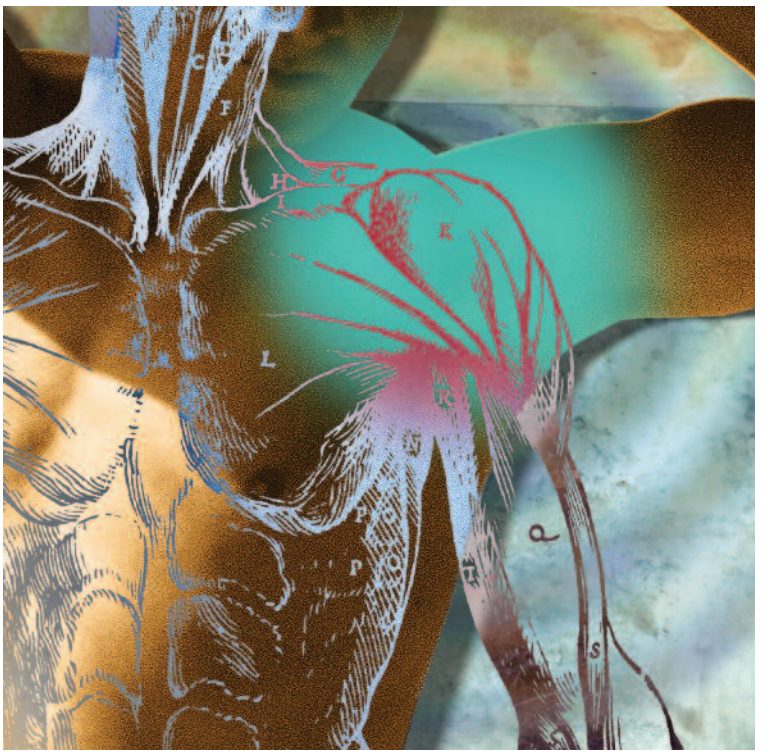
The painful shoulder

E. MICHAEL SHANAHAN BM BS, MPH, PhD, FAFOEM, FRACP
RACHELLE BUCHBINDER MB BS(Hons), MSc, PhD, FRACP

Shoulder pain in primary care is usually manageable with a conservative approach and often improves over time irrespective of the cause. Red flag diagnoses should, however, be considered first.



Shoulder pain is a common and often disabling complaint. It is the third most common musculoskeletal reason for attending a GP after back and neck problems and makes up 1.1% of all chronic problems and 2.5% of all work-related problems encountered by Australian GPs.[1] In the community, the estimated prevalence of shoulder pain is between 16 and 26%.[2,3] Shoulder pain is more common in middle-aged and elderly people[4] and in certain working populations, such as those involved in frequent activities above shoulder height or in heavy lifting. Psychological aspects of the work environment also appear to play a role in shoulder pain presentations.[5] In addition, patients with inflammatory arthritis have high rates of shoulder pain, with over 90% of patients with rheumatoid arthritis reporting shoulder involvement.[6]

Chronic shoulder pain results in significant disability, particularly in the elderly when it may threaten the patient's independence. The diagnosis of shoulder pain is confused by poor agreement surrounding the nomenclature of conditions causing shoulder pain and by the limitations surrounding clinical examination and investigations.[7] Furthermore, many patients present with multiple potential causes for their pain.[8]

Clinical assessment of the painful shoulder

The more common of the many potential causes of shoulder pain are listed in Table 1.[9] Careful history taking and clinical examination, supplemented by appropriate investigation where necessary, helps the clinician to come to a working diagnosis. A simple approach to the assessment of a patient with a painful shoulder, based upon the most common likely diagnoses, is suggested in the flowchart on page 75.[10]

The case study described in the box on page 74 illustrates the possible complexity of shoulder pain presentations, particularly in the elderly. In the first instance, red flag indicators of potentially serious causes need to be considered (Table 2). Bilateral symptoms should prompt consideration of polymyalgia rheumatica and rheumatoid arthritis, although the lack of morning stiffness or other symptoms and the normal levels of acute-phase reactants makes these diagnoses unlikely. The likelihood of

