DISTINGUISHING BETWEEN ACUTE AND CHRONIC ROTATOR CUFF INJURIES IN WORKERS’ COMPENSATION PATIENTS

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SHOULDER PAIN

- Third most common musculoskeletal complaint in general population
- Incidence of 6.6 to 25 cases per 1000 patients
- One year prevalence estimated to be 20% - 50%
- Approximately 50% of all patients with shoulder pain seek medical care
- Symptoms persist or recur in 40% of patients
- Majority of complaints related to rotator cuff injuries
COMMON SHOULDER PROBLEMS

- Impingement syndrome
- Rotator cuff tendinopathy
- **Rotator cuff tears**
- Adhesive capsulitis
- Bicep tendonitis
- Acromioclavicular strain/osteoarthritis
- Instability
- Glenohumeral osteoarthritis
SHOULDER ANATOMY
SHOULDER STABILITY

“Golf Tee”
ROTATOR CUFF FUNCTION

- Primary stabilizer of the GH joint
- Depresses the humeral head and prevents the humerus from migrating superiorly
- Provides a fulcrum for the deltoid muscle
- Actions: Abduction, external and internal rotation of the humerus
HOW DO YOU KNOW?????
REMEMBER

History

Physical Examination

Ancillary Studies
HISTORY

- Chief Complaint
- Onset of Symptoms
- Mechanism of Injury
- Arm Position at Onset of Symptoms
- Impact on Activities of Daily Living
- Age
- Handedness
- Occupation
- Number of Years Working
- Changes in Work Environment
- Impact on Work
ROTATOR PATHOLOGY IN ASYMPTOMATIC SHOULDER

- Ultrasound evaluation 51 asymptomatic subject
- Age range for 40-70 years
- Subacromial-subdeltoid bursal thickening 78%
- Supraspinatus tendinopathy 39%
- Subscapularis tendinopathy 25%
- Partial-thickness supraspinatus tear 22%
- Asymptomatic shoulder abnormalities 96%

Girish AJR 2011
PREVALENCE OF ROTATOR CUFF TEARS IN GENERAL POPULATION

- 683 people, total of 1366 shoulders, mean age 57.9 years
- Rotator cuff tears prevalence 20.7%
- 36% subjects with symptoms, 16.9% subject without symptoms have rotator cuff tears
- Associated with elderly patients, males, dominant arm, heavy labor, history of trauma

Yamamoto, J Shoulder Elbow Surg. 2010
DEMOGRAPHIC ROTATOR CUFF DISEASE

• 588 patients standardized ultrasound study for unilateral shoulder pain
  – 212 intact rotator cuff bilaterally
  – 199 unilateral rotator cuff tear
  – 177 bilateral rotator cuff tear

• Presence of rotator disease correlated with age
  – 48.7 years no rotator cuff tear
  – 58.7 years unilateral tear
  – 67.7 years bilateral tears

Yamaguchi, J Bone Joint Surg Am. 2006
DEMOGRAPHIC ROTATOR CUFF DISEASE

- Logistic regression analysis 50% likelihood of bilateral tear after age 66 years
- Bilateral tears the symptomatic tear was larger than asymptomatic tear
- Patients with symptomatic tear had 35.5% prevalence of contralateral tear

Yamaguchi, J Bone Joint Surg Am. 2006
PHYSICAL EXAMINATION

• Physical examination of the shoulder should take place only after a detailed and thorough history has been performed
• Patient should be unclothed and the entire upper extremity should be visualized
• A detailed reproducible stepwise examination should then be performed
PHYSICAL EXAMINATION

- Inspection
- Range of motion
- Stability testing
- Special tests

- Strength testing
- Palpation
- Cervical spine
- Neurovascular
ANCILLARY STUDIES

- Radiographic
- Ultrasonography
- MRI Arthrogram
SHOULDER X-RAYS

• Front line for standard of care
• Rule out obvious fracture or tumor
• Provide significant diagnostic value for chronic conditions
• Osteoarthritis, chronic ligament or tendon disorders
• Anatomical alignment
• May show subtle abnormalities in certain conditions
SHOULDER X-RAYS
Standard Series

True AP

Axillary Lateral
ACROMIAL SPUR

Subacromial Spur

Normal Shoulder
CALCIFIC TENDINOPATHY

Calcific Tendinopathy

Normal Shoulder
CHRONIC ROTATOR CUFF TEAR

Chronic Rotator Cuff Tear

Normal Shoulder
GLENOHUMERAL ARTHRITIS
DIAGNOSTIC ULTRASOUND
DIAGNOSTIC ULTRASOUND

• Widely used as an imaging tool since the 1970’s
• Popularized for imaging of the musculoskeletal system in the 1980’s
• Primary indications
  – Muscles and tendons
  – Soft tissue masses and foreign bodies
  – Dynamic evaluation
DIAGNOSTIC ULTRASOUND

• Muscles, tendons, dynamic evaluation
  – Re-tears, chronic tendinopathy

• Operator dependent
  – Washington University Radiology, Barnes Jewish West County Hospital
MRI METAL IMPLANT ARTIFACT
DIAGNOSTIC ULTRASOUND: ROTATOR CUFF
STRESSED ROTATOR CUFF TEAR
SONOGRAPHY FOR ACUTE AND CHRONIC ROTATOR CUFF TEARS

• 24 patients acute and 20 patients with chronic rotator cuff tears
• Acute tears
  – 75% midsubstance tear location
  – 64% joint or bursal fluid
• Chronic tears
  – 80% nonvisualized rotator cuff
  – 73% no joint or bursal fluid

Teefey, J Ultrasound Med, 2000
MAGNETIC RESONANCE IMAGING
SIZE MATTERS!!!!
MAGNET SIZE AFFECTS QUALITY

0.5 Tesla

3.0 Tesla
MAGNET SIZE AFFECTS QUALITY

0.5 Tesla

3.0 Tesla
MRI vs. MRI ARTHROGRAM

- MRI is less sensitive and specific in diagnosis of partial-thickness tears than detection of full-thickness tears of rotator cuff
- MRI Arthrogram improves detection of partial thickness tear of rotator cuff
- MRI Arthrogram more accurate than MRI for detection of labral and capsule tears
STANDARD MRI

1.5 Tesla

1.5 Tesla
MRI ARTHROGRAM

3.0 Tesla

3.0 Tesla
PARTIAL ROTATOR CUFF TEAR
ACUTE ROTATOR CUFF TEAR
ACUTE ON CHRONIC ROTATOR CUFF TEAR
SUMMARY & CONCLUSIONS

- A detailed “history” will assist greatly in addressing causation
- Correlation of a thorough “physical examination” with necessary “ancillary testing” will confirm your diagnosis
- Ancillary testing will support and confirm your diagnosis
Thank You!!