بسم الله الرحمن الرحيم

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بقسم التوثيق الإلكتروني بمركز الشبكات وتكنولوجيا المعلومات دون أدنى مسئولية عن محتوى هذه الرسالة.

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Role and Correlation of High Resolution Ultrasound and Magnetic Resonance Imaging in Evaluation of Shoulder Pain in the Elderly

Thesis

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Saleh Ahmed

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List of Abbreviations

Abb.	Full term
ABER	Abduction and external rotation
AC	Acromioclavicular
ACR	American College of Radiology
ALPSA	Anterior labroligamentous periosteal sleeve avulsion
BT	Biceps tendon
CT	Computed tomography
CTA	Computed tomographic arthrography
GLAD	Glenolabral articular disruption
GP	General practitioner
GT	Greater tuberosity
HAGL	Humeral avulsion of the inferior glenohumeral ligament
HH	Humeral head
LHB	Long head of biceps
MRI	Magnetic resonance imaging
POLPSA	Posterior labrocapsular periosteal sleeve avulsion
RC	Rotator cuff
RCTs	Rotator cuff tears
SA-SD	Subacromial-subdeltoid
SLAP	Superior labrum anterior-posterior
US	Ultrasound
UTE	Ultrashort echo time

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INTRODUCTION

The preferred imaging modalities for evaluation of shoulder disorders include magnetic resonance imaging and high-resolution ultrasound. Both these modalities have their own merits and demerits [1]. Accuracy, availability, cost effectiveness and expertise are some of the important parameters that guide the process of making a decision on the best modality. There have been studies done in the past that evaluated the accuracy of either magnetic resonance imaging or high-resolution ultrasound in detection of shoulder pathologies and only few studies compared these two methods. Of course magnetic resonance imaging is the most powerful diagnostic tool [2,3]. But nowadays, high-resolution ultrasound shows accuracy in differentiation between complete- and partial-thickness tears and detection of osteoarthritic changes and there is a good agreement with magnetic resonance imaging [4–7].

Low cost, wide availability and scan dynamics are some of the advantages in favor of shoulder high resolution ultrasound make it a modality of first choice.

Aim of the Work

The aim of this work is to evaluate the role of high-resolution ultrasonography and magnetic resonance imaging in elderly patients with shoulder pain.

Chapter 1

ANATOMY & EPIDEMIOLOGY

Anatomy

From the skin surface to the inside of the shoulder, the following structures can be recognized; the cutis and sub cutaneous fat tissue, deltoid muscle, coracoacromial arch, sub acromial–sub deltoid bursa, rotator cuff with the long head of the biceps tendon and the proximal humerus (Figs. 1,2).

1. Coracoacromial arch

The coracoacromial arch consists of bone and soft tissue.The acromion makes up the bony segment of the arch. The coracoacromial ligament extends as a soft tissue arch that forms the roof of a tunnel, through which the rotator cuff and the sub acromial–sub deltoid bursa move during abduction of the arm. The arch plays an important role in the impingement of these structures. This tunnel is bordered on its two sides by the acromion and the coracoid. The floor of the tunnel is formed by the humeral head.

2. Subacromial–subdeltoid bursa

The subacromial–subdeltoid bursa is a synovial lined space. Normally it does not contain any fluid. The bursa consists of two bursal leaves. The outer and inner leaf are fused with the deltoid muscle fascia and rotator cuff, respectively.

The bursal leaves can easily glide over each other, which facilitates the shoulder to have its range of movement. The bursa may contain an increased amount of fluid (as in acute bursitis or full thickness tear of the cuff) and/or the bursal leaves might be thickened (as in chronic bursal impingement and inflammation).

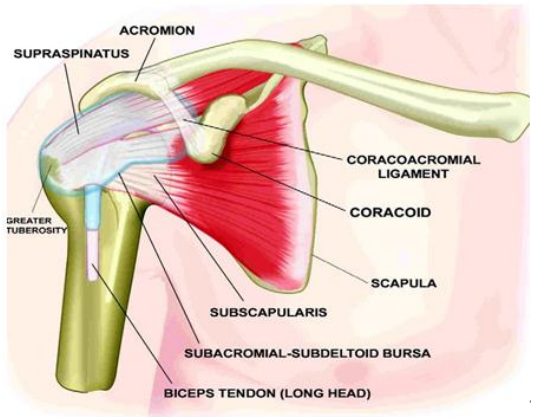

Figure (1): Right shoulder from anterior, showing the relationship of the coracoacromial arch, rotator cuff and intervening subacromial–subdeltoid bursa, biceps tendon (long head) and bony structures.

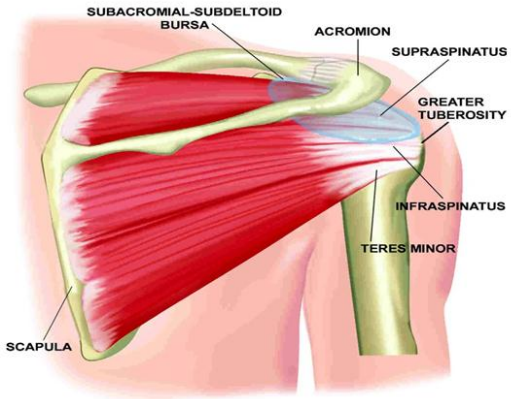

Figure (2): Right shoulder from posterior showing the various rotator cuff constituents in relation to the subacromial–subdeltoid bursa, humeral head and other bony structures.

3. Rotator cuff

The rotator cuff is a tight layer of tendons around the glenohumeral joint. The cuff is composed of four tendons. The subscapular tendon inserting on the lesser tuberosity of the humerus. The supraspinatus, infraspinatus and teres minor tendon form about 15 mm proximal to their insertion on the greater tuberosity a conjoined tendon, and therefore cannot be separate sonographically. The subscapular tendon is separated