

History and Physical Exam of the Shoulder

Background

1. Definition

- Method to initially eval presence of shoulder pathology
- Allows for determination of whether further investigation is necessary
 - Imaging
 - Referral to orthopedist

2. General information

- Shoulder pain is common in athletes utilizing excessive overhead or throwing activity
 - Pitchers
 - Quarterbacks
 - Tennis players
 - Golfers
 - Wt lifters
- Self-reported prevalence of shoulder pain is estimated to be between 16-26%
- Shoulder pain is 3rd most common musculoskeletal complaint seen in primary care
- New shoulder pain comprises about 1% of adult visits to a general practitioner annually

Pathophysiology

1. Pathology

- Mixed shoulder disorders are common
- Relationship of pain to throwing
 - Six phases of throwing
 - Phase 1: Wind up
 - Body's center of gravity is raised
 - Minimal stress to shoulder
 - Rotator cuff muscles are inactive
 - Phase 2: Early cocking
 - Arm positioned in 90° of abduction
 - External rotation is initiated
 - Early deltoid and late rotator cuff firing
 - Phase 3: Late cocking
 - Max external rotation (170°)
 - Max rotator cuff firing
 - Max stress to anterior capsule
 - Phase 4: Acceleration
 - Rotation of shoulder to ball release point of 90° rotation
 - Minimal load to glenohumeral joint during energy transfer
 - Phase 5: Deceleration
 - Most violent
 - Ball release to zero degree rotation
 - Max stress to posterior capsule
 - Phase 6: Follow-through
 - Resetting
 - Muscle activity reverts to resting level

- Rotator cuff disorders
 - Typically due to overuse or repetitive motion
 - Impingement syndrome
 - Mechanism involves inflammation of rotator cuff tendons and/or bursa
 - Caused by irritation against coracoacromial arch
 - Glenohumeral disorders
 - Adhesive capsulitis (frozen shoulder)
 - Idiopathic loss of both active and passive motion
 - Osteoarthritis
 - Characterized by destruction of joint cartilage w/loss of joint space
 - Dislocation: may be secondary to trauma
 - Acromioclavicular (AC) disease
 - AC separation: typically results from direct trauma to shoulder
 - AC osteoarthritis
 - Referred mechanical neck pain
2. Incidence in athletes
- Incidence of shoulder pain is 6.6-25 cases per 1,000 pts
 - Peak incidence occurs in 4th-6th decades
 - Shoulder injuries comprise 8-13% of athletic injuries
3. Risk factors
- Incr age
 - Repetitive shoulder use, particularly overhead activity
 - Trauma
 - Diabetes
 - Hypothyroidism

Diagnostics

1. History

- Age (old vs young)
- Dominant hand
- Pain
 - Onset (acute vs. chronic)
 - When did pain start?
 - In what context did you begin experiencing pain?
 - Character
 - Is pain sharp, dull, or achy?
 - Location
 - Where is pain located (clavicle, ant. shoulder, post. shoulder)?
 - Radiation
 - Occurrence
 - Is pain at rest, on movement or both?
 - Is night pain present?
 - Exacerbating/ relieving factors
 - Is pain better or worse w/overhead activity?
- Stiffness
 - Is stiffness present or absent?

- Instability
 - Does your shoulder pop or seem to slip in and out?
 - Trauma
 - Did you have any falls or direct blows to your shoulder?
 - Work/ activity
 - Do you perform a lot of overhead activity?
 - Do you weight lift?
 - Are you an athlete that participates in a lot of throwing?
 - Do you perform a lot of manual labor?
 - Neurologic symptoms
 - Do you have any numbness, tingling, or weakness in your shoulder?
 - PMHx
 - Any hx of
 - Diabetes
 - Hypothyroidism
 - Stroke
 - Cancer
 - Cardiac
 - Respiratory
 - Gastrointestinal
 - Renal dz
 - Previous hx of tx for shoulder pain
 - Review of systems
 - Are other joints affected?
 - Any neck, thoracic or other upper limb pain?
 - Any systemic symptoms of illness
 - Fever
 - Wt loss
 - Rash
 - Respiratory symptoms
 - Medications
 - What meds are you currently taking?
 - Do you have any known drug reactions/ allergies?
2. Physical exam
- Anatomy illustrations
 - Inspection (should be done w/pt disrobed)
 - Asymmetry
 - Acromioclavicular joint disparity
 - Wasting: evidence of muscle atrophy
 - Gross deformity
 - Evidence of trauma
 - Venous distension: effort thrombosis
 - Palpation
 - Sternoclavicular joint
 - Palpate for tenderness, deformity
 - Clavicle
 - Palpate for pain, deformity, tenderness
 - AC joint
 - Palpate end of clavicle

