Ultrasonographic Findings of Periarthritis of Shoulder Joint in the Out Patients Department

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Abstract

Background: To detect periarticular lesions around the shoulder, musculoskeletal ultrasonography is very much useful. Recent improvements in Ultrasonographic technology have led to a higher sensitivity and accuracy of musculoskeletal sonography.

Objective: To present the distribution and representation of shoulder ultrasonographic (US) examination findings in patients with clinical diagnosis of shoulder periarthritis.

Materials and Methods: A cross sectional descriptive type of study at Single center setting conducted in OPD of department of Physical Medicine & Rehabilitation, BSMMU, Dhaka on thirty five patients with the clinical diagnosis of periarthritis of shoulder. Data was collected using an interview-administered questionnaire. All baseline investigations were done. Ultrasonogram was done by experienced Sonologists who were unaware about clinical data.

Results: The primary end point was reached in 85 percent of patient presented sonographic alteration suffering from periarthritis of shoulder. The structure most frequently involved was bicipital tendinitis (32%) and Supraspinatus tendinitis (28%). Sub acromial Bursitis (14%) and Acromioclavicular Osteoarthritis (11%) were also involved. About 15% individual presents no abnormalities. Different varieties of changes in the various structures had been detected.

Conclusion: Proper identification and assessment of the alteration of periarticular structure helps to approach for management and rehabilitation of Periarthritis of shoulder thus disability can be reduced.

Key words: Periarthritis, Shoulder, Ultrasonography.

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Introduction

Periarthritis of the shoulder, an inflammatory disease of the shoulder joint, capsule and surrounding soft tissues characterized by shoulder pain and limited shoulder mobility. It occurs commonly and causes considerable pain, disability and time lost from work.¹ The prevalence of shoulder pain accompanied by disability in Bangladesh is approximately 7.3%.² The differential diagnosis includes several entities of similar clinical picture. Tendinitis and tears of the rotator cuff, biceps tendinitis, and subacromial-subdeltoid bursitis are the most common lesions found.³ While its etiology is not clearly understood, numerous conditions, such as chronic strain of the shoulder, trauma and frequent exposure to cold or damp conditions, are recognized as possible causes.⁴

Occupation, posture, psychological stress and diabetes are considered the most important risk factors.⁵ The main clinical manifestations are soreness and progressive limitation of some movements of the shoulder joint. When the condition involves the whole rotator cuff in older patients, resulting in total restriction of all movements of the joint, it is termed ‘frozen shoulder’ or ‘adhesive capsulitis’⁶. The disorder involves not only the bursae or tendons but often all other structures of the shoulder joint, the more inclusive term, periarthritis, should be used.⁷⁻⁸

High frequency ultrasonography (US) is an accurate non-invasive imaging technique for evaluating patients with painful shoulder.⁹ US is able to identify not only the damage to cartilage and bone. But also to identify tendon pathology and synovial inflammation.¹⁰

Diagnostic Musculoskeletal ultrasound (MUS) can serve as an excellent imaging modality for the musculoskeletal clinician. The high sensitivity/specificity, non-invasiveness and low costs of this technique justify its routine utilization in clinical
rheumatological practice. The structures most commonly imaged with diagnostic musculoskeletal ultrasound; include tendon, muscle, nerve, joint, and some osseous pathology. It has also become a valuable tool in the daily clinical practice of Physical medicine and Rehabilitation Specialists; the musculoskeletal ultrasound probe replaces the terms with the physician’s stethoscope. Although it has been applied to the musculoskeletal system since the 1970s, more recent developments in real-time sonography and the use of high-resolution transducers have enabled high-quality images of soft tissues to be achieved.

The most frequent ultrasound finding of shoulder joint was effusion in the long head of the biceps tendon (Figure 1). Subscapularis muscle was the most frequently involved among the rotator cuff tendons. Tendon tear was also common among non-painful shoulders.

