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Research Paper Review

Shoulder Pain and Mobility Deficits: Adhesive Capsulitis: Clinical Practice Guidelines

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Kelley MJ, Shaffer MA, Kuhn JE et al.

ABSTRACT

The Orthopaedic Section of the American Physical Therapy Association (APTA) has an ongoing effort to create evidence-based practice guidelines for orthopaedic physical therapy management of patients with musculoskeletal impairments described in the World Health Organization's International Classification of Functioning, Disability, and Health (ICF). The purpose of these clinical practice guidelines is to describe the peer-reviewed literature and make recommendations related to adhesive capsulitis.

ANALYSIS

Reviewed by Dr. Jeff Muir DC (Research Review Service)

Author's Affiliations
The Orthopaedic Section of the American Physical Therapy Association (APTA).

Background Information
The Orthopaedic Section of the American Physical Therapy Association (APTA) is currently engaged in an ongoing effort to create evidence-based clinical practice guidelines (CPGs) for practicing physical therapists and allied professionals. The purpose of these guidelines is to provide evidence-based recommendations on the assessment, diagnosis, prognosis and treatment of common orthopaedic conditions. This document summarizes their recommendations regarding the treatment of adhesive capsulitis.

Shoulder pain affects up to 26% of the population (1), with adhesive capsulitis (AC) affecting up to 5.3% of the general population as a primary condition (2, 3). Adhesive capsulitis is also prevalent as a secondary condition, with rates of between 4.3% and 38% associated with conditions such as diabetes mellitus and thyroid disease (2-4). Adhesive capsulitis presents as general shoulder pain with mobility deficits, including loss of passive motion in multiple planes, especially external rotation and abduction.

STUDY METHODS

Search strategy
The authors of these guidelines independently performed a systematic search of MEDLINE,

CINAHL, and the Cochrane Database of Systematic Reviews (1966 through September 2011) for any relevant articles related to classification, examination, and intervention for adhesive capsulitis and frozen shoulder.

Review process
Expert consultants in various fields including claims review, epidemiology, medical practice guidelines, residency and clinical practice, rheumatology and education were engaged to assist the authors with review of potential articles and to edit the practice guidelines prior to submission for publication.

The authors make a number of recommendations regarding assessment, diagnosis and treatment of adhesive capsulitis. Each recommendation is accompanied by an indication of the level of evidence providing support for that particular recommendation. Levels of evidence, from strongest to weakest, include:

- Level I: Evidence from high-quality diagnostic studies, prospective studies or randomized, controlled trials
- Level II: Evidence from lesser-quality diagnostic studies, prospective studies or randomized, controlled trials (i.e. poor blinding, less than 80% follow-up, poor randomization methods)
- Level III: Case-controlled studies; retrospective studies
- Level IV: Case series
- Level V: Expert opinion
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SUMMARY OF RECOMMENDATIONS

Patho-Anatomical Features
The glenohumeral joint is a synovial joint articulating the humerus and the genoid fossa within the joint capsule, which extends distally such that it encases the long head of the biceps tendon in the bicipital groove. The joint capsule, with the surrounding ligamentous structures (coracohumeral ligament and superior, middle, and inferior glenohumeral ligaments) comprise the capsuloligamentous complex. The capsuloligamentous complex and the rotator cuff tendons combine to create a "constraining sleeve" around the glenohumeral joint (5).

AC is characterized by the presence of multiregional synovitis with inflammation, while others also describe focal vascularity and synovial angiogenesis (increased capillary growth) (6, 7). There is also evidence of new nerve growth in the capsuloligamentous complex, which some have suggested may explain the increased pain response (8). The capsuloligamentous complex, including the rotator cuff interval, can become fibrotic in cases of AC (7).

Clinicians should assess for impairments in the structures surrounding the shoulder complex, paying special attention to losses in passive motion in multiple planes (particularly external rotation and abduction). *Recommendation based on theoretical/foundational evidence.*

Risk Factors
Patients suffering from diabetes mellitus and thyroid disease are at risk for developing AC. AC is most prevalent between ages 40 and 65 years, in females, and in those who have had a previous episode of AC in the contralateral arm. *Recommendation based on moderate evidence.*

Clinical Course
AC is characterized by a staged progression of pain and mobility deficits along a continuum of pathology. Mild to moderate mobility deficits may persist 12 to 18 months following onset, although many patients report minimal to no disability. *Recommendation based on weak evidence.*