Associate Professor Shanahan is a Staff Specialist In Rheumatology in the Southern Adelaide Health Service, a practicing Occupational Physician, and Associate Dean of the School of Medicine at Flinders University, Adelaide, SA.
Professor Buchbinder is a Rheumatologist and Director of the Monash Department of Clinical Epidemiology at Cabrini Hospital, and Professor of Clinical Epidemiology in the Department of Epidemiology and Preventive Medicine, School of Public Health and Preventive Medicine, Monash University, Melbourne, Vic.
Series Editors: Dr Jane Zochling MB BS, FRACP, MMed (ClinEpi), PhD is a Research Fellow at the Menzies Research Institute, University of Tasmania, Hobart, Tas. Professor Lyn March MB BS, MSc, PhD, FRACP, FAFPHM is Professor of Medicine at the University of Sydney, Department of Rheumatology at Royal North Shore Hospital, Sydney, NSW.

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Table 1. Common causes of shoulder pain[9]

Pain arising from the shoulder

- Rotator cuff disease or associated with the rotator cuff
  - tendonitis, and partial and full thickness tears
  - calcific tendonitis
  - complete rotator cuff tear
  - tendonitis and rupture of the long head of biceps
  - subacromial bursitis
- Adhesive capsulitis ('frozen shoulder')
- Glenohumeral joint disorders
  - osteoarthritis
  - rheumatoid arthritis
  - polymyalgia rheumatica
  - septic arthritis
  - instability and dislocations
  - traumatic labral tears
- Acromioclavicular and sternoclavicular disorders
- Malignancy – myeloma and bony metastases

Pain arising from elsewhere

- Referred pain from the neck
- Myocardial ischaemia
- Referred diaphragmatic pain
- Lesions of axillary, suprascapular, long thoracic, radial or musculocutaneous nerves, brachial plexus, referred pain
- Malignancy – apical lung cancer

Regional or diffuse pain

- Myofascial pain syndromes, fibromyalgia

Case study. Shoulder pain in an elderly man

An 84-year-old man presented with a six-month history of bilateral shoulder pain, worse on the right side. The pain was constant but more severe at night and significantly interfered with his sleep, mainly when lying on the right side. He found it particularly difficult to perform any overhead activities. The pain radiated into his upper arms. There was no history of morning stiffness and no systemic symptoms. He had a history of myocardial infarction and hypothyroidism.

Clinical examination revealed generally wasted musculature in his shoulder girdles but no obvious swelling, and the joints were of normal temperature. Neck movements were restricted to around 50% of normal in all planes. Examination of his right shoulder revealed shoulder flexion was restricted to 120°; abduction was painful from 30 degrees, with active abduction restricted to 90° degrees although passive abduction was normal; hand behind back movement (which requires both adduction and internal rotation) was limited to the patient being able to place his hand on his hip. There was pain with resisted abduction but no obvious weakness in abduction or external rotation. The pain was aggravated with passive abduction in the scapula plane and internal rotation while stabilising the scapula, suggesting impingement. Findings were similar but milder on the left side. He was tender over the lateral aspect of each shoulder below the acromion, over the acromioclavicular joints superiorly and the glenohumeral joints anteriorly.

Full blood examination, serum electrolyte levels and renal and liver function tests were normal, as were C-reactive protein level (9 mg/L) and erythrocyte sedimentation rate (20 mm/hour). Plain x-rays revealed mild degenerative changes at the glenohumeral joints with osteophyte formation at the inferior aspect of the glenoid. There was mild superior subluxation of the humeral head with sclerosis and irregularly of the greater tuberosity, and a spur at the under surface of the acromion with narrowing of the subacromial space bilaterally. There were moderate degenerative changes at the acromioclavicular joints with joint space narrowing and osteophyte formation at the inferior aspect of the clavicle.

