PAIN IN NECK, SHOULDER, AND ARM

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Neck pain

Normal cervical lordosis, which is often lost in neck disorders.

Poor sleeping posture is a common cause of neck pain.

Pain in the neck is a common clinical presentation in primary care and rheumatological practice. It has been estimated that half of the population will have an episode of neck pain during their lifetime. Up to a third of patients attending general practices with neck pain will have had symptoms lasting more than six months or recurring in bouts.

Symptoms arising in the neck are often poorly localised, and there may be difficulty making a precise anatomical diagnosis, particularly as the clinical signs of neck disorders are neither sensitive nor specific. However, certain features of a patient's history and examination help to distinguish common mechanical disorders from more sinister systemic disease. A full history and physical examination are therefore essential for anything other than trivial neck pain.

"Mechanical" disorders

Acute spasm of the neck muscles (spasmodic torticollis) is a common phenomenon. The exact cause of the spasm is uncertain but often appears to be due to bad posture. Examples include poor positioning of a computer screen, inappropriate seating, and sleeping without adequate neck support. Another common offender is carrying unbalanced loads, such as a heavy briefcase or shopping bag. A careful history is often required to identify such factors.

Degenerative changes in the cervical spine (cervical spondylosis) may be associated with neck pain but usually only when the degenerative changes are severe. Mild or moderate degenerative changes are often seen in asymptomatic individuals. In general the pain of mechanical disorders is intermittent and related to use. At least partial relief may be gained by supporting the head and neck.

Neurological changes associated with entrapment of cervical nerve root

Nerve root	Muscle weakness	Reflex changes	Sensory changes
C5	Shoulder abduction and flexion Elbow flexion	Biceps	Lateral arm
C6	Elbow flexion Wrist extension	Biceps Supinator	Lateral forearm Thumb Index finger
C7	Elbow extension Wrist flexion Finger extension	Triceps	Middle finger
C8	Finger flexion	None	Medial side lower forearm Ring and little fingers
T1	Finger abduction and adduction	None	Medial side upper forearm Lower arm

Pain referred to the arm may indicate irritation or entrapment of a nerve root. Common causes are a prolapsed cervical disc or degenerative changes, including apophyseal joint or ligamentous hypertrophy and osteophytes. Neurological examination will often reveal the level of entrapment.

Systemic causes of neck pain

Inflammatory

Ankylosing spondylitis
Rheumatoid arthritis
Polymyalgia rheumatica

Malignancy

Myeloma
Metastatic disease

Infection

Staphylococcal or other sepsis
Tuberculosis

Metabolic

Osteomalacia

Systemic disease

Inflammatory, neoplastic, or infective disease is suggested by unremitting pain, often radiating to both arms, that is worse at rest and causes considerable sleep disturbance. Neck movements are usually painfully limited in all directions.

Whiplash injuries

Neck injuries sustained in road traffic accidents may occur after front, side, or rear collisions. The start of pain may be delayed for a few hours or even several days after the accident. Restriction of cervical movements may be considerable, but investigation often reveals no pathology. The pain can radiate to the shoulders, arms, and head and is probably caused by stretching or tearing of cervical muscles and ligaments. The principles of treatment are the same as for any acute neck pain, with early mobilisation and avoidance of prolonged use of a collar.

Recovery is often slow with neck pain persisting beyond six months in up to 10% of patients. Psychological disturbance is often seen in such people, who seem to have coped poorly with their injuries and only slowly revert to their previous level of functioning. The syndrome is related to a number of factors including the stress of having been involved in an accident, frustration at the lack of improvement despite reassurance and treatment, and resentment at prolonged suffering through no fault of their own. In such circumstances a sympathetic approach is important while encouraging patients to take responsibility for their symptoms.

Fibromyalgia

Neck pain and tenderness may be part of a more generalised state of hyperalgesia with multiple tender trigger areas together with general malaise and non-restorative sleep pattern. In the absence of any abnormalities on investigation this condition is referred to as fibromyalgia.

Forces involved in a whiplash injury.

Magnetic resonance images of cervical spine: (left) loss of normal lordosis but no other abnormality; (right) advanced rheumatoid disease of cervical spine, with considerable distortion of lower medulla by pannus around the odontoid peg and gross reversal of normal lordosis at C5, compressing the nerve cord.

