Shoulder pain - a non surgical perspective.

Assoc. Prof Michael Shanahan
Rheumatologist and Occupational Physician
Today’s discussion

- Some basic anatomy
- The epidemiology of acute and chronic shoulder pain
- Some important causes and clinical practice points
- Imaging and error.
- Frozen shoulder and calcific tendonitis
Shoulder pain is a common reason for seeking medical care

- 3rd most common MSK reason to see GP
- Community prevalence 16-26%
- 67% lifetime prevalence
- Peak incidence in the 4th → 6th decade (1-2.5%)

Luime et al Scand J Rheum 2004;33 73-81
Acute shoulder pain - epidemiology

- Many people presenting with acute shoulder pain are likely to have conditions that will resolve spontaneously regardless of treatment.

- 50% of people with shoulder pain do not seek care at all.
- 23% of all new episodes of shoulder pain resolved fully within one month and 44% resolved within three months of onset. 41% of cases symptoms persisting for longer than one year.

- The risk that uncomplicated shoulder pain will persist beyond the acute phase appears to be related to personality traits, coping style and occupational factors.

_NHMRC Evidence based management of acute musculoskeletal conditions – a guide for clinicians. 2003_
Chronic shoulder pain

Majority are soft tissue in origin – rotator cuff/ subacromial impingement syndromes.
Chronic Shoulder Pain - remember this!

- Primary diseases of the musculoskeletal system
- Systemic illness – infection, malignancy
- Referred – cardiovascular, respiratory, abdomen

The differential diagnosis is very long!
‘Red flag’ indicators of potentially serious causes of shoulder pain

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>‘Red flag’ indicators</th>
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<tbody>
<tr>
<td>Acute rotator cuff tear</td>
<td>Trauma, acute pain and weakness, positive drop test</td>
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<tr>
<td>Infection</td>
<td>Systemic features, fever, redness, swelling, raised C-reactive protein level</td>
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<tr>
<td>Inflammatory arthritis</td>
<td>History of rheumatoid arthritis, psoriatic disease or crystal arthritis; evidence of active disease elsewhere, effusion</td>
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<tr>
<td>Malignancy</td>
<td>History of cancer (particularly lung cancer), other symptoms or signs suggestive of malignancy; 7% of bony metastases occur in the proximal humerus</td>
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<td>Neurological lesion</td>
<td>Sensory or motor deficit in the arm</td>
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<tr>
<td>Unreduced dislocation or fracture</td>
<td>History of trauma, loss of normal contour and rotation of the shoulder, history of osteoporosis</td>
</tr>
<tr>
<td>Visceral disease</td>
<td>Myocardial infarction; any diaphragmatic, pericardial or mediastinal pleural irritation</td>
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</tbody>
</table>
Pain patterns around the shoulder: (a) bicipital tendinitis; (b) acromioclavicular joint; (c) sternoclavicular joint; (d) glenohumeral joint/rotator cuff/subacromial bursitis.
The limitations of imaging

- 588 consecutive patients, undergoing US for unilateral shoulder pain: 36.1% had intact rotator cuff (RC), 33.8% had a unilateral tear and **30.1% had bilateral tears, either partial or full.**

  The presence of tears correlated with increasing age. The average age for not having a tear was 48.7 years, a unilateral tear was 58.7 years and bilateral tear was 67.8 years.


- MRI study of 96 asymptomatic individuals aged between 19-88 years (average age 53 years). The dominant shoulder of each participant was scanned. **The prevalence of RC tears among this population was 34%. (15% were full thickness tears!)**

The limitations of imaging

Peri-tendinous and bone abnormalities among 100 asymptomatic volunteers aged 19-88 years (average age 54 years). (MR)

- ACJ osteoarthrosis was present in 75% of participants
- one third had subacromial spurs
- ACJ joint fluid was present in nearly all participants.


Ultrasound study: abnormalities found in 96% of a sample of 51 asymptomatic male subjects.
Most commonly thickening of the subacromial-subdeltoid bursa (78%), tendinosis of the supraspinatus (39%) and ACJ osteoarthritis (65%)

Association between imaged pathology and symptoms

Over 200 consecutive symptomatic patients examined using ultrasound, plain x-ray and MR arthrography.

- The RC (50%+) and subacromial bursa (30%+) were the structures with the highest prevalence of pathology.

- **Guided diagnostic blocks were then performed.**
- There was a positive response into the subacromial bursa in 34%.
- Positive response to ACJ injection in 14%.
- Of the remaining participants 16% demonstrated a positive response to injection into the GHJ.
- However over one third had no response to the injections, indicating that the cause of the pain was not identified.