Diagnostic ultrasoundograms estimated to be less expensive than MRI. Additionally, Ultrasound is more patient friendly as claustrophobia, which may occur with MRI scanners. When compared to MRI, patients with shoulder pain prefer diagnostic Ultrasonography. MRI scanning benefits to examine a large area but may detect several “abnormalities” that may not be clinically related to the patient’s complaints. Diagnostic Ultrasonography also can examine large areas with extended field of view (FOV) imaging; however the clinician can interact with the patient who can then direct the examination toward the symptomatic area. In this way, the clinician can focus the examination to the most relevant area.

Ultrasonogram also has the advantage of being a dynamic study. For example, the subjected part can be imaged in real time, observing for pathologic movement in muscles, tendon, bursa or joints. With diagnostic ultrasonogram, the patient simultaneously provides feedback and vital information to the examiner during the dynamic examination that may reveal tendon sublimation, joint sublimation, or ligament incompetent.

This study is intended to present the distribution and representation of shoulder ultrasonographic (US) examination findings in patients with clinical diagnosis of shoulder periarthritis. This study will give significant information about assessment of sonographic disease pattern among the patients with periarthritis of shoulder joint. This effort will help to target key patient populations at risk by quantifying the extent of the problem, and by facilitating for appropriate interventions at an appropriate time.

**Materials and Methods**

This cross sectional descriptive study was carried out in the Department of Physical Medicine and Rehabilitation (PMR), Bangabandhu Sheikh Mujib Medical University (BSMMU), Bangladesh from July 2012 to June 2013. A total of 35 adult patients clinically diagnosed periarthritis of shoulder joint were selected purposively irrespective of sex.
Criteria for inclusion were patients aged ≥20 years and ≤60 years of both sexes except evidence of malignancy, patient with fracture or suspected fracture, contact with TB patient. After taking the formal consent of the patient, details history was taken and a preset date form filled up for every patient. Past history of illness and any systemic disease was inquired cautiously. Clinical examination was done accordingly. Base line investigation was done e.g. CBC, ESR and Hb%, RBS, Serum creatinine, Urine for R/M/E, serum uric acid, X-ray shoulder joint A/P view was also done. All reports were properly recorded in the data sheet. Ultrasonography of the shoulder joint was done by the well Trained Sonologists. Outcome variables were Ultrasonographic findings regarding tendon, bursa, capsule, bony contour and muscle and demographic variables. Data cleaning validation and analysis performed using the SPSS (Statistical package for social sciences) -package program (version-20.0) for Windows.

Results

The current study included 35 patients and Mean age was 48.54 years, range 28-70. Most number of patients (21, 60%) were of 40 to 60 years of age group. 9 (25.7%) of the respondents were below 40 years, 5 patients (14.3%) were aged over 60 years. It also showed that 19 (54%) of the total respondents were female and 16 (46%) were male. It also observed that more than half (51%) of the respondents were service holders, 37% were housewives and the rest were retired and businessmen. In this study 21 of the 35 respondents (60%) had shoulder pain for less than 6 months, 10 had pain for 6 months to 1 year and 4 patients had pain for more than 1 year; mean symptom duration 9.0643 months, range 0.5-96 months.

Figure 2: Distribution of nature of pain.

Result shows that the patients gave positive family history of various diseases like 11% of the patients gave positive family history of Diabetes Mellitus (DM), 17% (6 of the 35 patients) had positive family history of hypertension, 3% of the respondents had positive family history of heart disease and only 1 of the respondents gave positive family history of asthma. The present study reveals that more than half of the respondents (18, 51.2%) had no associated condition, 8 of the patients had diabetes, 5 had hypertension, 2 had both diabetes and hypertension and only one person had asthma and one other had hepatitis. It also shows that 31% of the respondents had a positive history of trauma. Almost two-thirds (73%) of the patients were found to have pain in shoulder due to degenerative change, 27% had pain due to inflammatory change (Figure 2).
number of Normal USG study that was 14%( n=5).

