Shoulder Screening for Patients with Spinal Cord Injury

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Objectives

• Discuss the prevalence and characteristics of shoulder pain in patients with spinal cord injury

• Describe the importance of screening for shoulder injury during inpatient rehab

• Learn to administer and score the Wheelchair User’s Shoulder Pain Index

• Evaluate the clinical utility and applicability of selected shoulder special tests
Shoulder Pain After Neurological Injury

- Common due to overuse of arms and weak musculature
- Difficult to treat and often not first priority due to other complications
- Pain-related dysfunction increases with age and compounds with arthritis
Prevalence\textsuperscript{2,3}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{prevalence.png}
\caption{Prevalence of Tetraplegia and Paraplegia}
\end{figure}

Jain et al:
\textit{Correlation between Assistive Device and Shoulder Pain}

- Tetraplegia: 87%
- Paraplegia: 58%

- 46.7%
- 35.4%
- 47.6%
- 33.3%
Mechanism of Injury

• Largely unknown
• Pain is most intense with ADLs that require force through hand (WC propulsion, transfers)\(^1,2,5\)
• Theorized that subacromial impingement is large contributor to rotator cuff pathology and pain\(^6\)
• Ball and socket joint implies biomechanics of shoulder was meant for multidimensional mobility, not weightbearing\(^7\)
Common Sources of Shoulder Pain

Chronic
- Neuropathic Pain

Acute
- Neuromusculoskeletal
- Musculoskeletal
  - Rotator Cuff Tear
  - Tendonitis
  - Impingement
  - Adhesive Capsulitis
  - Fracture
  - Dislocation

Often, but not always above level of injury

Subacromial region vulnerable due to functional demands of UE WB
Why Screen for Shoulder Injury Now?7,9

• Strengthen rotator cuff muscles
  • Prevent impingement
  • Decrease risk for neuromuscular fatigue

• Adapt ADLs and leisure to prevent overuse
  • Adapt environment to minimize affected arm during healing phase
  • Leading with painful shoulder during transfers
  • Transfer board
  • Adjusting surface height to level or downhill transfers

• Prevent unnecessary traction on shoulder by healthcare professionals and family

• Prevent chronic pain
Evaluation

- History
- Onset of pain
- Location of pain
- Aggs / Eases
- Upper Quarter Screen
  - Rule out c-spine
- Palpation
- ROM

- Strength
- Scapulothoracic movement quality
- Posture
- Kinematics during WC propulsion
- **Self-report outcome measures**
- Special Tests
Wheelchair User’s Shoulder Pain Index (WUSPI)

- Self report
- Free
- 5-10 min
- VAS Scale
- 15 Items
- Score 0-150
- Performance Corrected when not all items are used

Normative Values

**Untreated** shoulder pain → 40.7 points
**Tetraplegia** → 29.4 points
**Paraplegia** → 17.3 points

**MDC** = 5.10 points

**Scoring**

- Measure to “X”
- Raw Score = Sum of 15 Items
- Note # completed
- PC-WCUP Score = (Raw Score / # of items) x 15
Shoulder Special Tests

• Requirements of Special Tests

• Clinical Value based on sensitivity and specificity

• Consider adapting the test to fit your patient’s need
  • Positioning

• Practice!
Anterior Apprehension, Relocation, Release Cluster\textsuperscript{10} (Anterior Instability)

- Requires PROM into ER
- Good Clinical Value - ruling IN & OUT
  - Sensitivity: 81%
  - Specificity: 98%
- Apprehension
  - Shoulder 90° ABD, Elbow 90° flex, full ER
  - (+) Pain or apprehension
- Relocation
  - Post force at humeral head
  - (+) pain diminishes
- Release
  - Suddenly release hand
  - (+) pain returns
Jerk Test\textsuperscript{11} (Posterior/Inferior labrum tear)

• Requires PROM into flex and horizontal ABD

• Good Clinical Value—ruling IN & OUT
  • Sensitivity: 90%
  • Specificity: 85%

• Stabilize scapula, hold affected arm at 90° ABD and slight IR; apply axial force and move arm into horizontal ABD, (+) pain
Hawkins Kennedy
(Subacromial Impingement)

- Requires PROM into 90° scaption and IR
- Good Clinical Value - ruling OUT
  - Sensitivity: 80%
  - Specificity: 56%
- Pt’s shoulder positioned in 90° flex, PT passively IR at wrist
  - Move shoulder into 20° horizontal ABD if (-) in flex
  (+) pain with IR
ER Lag\textsuperscript{13} (Infraspinatus/ Teres Minor Tear)

- Requires PROM, AROM, Strength, Cognition/Command Following
- Good Clinical Value-ruling IN & OUT
  - Sensitivity: 97%
  - Specificity: 93%
- Passively position pt into 20° scaption and maximal ER; PT releases (+) pt cannot maintain position in ER
Questions?


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