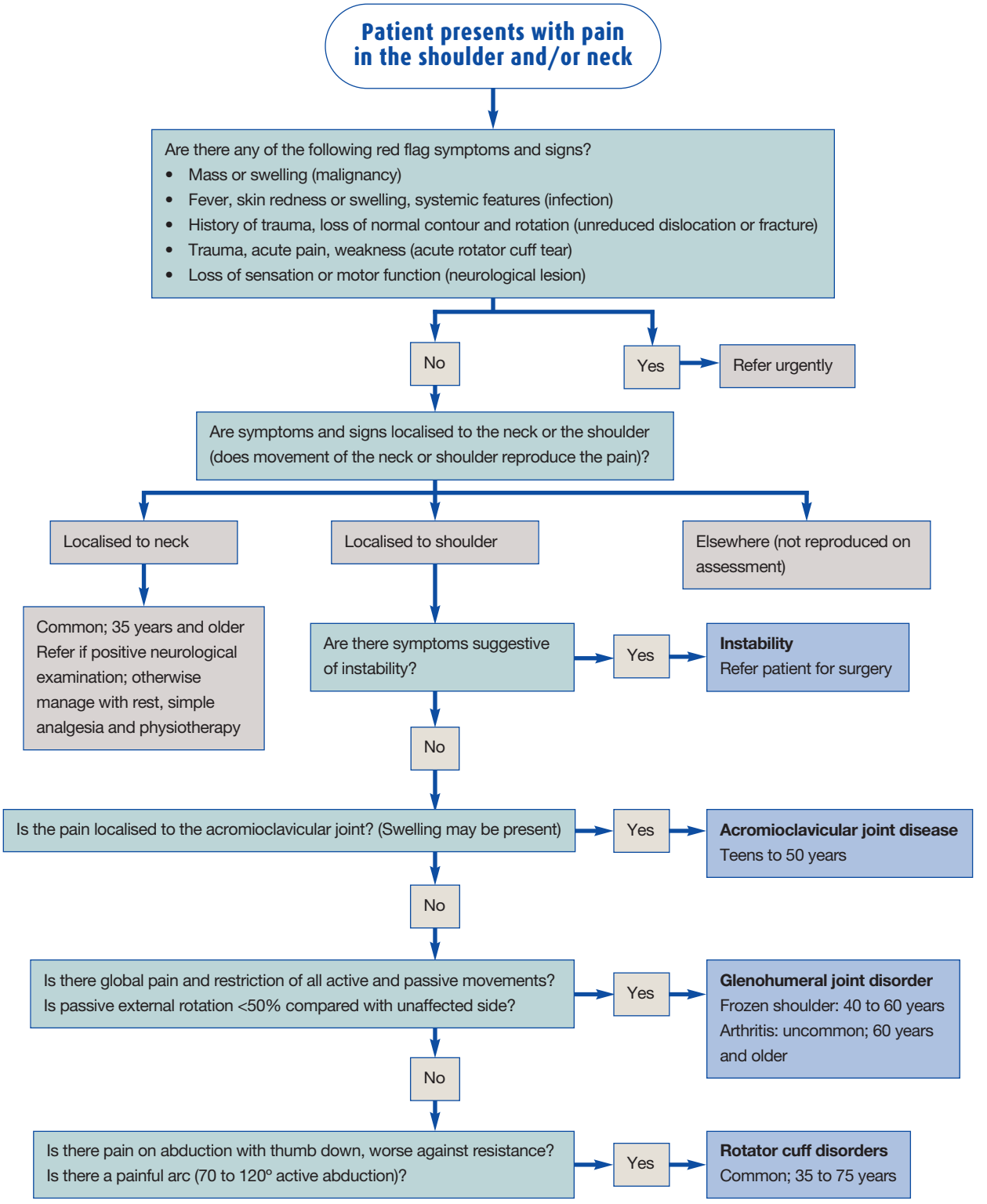
Ultrasound revealed bilateral partial thickness tears of the supraspinatus tendons and thinning of the long head of the biceps tendon with fluid in the biceps sheath, as well as a small tear of the subscapularis insertion on the left. There was mild bursal thickening bilaterally, with bursal bunching at 70° of abduction on the right corresponding to the patient's symptoms on that side.

malignancy increases with age, so this is another important consideration.[11] However, the most common cause of shoulder pain in an elderly person is rotator cuff disease.

In most cases the diagnosis of rotator cuff disease can be made based on clinical features alone. Characteristically there is a painful arc and pain elicited by resisted shoulder abduction, with or without restricted external rotation. In contrast to adhesive capsulitis, the passive range of motion in rotator cuff disease is often normal, although it may be restricted by pain. Painful weakness and atrophy suggest significant tears. Investigations are usually unnecessary but plain x-rays may be indicated to exclude significant glenohumeral osteoarthritis, calcific tendonitis or superior migration of the humeral head (which is indicative of large rotator cuff tears). Plain x-rays are also useful to rule out malignancy and dislocation and/or fracture in the setting of trauma.