Diagnosis/Classification

Patients with AC present with a gradual and progressive onset of symptoms. Loss of mobility and range of motion, especially in elevation and rotation, are the hallmarks of AC. Clinicians should bear these facts in mind during examination in order to effectively diagnosis AC versus other shoulder conditions. *Recommendation based on expert opinion.*

Differential Diagnosis

Clinicians should consider differential diagnoses when the patient's reported activity limitations are inconsistent with those discussed above and/or if the patient's symptoms fail to resolve with the appropriate AC treatment(s). *Recommendation based on expert opinion.*

Imaging

Diagnosis of AC is generally determined via history and physical examination; diagnostic imaging is often used to rule out underlying or alternative pathology. Plain films are typically normal in cases of AC, although osseous abnormalities such as glenohumeral osteoarthritis can be identified on plain films. A joint capsule capacity of less than 10-12 ml is associated with AC and is visualized on radiographic investigation (9).

Magnetic resonance imaging (MRI) is helpful to differentially diagnose soft tissue and bony abnormalities that may accompany or imitate AC (10). MRI can reveal synovitis, joint volume reduction and rotator cuff interval thickening in cases of AC. *Recommendation based on expert opinion.*

Examination Recommendations

Outcome Measures

Validated outcome measures such as the Disabilities of the Arm, Shoulder and Hand (DASH), the American Shoulder and Elbow Surgeons shoulder scale (ASES), or the Shoulder Pain and Disability Index (SPADI) should be utilized to provide objective data to assist with diagnosis and prognosis, whenever possible. These tools are best utilized before and after interventions intended to relieve pain and improve strength and mobility for patients with AC. *Recommendations based on strong evidence.*

Activity Limitation Measures

Activity level should be assessed using easily reproducible measures associated with the patient's shoulder pain characteristics to assess changes in the patient's level of shoulder function. *Recommendation based on expert opinion.*

Physical Impairment Measures

Pain, active range of motion and passive range of motion should all be utilized to assess the key impairment of shoulder function in patients with AC. Glenohumeral joint accessory motion may also be assessed to determine the degree of loss of translational glide. *Recommendation based on theoretical/foundational evidence.*

Intervention Recommendations

Corticosteroid Injections

Evidence shows that intra-articular corticosteroid injections, combined with shoulder mobility and stretching exercises, are more effective at providing short-term (4-6 weeks) pain relief and mobility improvements than mobility and stretching exercises alone. *Recommendation based on strong evidence.*

Patient Education

Effective patient education: describes the natural course of the condition, promotes activity modification while encouraging maximal range of motion, and matches the intensity of the stretching with the patient's current ability. *Recommendation based on moderate evidence.*

Modalities

Modalities such as short-wave diathermy, ultrasound or electrical stimulation, combined with mobility and stretching exercises, can reduce pain and improve range of motion in patients with AC. *Recommendation based on weak evidence.*

Joint Mobilization
Joint mobilization exercises directed towards the glenohumeral joint are effective at reducing pain and increasing motion and function. *Recommendation based on weak evidence.*

Translational Manipulation
Translational manipulation under anaesthetic is effective for patients not responding to conservative care. *Recommendation based on weak evidence.*

Stretching Exercises
Patients should perform stretching exercises, as prescribed by their clinician, maximized in intensity based on the patient's tolerance. *Recommendation based on moderate evidence.*

CLINICAL APPLICATION & CONCLUSIONS

Adhesive capsulitis is a challenging condition which, despite its tendency to resolve within 12-18 months, causes significant discomfort and stress for patients. Clinicians should focus on early and accurate diagnosis of AC and employ treatments that focus on pain relief and mobility maximization. Clinicians should be aware of the level of evidence supporting each specific treatment and assessment recommendation and be aware of new findings that contribute to the knowledge base.

The authors of these clinical guidelines intend to re-visit their findings and recommendations in 2017, although they may do so sooner, should new information be presented in the interim.

STUDY STRENGTHS/WEAKNESSES

Limitations
The authors compiled a comprehensive review of assessment, diagnosis and treatment of AC; however, the studies used to provide support for specific recommendations were each associated with specific limitations, based on their methodology and performance. The authors made every effort to identify these limitations when discussing specific studies that provided support for recommendations.

Strengths
The authors used a broad search strategy to maximize their literature review, which provided a comprehensive overview of the available evidence. They acknowledged and identified the levels of evidence associated with each section and provide their recommendations based on the best available research. They also identified a plan to re-evaluate the recommendations within a suitable time frame, to ensure any new information is incorporated into any new guidelines.

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