



ROLE OF ULTRASOUND IN THE DETECTION OF ROTATOR CUFF SYNDROME: AN OBSERVATIONAL STUDY

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ABSTRACT **BACKGROUND** – Physical tests are customarily favoured to evaluate rotator cuff syndrome but are inadequate to anticipate the morphology and size of the rotator cuff. The management of patients is pivoted on the existence of cuff injury and the size of the tear. The purpose of this study was to appraise the ultrasound findings for patients with sudden shoulder pain. **MATERIAL/METHODS** – A total of 121 patients with sudden shoulder pain with rotator cuff syndrome, doubted by orthopaedic doctors, were exposed to ultrasonography. Real time ultrasonography was done for biceps, infraspinatus, posterior labrum, subscapularis, supraspinatus, teres minor, subacromialsubdeltoid bursa and AC joint. Each tendon was assessed from their myotendinous junction shoulder to bony insertions. **RESULTS** – Ultrasonography pointed out that 87% of the registered patients had leastwise one specific cause of the rotator cuff disorder. Among the rotator cuff disorders, calcific tendinitis (50%) was observed more frequently followed by tendinopathy, subacromial subdeltoid bursitis (32%) and partial thickness tear (16%). **CONCLUSIONS**- ultrasonography is essential to make an accurate diagnosis to execute effective treatment plan in patients with shoulder pain.

KEYWORDS : Tendinopathy, Bursitis, Shoulder Pain, Ultrasonography,

BACKGROUND :

Shoulder pain is a prevalent musculoskeletal disorder with a reported lifetime prevalence of 66.7% in the general population^{1,2}, categorizing only behind the prevalence of low back pain (84%).³ Periarticular shoulder disorders are the most common cause of shoulder pain experienced by general practitioners and musculoskeletal specialists.⁴ Precise clinical diagnosis of these disorders is frequently exigent.

Although a careful history and physical examination are important, clinically differentiating full thickness cuff tear from partial thickness cuff tear or impingement related tendinitis can be difficult. In spite of the fact that the morphology of the acromion has appeared to be a chief element in the incident of subacromial impingement and rotator cuff tears⁵, analysis of the shape of the acromion on radiography is sensitive to alteration in radiographic methodology and to the MR section contemplated on MRI and appears high interobserver variability.^{6,7} MRI is a authentic technique for the ranking of the rotator cuff tendons, but it bestows only a static rating of the shoulder joint and can only indirectly puts forward the diagnosis of subacromial impingement since most findings are nonspecific. Studies have probed the merits of dynamic MR estimation of the shoulder with open MRI.^{8,9}

The major limiting points of dynamic MRI are the narrow accessibility of open magnets and the certainty that the MR technology, at this time, only permits sequential imaging of single-plane shoulder motions that do not fully replicate corporal shoulder motion. Ultrasound is alluring as an imaging test because it is quick, safe, economical, widespread.

MATERIAL AND METHODS :

A total of 121 patients with sudden shoulder pain with rotator cuff syndrome, doubted by orthopaedic doctors, were put through ultrasonography. Real time ultrasonography was done for biceps, infraspinatus, posterior labrum, subscapularis, supraspinatus, teres minor, subacromialsubdeltoid bursa and AC joint. Each tendon was assessed from their myotendinous junction shoulder to bony insertions.

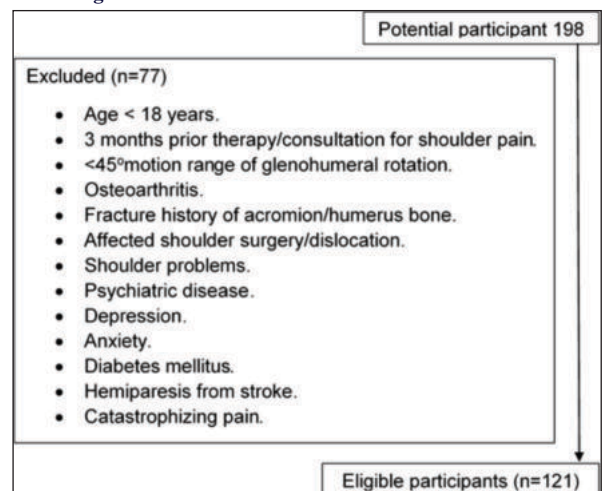
Inclusion Criteria:

- Patients age 18 years and older.
- Sudden pain.

Exclusion Criteria:

- Three months prior consultation for shoulder pain.
- Less than 45 degree motion range of glenohumeral rotation which might be due to glenohumeral diseases like osteoarthritis.
- Fracture history of acromion or humerus.
- Affected shoulder surgery or dislocation any rheumatic disorder.
- Referred pain hemiparesis.