The use of diagnostic ultrasound in the primary care investigation of the rotator cuff of a patient is a matter of considerable debate.[12] This is because asymptomatic cuff tears are common, being present in more than half the population over 60 years of age,[13] and the procedure of diagnostic ultrasound is highly operator-dependent. According to Medicare Australia statistics, there

An approach to diagnosing shoulder problems



Based on the Oxford Shoulder and Elbow Clinic's 'Diagnosis of shoulder problems', www.noc.nhs.uk/shoulderandelbow/information/documents/Diagnosis2Appendix11.pdf

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Table 2. 'Red flag' indicators of potentially serious causes of shoulder pain

Diagnosis	'Red flag' indicators
Acute rotator cuff tear	Trauma, acute pain and weakness, positive drop test
Infection	Systemic features, fever, redness, swelling, raised C-reactive protein level
Inflammatory arthritis	History of rheumatoid arthritis, psoriatic disease or crystal arthritis; evidence of active disease elsewhere, effusion
Malignancy	History of cancer (particularly lung cancer), other symptoms or signs suggestive of malignancy; 7% of bony metastases occur in the proximal humerus[11]
Neurological lesion	Sensory or motor deficit in the arm
Unreduced dislocation or fracture	History of trauma, loss of normal contour and rotation of the shoulder, history of osteoporosis
Visceral disease	Myocardial infarction; any diaphragmatic, pericardial or mediastinal pleural irritation

has been a fourfold rise in the number of diagnostic shoulder ultrasounds performed over the past decade; almost half a million were performed in the year 2008 to 2009, at a cost of over $41 million.[14] Consideration should therefore be given to whether ordering an ultrasound or other imaging test in primary care is likely to influence treatment decisions. Like MRI, it is probably best reserved for specific indications such as when surgery is contemplated.[15]

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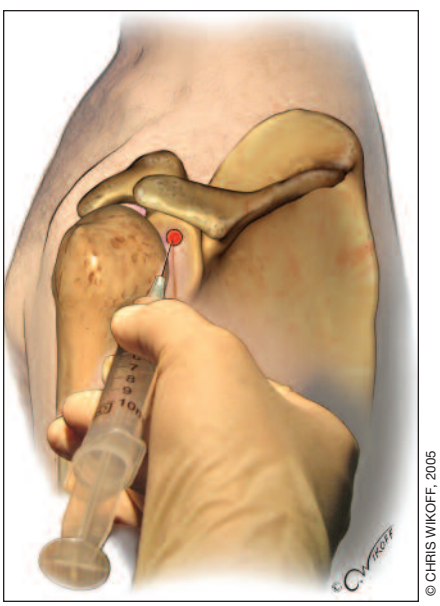

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Figures 1a and b. Subacromial injection. a (left). Surface anatomy drawn on the skin. b (right). The needle is advanced under the posterior lateral acromial edge.[19]

Management of shoulder pain

As with most problems in musculoskeletal medicine, the aims of treatment are twofold, namely pain reduction and restoration of function. Treatment should be tailored to the patient's specific needs, age and general fitness. Specific needs such as the reduction of night pain should be targets for intervention. In general, normal activities should be encouraged. Psychological risk factors should be identified and modified if possible. Table 3 describes the most common treatment options for rotator cuff disease and the currently available evidence from randomised controlled trials for their efficacy and safety.[16-18]

In the case described on page 74, the patient's main concerns were related to constant pain interfering with sleep and his inability to undertake activities relating to personal hygiene and grooming. Simple analgesia (paracetamol 1 g four-to six-hourly, up to 4 g per day) was ineffective and anti-inflammatory agents were avoided because of his age and the risk of side effects. Corticosteroid injections were given into the subacromial space of both shoulders using anatomical landmarks (Figures 1a and b).[19] This provided temporary (four to six weeks) relief of symptoms, particularly night pain.

The patient was referred to a physiotherapist who provided education, a supervised exercise program aimed at maintaining range of movement and shoulder strengthening and also a handout describing some additional simple exercises that he could perform at home.[20] Further pain relief was achieved with a right suprascapular nerve block,[21] which was repeated after three months.

At six months' follow up, the patient was satisfied with his clinical status; his pain was not troubling him greatly and he was able to care for himself provided he avoided sudden shoulder movements. No further treatment was instigated at that time.