Table 1: Ultrasonographic findings in periarthritis of Shoulder Joint.

<table>
<thead>
<tr>
<th>Involved Structure</th>
<th>Number of Findings (N)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicipital Tendinitis</td>
<td>11</td>
<td>31</td>
</tr>
<tr>
<td>Supraspinatus Tendinitis</td>
<td>10</td>
<td>28</td>
</tr>
<tr>
<td>Subacromial Bursitis</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Capsulitis</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Acromio Clavicular OA</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Subscapularis Tendinitis</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Normal USG</td>
<td>5</td>
<td>14</td>
</tr>
</tbody>
</table>

Discussion

Periarthritis of the shoulder is a very common rheumatological condition. In most patient it results from periarticular lesion involving the Rotator cuff, the Biceps tendon and the sub acromial- sub deltoid bursa. In this study 35 adult patients aged 20 to 60 clinically diagnosed Periarthritis of shoulder joint were selected purposively. Ultrasonography of the affected joint was done by the experienced sonologist who were blind about the clinical diagnosis. The differential diagnosis comprises several essences of similar clinical picture. Ultrasonogram investigation includes the biceps, the supraspinatus, infraspinatus, and subscapularis tendons; the subacromial-subdeltoit bursa; and the glenohumeral and acromioclavicular joints to assess their usual involvement. We observed that most number of patients 60% are of 40 to 60 years of age group. It also shows that 19 (54%) of the total respondents were female and 16 (46%) were male. It also shows that more than half (51%) of the respondents were service holders, In this study 21 of the 35 respondents (60%) had shoulder pain for less than 6 months. Almost two-third (73%) of the patients were found to have pain in shoulder due to degenerative change, 27% had pain due to inflammatory change.

The present study reveals that more than half of the respondents (18, 51.2%) had no associated condition and 31% of the respondents had a positive history of trauma.

In this study 34% of the respondents had positive Neer test, 14% of the respondents had positive Jobe’s test, 9% of the respondents were found positive for Patte’s test, only one of the respondents was found to have positive Gerber’s test, 26% of the respondents had positive Yargasson’s test, 6 out of the 35 respondents had a (17%) positive Speed’s test and 6% of the respondents had positive Hawkins test.Although the Speed’s test was positive in 42.2% cases in a study conducted by Iagnocco A et al. In this study it was observed that among the clinical diagnosis of the patients, 2 (5%) patients were diagnosed as suffering from acromioclavicular ossearthritis, 7 (20%) had adhesive capsulitis, 6 (17%) had bicipital tendinitis, 8 (23%) had subacromial bursitis and 7 (20%) had supraspinatus tendonitis which corresponds with the findings of a study conducted by E Naredo et al.

It also shows the diagnosis of the patients based on ultra-sonogram report, 85 % ( 30 ) were positive and 15% (5) were negative upon ultrasonographic examination. According to USG, 5 of the patients had no structural involvement, 10 had inflammatation of the supraspinatus tendon, 5 had inflammatation of the subacromial bursa, 11 patients had inflammatation of the bicipital tendon, 3 had inflammatation of the joint (adhesive) capsule and 4 had osteoarthritic change of the acromioclavicular joint. Pope DP et al and Naredo E et al found similar positive ultrasonogram findings butt their was significant variation in representation of structural involvement in this study. Although Iagnocco A et al also found sonographic alternation in total of 94.1% of patient on their study.

It was a single centred study, sample size was not reflecting the whole country scenario and it was a purposive non-random sampling method.

Conclusion

The sonography is a valuable method for the assessment of shoulder pathology. The availability of Musculoskeletal Ultrasonogram in Physiatric practice offers the possibility of establishing a more accurate diagnosis and rehabilitation of the painful shoulder and therefore improving the treatment of this common problem. The availability, non-invasiveness and low costs of sonography justify its routine utilisation for the assessment of painful shoulder in clinical practice.

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References


