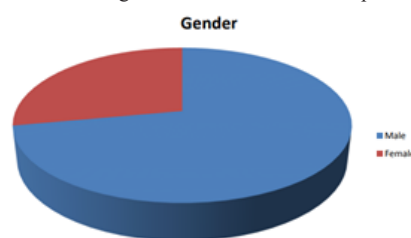


Figure 1- Sex Distribution Of Cases

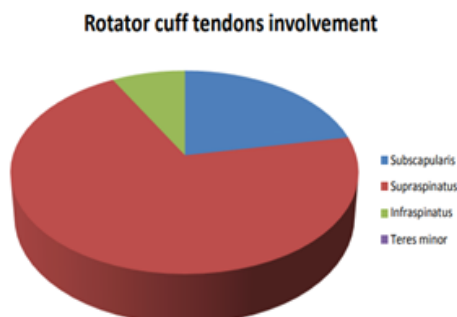


Figure 2 - Supraspinatus Tendon Was In Involved In 70 % Cases , Infraspinatus In 8% Cases, And Subscapularis In 22% Cases, Teres Minor Was Not Involved In Any Case Of Our Study

DISCUSSION:

USG plays a major diagnostic role in detecting shoulder joint pathologies. It has a high sensitivity and specificity for full thickness tears of the rotator cuff tendons.

In present study, most common age group affected was age group >50 years. Male to female ratio was 2:1.

Overall study was conducted in 150 patients, 189 tendons were involved, most common tendon involved was supraspinatus tendon among the rotator cuff tendons. This is concordance with the study done by Yamamoto et al.[4]

In our study partial thickness tears of supraspinatus was more common than intersubstance and full thickness tears. This is concordance with the study done by Goyal et al.[5]

In our study the sensitivity of USG to detect full thickness supraspinatus tear was 94% while of partial thickness tear was 80%. The sensitivity of USG to detect full thickness subscapularis tear was 100% while of partial thickness tear was 46%. The sensitivity of USG to detect full thickness infraspinatus tear was 100% while of partial thickness tear was 75%. This is concordance with the study done by Teeffey et al[6] and Narasimhan et al [7].

Table 2 – Comparison of our study with various previous studies.

Our study	OUR STUDY	TEEFY ET AL	NARASIMHAN ET AL	GORMELI ET AL
Subscapularis (P)	46	42	64	53
F	100	94	100	92
Supraspinatus (P)	80	84	80	80
F	94	90	96	94
Infraspinatus (P)	75	64	72	65
F	100	100	100	94
Teres minor P/F	0	0	0	0



Figure 2: 40 Yr Old Female Presented With Right Shoulder Pain,usg Shoulder Was Performed.

Non visualization of supraspinatus tendon(white arrow) in between deltoid muscle (yellow arrow) and humeral head(blue arrow) in short axis view.

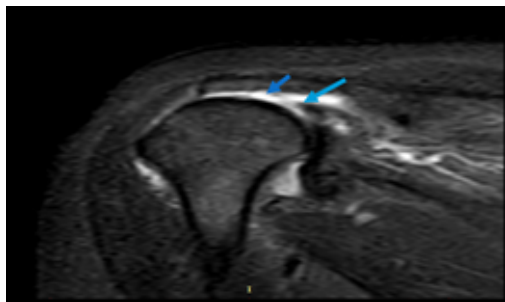


Figure 3 - Mri Of Above Case Was Performed

Full thickness insertional tear of entire supraspinatus tendon(blue arrow) with retraction of the torn fibres (brown arrows) and resultant superior migration of humeral head is seen leading to narrowing of subacromial space.



Figure 4: 43 Yr Old Male Presented With Right Shoulder Pain,usg Shoulder Was Performed.

In short axis view Articular sided partial thickness tear(blue arrow) is seen in the supraspinatus tendon also known as partial articular supraspinatus tendon avulsion (pasta lesion).

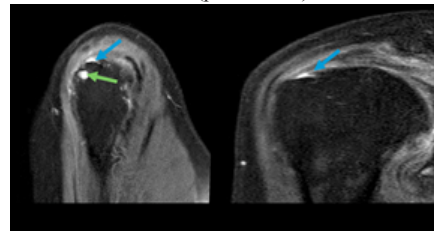


Figure 5 – Mri Was Performed

Articular sided partial thickness tear(blue arrow) of supraspinatus tendon with intact superior fibres. green arrow shows subchondral cyst in the humeral head.

CONCLUSIONS:

USG imaging can be considered almost equally effective as compared to MRI, in the evaluation of rotator cuff injuries, especially full thickness tears. USG is not as sensitive as MRI in evaluating labral and capsular or ligamentous pathologies. MRI additionally picked up labral tears, Inferior Glenohumeral Ligament thickening, muscle atrophy, and osseous involvement.

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