Ultrasonography Technique and Diagnosis: Flow Diagram Of Excluded



RESULTS :

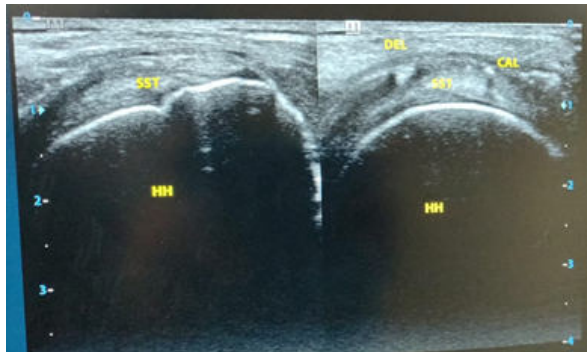
From January 17, 2019 to April 12, 2021, a total of 198 patients with sudden shoulder pain were recruited from an outpatient setting of the government medical college, Amritsar. Among the recruited patients, only 121 patients were included in the study following the inclusion and exclusion criteria. The flow diagram is shown. Ultrasonography picked out 87% of the registered patients had leastwise one peculiar cause of the rotator cuff disorder. Among the rotator cuff disorders, calcific tendinitis (50%) was observed more frequently followed by tendinopathy and subacromial subdeltoid bursitis (32%) and partial thickness tear (16%).

DISCUSSION :

In a recent comprehensive review of the literature, Stiles and Otte¹⁰ concluded that the role of conventional MRI in both rotator cuff tear and glenohumeral instability was unclear. Standard MRI cannot differentiate some full-thickness cuff tears from partial tears, the reported sensitivity (0.80 to 0.97) and specificity (0.93 to 0.94) of conventional MRI for complete tears is not superior to ultrasound results obtained by experienced operators. In addition, MRI has no cost-benefit edge. Also, physical tests are not competent of depicting the morphology and size of rotator-cuff.¹¹ Ultrasonography supplies outstanding envision of upper limb muscles¹² and adjoining connective soft tissues¹³, and it has numerous advantages, e.g., no radiation and movability¹². Also, ultrasonography has magnificent inter-observer

consensus for synovial effusion, cartilage erosion, and synovial thickening.¹⁴ Musculoskeletal ultrasonography is a suitable and non-invasive technique for the assessment of rotator-cuff syndrome. Our observational study showed that older age (older than 40 years) was a stronger predictor of rotator-cuff disorder in patients with sudden pain in the shoulder(s). Sudden pain in the shoulder typically presents with at least one specific cause of rotator-cuff disorder (e.g., calcific tendonitis, tendinopathy, SASD bursitis, or partial thickness tear). Ultrasonography gives clarification to the patient complaints and advises physicians regarding prognosis. For instance, sporadic severe events are attributes of calcific tendonitis.¹⁵ In daily use, it is mandatory to consider the ultrasonography results every time and other discoveries from the clinical setting, as asymptomatic findings might be noted.¹⁶

This research was skilful to differentiate calcific tendonitis, tendinopathy, SASD bursitis, and thickness tears amid the rotator-cuff disorders in patients with sudden shoulder pain by employing ultrasonography. It is foremost to record that for further diagnosis of patients with sudden shoulder pain, physiological tests have high sensitivity but have no specificity¹⁷, and arthroscopy and open surgery are tedious, invasive, non-dynamic, and exorbitant methods.¹⁸ Ultrasonography can ease side-by-side comparisons of joints.¹³ Ultrasonography is the premier alternative to diagnose rotator-cuff disorder compared to other accessible techniques for patients with sudden shoulder pain. Established native restraints of this study need consideration when interpreting the study consequences. Because ultrasonography is operator-dependence¹³, echo intensity values were not modified in our line of work. The plausible reason for this was that there was a light touch of the transducer on the upper limb skin. Only 87% of patients were identified with positive rotator-cuff disorder(s). Nevertheless, all patients had sudden pain in the shoulder. The practicable justification for the nonsuccess of ultrasonography in the leftover patients could be the existence of unduly soft tissues over the glomerular joint space, which obstructs with the sensitivity of ultrasonography for noticing of the rotator-cuff disorder.¹⁹



Calcific Tendinitis



Subacromial Subdeltoid Bursitis

CONCLUSION :

Shoulder ultrasonography is the best way in the diagnosis of rotator cuff syndrome in patients with sudden shoulder pain.

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