- Subacromial bursa
 - Palpate acromion-down to acromiohumeral sulcus
- Coracoclavicular ligament
 - Palpate between acromion and coracoid
- Greater tuberosity
 - Palpate prominence on lateral humeral head
- Biceps tendon
 - Palpate proximal insertion on humerus
- Spine of scapula
 - Palpate supraspinatus above
 - Palpate infraspinatus and teres minor below
 - Observe for winging of scapula
- Range of Motion (ROM)
 - Assess passive and active ROM
 - Loss of active ROM: rotator cuff tear or nerve injury
 - Loss of passive ROM: mechanical block, labrum tear, adhesive capsulitis
 - Forward flexion
 - Arms from sides forward (0-160 normal)
 - Extension
 - Arms from sides backward (0-45 normal)
 - Abduction
 - Arms from sides outward (0-160/180 normal)
 - Internal rotation
 - Reach thumb up back-note level (mid thoracic normal-compare sides)
 - External rotation
 - Elbow at side, rotate forearms lateral (30-60 normal)
 - Horizontal adduction
 - Arm across chest (0-130 normal)
- Neurovascular
 - Sensory
 - Supraclavicular nerve (C4)
 - Superior shoulder/ clavicular area
 - Axillary nerve (C5)
 - Lateral shoulder
 - T2 segmental nerve
 - Axilla
 - Motor: perform resisted movements
 - Spinal accessory (CN11)
 - Innervates trapezius
 - Test via resisted shoulder shrug
 - Suprascapular (C5-6)
 - Innervates supraspinatus, infraspinatus
 - Test via resisted abduction, external rotation
 - Axillary nerve (C5)
 - Innervates deltoid, teres minor
 - Test via resisted abduction, external rotation

- Dorsal scapular nerve (C5)
 - Innervates levator scapula/ rhomboid
 - Test via shoulder shrug
- Thoracodorsal nerve (C7-8)
 - Innervates latissimus dorsi
 - Test via resisted adduction
- Lateral pectoral nerve (C5-7)
 - Innervates pectoralis major
 - Test via resisted adduction
- U/L subscapular nerve (C5-6)
 - Innervates teres minor and subscapularis
 - Test via resisted internal rotation
- Long thoracic nerve (C5-7)
 - Innervates serratus anterior
 - Test via scapular protraction/ reach
- Special tests
 - Supraspinatus (empty can)
 - 30° add, 90° FF, IR, resist down force
 - Weakness suggests rotator cuff tear, impingement
 - Drop arm
 - Passively abduct 90°, lower slowly
 - Weakness or arm drop suggests rotator cuff tear
 - Lift off
 - Hand behind back, move posteriorly
 - Weakness suggests subscapularis rupture
 - Speed
 - Resist forward flexion of arm
 - Pain indicates biceps tendonitis
 - Yergason
 - Hold hand, resist supination
 - Pain suggests biceps tendonitis, or subluxation
 - Impingement sign (Neer)
 - Passively forward flex >90°
 - Pain suggests impingement syndrome
 - Hawkins sign
 - Forward flex to 90°, elbow at 90°, then IR
 - Pain suggests impingement syndrome
 - Cross body adduction
 - 90° forward flex then adduct arm across body
 - Pain suggests AC pathology
 - AC shear
 - Cup hands over clavicle/scapula: then squeeze
 - Pain/ movement suggests AC pathology
 - O'Brien's (active compression)
 - 90° forward flex, max IR, then adduct/flex
 - Pain or pop suggests a SLAP lesion
 - Load and shift
 - Push into glenoid, translate ant/ post
 - Motion indicates instability (anterior vs. posterior)

- Apprehension sign
 - Throwing position, continue to externally rotate
 - Apprehension indicates anterior instability
- Relocation (Jobe)
 - 90° abduction, full ER, posterior force on humeral head
 - Relief of pain/apprehension, or incr ER suggests instability
- Posterior apprehension sign
 - Forward flex 90°, internally rotate, posterior force
 - Apprehension suggests posterior instability
- Inferior instability
 - Abduct 90°, downward force on mid-humerus
 - Apprehension or humeral head translation suggests inferior instability or multidirectional instability
- Sulcus sign
 - Arm to side, downward traction
 - Incr acromiohumeral sulcus suggests inferior instability or multidirectional instability
- Adson
 - Palpate radial pulse, extend and rotate neck to ipsilateral side
 - Reproduction of pain or decr radial pulse suggests thoracic outlet syndrome
- Roo (EAST)
 - Abduct/ER, open and close fist for 3 min
 - Reproduction of symptoms suggests thoracic outlet syndrome
- Spurling
 - Lateral flex/ axial compression of neck
 - Reproduction of symptoms suggests cervical disc pathology

References

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Evidence-Based Inquiry

1. Does injection of steroids and lidocaine in the shoulder relieve bursitis?
2. What is the initial approach to the treatment of shoulder pain?
3. How accurate is the Spurling maneuver for detection of cervical radiculopathy?

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