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Table 3. Common treatment options for symptomatic rotator cuff disease, evidence for effectiveness and possible limitations

Treatment	Evidence	Limitation
Simple analgesia, e.g. paracetamol 1 g every four to six hours, up to 4 g per day	Useful for musculoskeletal pain but limited evidence specifically for rotator cuff disease	Stronger analgesia may be needed for adequate pain relief but is associated with significant risk of side effects (particularly in the elderly) and should only be used for a short period of time
NSAIDs (including non-selective NSAIDs and COX-2 inhibitors)	Limited evidence that oral and topical NSAIDs provide small benefit in terms of pain relief	Risks may outweigh benefits in high-risk patients; consider possible cardiovascular, renal and gastrointestinal side effects and potential drug interactions (e.g. warfarin); particular care needed in the elderly
Manual therapy combined with strengthening exercises for the cuff and scapular stabilisation	Limited evidence that exercise therapy is beneficial. Manual therapy may provide additional benefits when used with exercise. Combination may be more beneficial for improving strength and function than pain; these benefits may take time to accrue (three to six months)	Minimal risks but long-term adherence to exercise program may be difficult to maintain
Other physical therapies	Conflicting evidence for low-level laser therapy, ultrasound and pulsed electromagnetic therapy; acupuncture may provide transient pain relief	Limited or unproven benefit
Subacromial injection of depot corticosteroid mixed with local anaesthetic	Evidence of rapid pain relief, effect lasts four to six weeks; injection may be repeated if necessary. No evidence that image-guided injection is more effective than traditional injections performed using anatomical landmarks. Two trials have reported similar efficacy from intramuscular injection, suggesting it may be the systemic corticosteroid effect that is therapeutic[16,17]	Low risk of adverse effects; may include transient rise in blood glucose level in people with diabetes, transient flushing and pain at injection site; training required
Suprascapular nerve block	Evidence of limited short-term benefit for people with shoulder pain; can be repeated if necessary	Minimal risk of adverse effects; training required
Surgical decompression of the subacromial space, with or without rotator cuff repair	Limited evidence that outcome from surgery is similar to an active rehabilitation program that includes exercise[18]	Usual risks of surgery; recovery from surgery usually takes three to six months, postoperative capsulitis occurs in up to 37% of cases

Discussion

Shoulder pain is a common problem in middle-aged and older people, and is most prevalent in the elderly. Often there are multiple identifiable pathologies in the one person, although the most common diagnosis is rotator cuff disease. Once red flag diagnoses have been considered, a pragmatic approach to management is warranted in the first instance. In general, conservative management is the mainstay of treatment, although evidence for the value of many commonly used treatments is limited. Some take-home messages are listed in the box on page 79.

Injection therapy should be avoided if there is a known sensitivity to any of the injecting agents or any suggestion of infection in the joint or surrounding tissues (including through psoriatic plaque), and if there is a joint prosthesis

The painful shoulder: take-home messages

- Shoulder pain is common, especially in the elderly. Rotator cuff disease is the most common cause, although multiple diagnoses and red flag indicators of serious conditions should be considered.
- Shoulder pain is usually manageable in primary care with a conservative approach, and often improves over time irrespective of the cause.
- Ultrasound scan of the shoulder is an expensive investigation that often adds little to a careful history and examination. It should be performed only when there is a reasonable prospect that the result will alter the management of the patient.

or fracture or the joint is unstable. Poorly controlled diabetes, coagulopathies and a poor previous response to injections are also relative contraindications.

Indications for surgery usually involve sudden onset of severe symptoms and pathology, or a combination of failed conservative care, persistent or worsening pain, and functional disruption. Surgery is generally reserved for the small proportion of people who fail to improve with conservative treatment and is less likely to be of sustained benefit in the elderly.[15,22] A 2008 Cochrane systematic review identified 14 randomised controlled trials that have assessed the value of surgery for rotator cuff disease.[18] In three of these trials, surgery was not found to be superior to supervised exercises; six trials found that arthroscopic versus open decompression resulted in similar outcomes, although four reported earlier recovery with arthroscopic surgery.

Treatment is further complicated in the elderly by issues of general fitness, drug sensitivity and polypharmacy. MT

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