## MRI versus Symptoms

N = 10 in each group

<table>
<thead>
<tr>
<th></th>
<th>No pain</th>
<th>Resolve pain</th>
<th>Persist pain</th>
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</thead>
<tbody>
<tr>
<td><strong>A/C joint degeneration</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild</td>
<td>2</td>
<td>4</td>
<td>3</td>
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<tr>
<td>Moderate/severe</td>
<td>6</td>
<td>5</td>
<td>7</td>
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<tr>
<td><strong>Rotator cuff: supraspinatus</strong></td>
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<tr>
<td>infraspinatus subscapularis</td>
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<tr>
<td>teres minor</td>
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<tr>
<td>Tendonosis</td>
<td>6</td>
<td>12</td>
<td>4</td>
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<tr>
<td>Partial</td>
<td>8</td>
<td>6</td>
<td>12</td>
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<tr>
<td>Full</td>
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<td>2</td>
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<tr>
<td><strong>Bone oedema</strong></td>
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<td></td>
<td>6</td>
<td>5</td>
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<tr>
<td><strong>Capsulitis</strong></td>
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<td></td>
<td>0</td>
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<td>1</td>
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<tr>
<td><strong>Bursitis</strong></td>
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<tr>
<td></td>
<td>9</td>
<td>9</td>
<td>10</td>
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<tr>
<td><strong>GHJ degeneration</strong></td>
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<td></td>
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<tr>
<td></td>
<td>8</td>
<td>7</td>
<td>6</td>
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<tr>
<td><strong>Labral tear</strong></td>
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<td></td>
<td>2</td>
<td>2</td>
<td>1</td>
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</tbody>
</table>

**An examination of shoulder pain using magnetic resonance imaging (MRI) in older people**

Tiffany K Gill, E Michael Shanahan, Dale Allison Daniel Alcorn, Catherine L Hill

Potential cognitive errors in the assessment of shoulder problems

- **Commission bias**: The tendency towards action rather than inaction. When working up low risk patients, we tend to make errors of commission by over-ordering tests when we would be better off doing nothing.

- **Confirmation bias**: Once you have formed an opinion, you have a tendency to only notice the evidence that supports you and ignore contrary evidence.

- **Anchoring**: Prematurely settling on a single diagnosis based on a few important features of the initial presentation and failing to adjust as new information become available.

- **Diagnosis momentum**: Similar to anchoring. Once a diagnostic label has been assigned to a patient by another individual, it is very difficult to remove that label and interpret their symptoms with fresh eyes.

- **Feedback sanction**: The idea is that there may be a significant time delay until one sees the consequences of a cognitive error, or they may never see that consequence at all, and therefore behaviour is reinforced.

- **Search satisfaction**: The tendency to stop searching once you have found something.
Specific clinical information from the referring physician can substantially improve the performance of the radiologist.
Is bias in the eye of the beholder?
A vignette study to assess recognition of cognitive biases in clinical case workups

Laura Zwaan,1,2 Sandra Monteiro,3 Jonathan Sherbino,4 Jonathan Ilgen,5 Betty Howey,6 Geoffrey Norman3

Frozen shoulder

A clinical syndrome of pain and severely restricted joint motion secondary to thickening and contraction of the joint capsule and synovium.
Frozen shoulder

- Incidence – 2-5%
- Natural history
- Primary or secondary
- Pathophysiology? Inflammation, fibrosis and capsular contraction
- Diagnosis
Frozen Shoulder – Treatment Options

- NSAIDS
- Oral Steroids
  - weak evidence
- Physiotherapy – high-grade mobilization
- Injection therapy
  - moderate evidence, early
- Suprascapular nerve block
  - little evidence

Hydro dilatation
  - moderate evidence

- MUA – first recommended in 1872!!
- Arthroscopic release
Frozen shoulder – poor data and poor treatment outcomes

- Poor quality research design in most studies
- Inadequate outcome measures
- Small effect sizes

- There are large gaps in the evidence for the effectiveness and cost effectiveness of all interventions investigated

Maund E et al. Management of Frozen Shoulder; a systematic review and cost effective analysis Health technology assessment 2012;Vol 16 No 11
Frozen shoulder study

Primary outcome measure ROM restoration. Secondary measures of pain and function.
Suprascapular Nerve Block

A simple and effective technique used to manage shoulder pain in a variety of situations including:

- Post operative pain management
- Malignant shoulder pain
- Inflammatory arthritis
- Degenerative arthritis
- Rotator cuff disease

Protocol described by Dangoisse et al, 1994
SPADI (pain subscale) Mean Scores

SPADI (0-100)
Active
Placebo

error bars are 95% confidence intervals

Shanahan et al ARD 2003
Calcific tendonitis

All rotator cuff tendons, and periarticular soft tissues can be involved.
Calcific Tendonitis – up to 7% of shoulder pain

- Commonly asymptomatic
- Prevalence ? 2-3% of middle aged patients
- Some metabolic associations
- Pathophysiology – degenerative vs reactive (? Fibrocartilaginous metaplasia)
- Usually calcium hydroxyapatite
- Acute and chronic pain
Calcific tendonitis – treatment

- NSAIDS/ice/analgesia
- Physiotherapy modalities
- Injection therapies
- Ultrasound guided needle aspiration and lavage
- Surgical debridement
Occupational Shoulder Pain

- Around 20% of all occupational musculoskeletal claims.

Only a small proportion of shoulder pain can be explained by readily identifiable conditions and managed in the medical model.