Investigations

Plain x rays of the cervical spine are rarely helpful in diagnosing the cause of neck pain except after acute trauma when major injury is suspected. The finding of degenerative changes is common in people aged over 40 and is usually symptomless.

The advent of magnetic resonance imaging has enhanced our ability to diagnose and assess more serious disorders which include atlantoaxial subluxation in rheumatoid disease, tumours, abscesses, and injuries (such as ruptured ligaments). It can be used to identify prolapsed cervical discs and demonstrates loss of intervertebral disc hydration, but so far it has not revealed the mechanical abnormalities to which we attribute most neck pain.

Self traction as recommended by French surgeon Delpech in 1825.

Shoulder pain

Calcification in rotator cuff.

Coronal oblique magnetic resonance image of right shoulder of 50 year old woman with chronic shoulder pain. There is a full thickness tear of supraspinatus tendon with retraction and muscle atrophy.

Treatment

The principles of treatment of acute and chronic neck pain have changed in recent years. Previously, when pain or muscle spasm was intense a period of rest was often prescribed, usually with the patient in a collar. This approach often encouraged the persistence of neck stiffness and disability. Instead early active treatment is now recommended for neck pain. Collars, if prescribed, should be worn only during activities likely to exacerbate the pain and not used for more than two to three weeks.

Early mobilisation or manipulative techniques aimed at restoring full range of movement are usually helpful. Mobilisation means moving the joint or joints within their normal range, while manipulation involves moving the joint beyond normal range. These treatments are performed by some physiotherapists, by osteopaths and chiropractors, and by some appropriately trained doctors. When manipulation fails traction is sometimes used but is less popular than previously. Autotraction—in which a patient stretches his or her own neck—has long been used and is popular in Scandinavia and the United States but is little used in Britain.

Advice on the correction of postural abnormalities is important in preventing recurrence of pain. Programmes based on the Alexander technique can be helpful when tension and posture seem to be a problem (as with musicians, for example). Radicular pain is treated with rest and wearing a collar for no longer than two weeks. Intractable root symptoms need to be investigated further, and, on the rare occasions that the spinal cord is compromised, a surgical opinion should be sought.

Periarticular disorders

The shoulder is the most mobile joint in the body, but to achieve this mobility it is dependent for stability on surrounding soft tissue structures, in particular the musculo-tendinous rotator cuff. It is therefore not surprising that disorders of the rotator cuff account for most shoulder pain. In patients aged under 40 impingement or tendinitis of the rotator cuff is the commonest problem and usually follows excessive use or trauma. In keeping with most shoulder disorders, pain is felt in the upper arm and the patient is often unable to lie on the affected side at night. The presence of a painful arc on abduction of the arm and pain on resisted movement with localised tenderness of the insertion of the rotator cuff confirms the diagnosis. X Ray pictures of the shoulder occasionally show calcium deposition within the supraspinatus tendon or subacromial bursa, but this is often an incidental finding.

In older patients varying combinations of repeated impingement of the cuff under the acromion, intrinsic degeneration of the cuff, and pressure from bony spurs at the acromioclavicular joint may lead to tears of the rotator cuff. These are either partial or complete and can be associated with chronic and sometimes severe pain.

Pain localised to the top of the shoulder or suprascapular region suggests a disorder of the acromioclavicular joint or neck. Pathology of the acromioclavicular joint is common and is usually traumatic (for example, from playing a sport) or osteoarthritic. Clinical examination reveals tenderness of the joint and pain on passive horizontal adduction. Pain referred to the shoulder tip from diaphragmatic irritation—caused by conditions such as gall bladder disease, subphrenic abscess, and pulmonary embolism—should also be considered.

Causes of a stiff, painful shoulder joint

Adhesive capsulitis

Usually primary
Secondary to diabetes mellitus or intrathoracic pathology

Joint inflammation

Inflammatory arthropathy (such as rheumatoid or psoriatic)
Infection

Osteoarthritis

Secondary to trauma, neuropathic joint, or diabetes

Prolonged immobilisation

Hemiplegia
Strapping after dislocation

Polymyalgia rheumatica

Glenohumeral disorders

Glenohumeral disorders are classically associated with loss of external rotation. Adhesive capsulitis is characterised by limitation of both active and passive movements of the shoulder with pain at the extremes of motion. Most cases are primary, although the condition may follow a rotator cuff lesion or occur in association with lung disease, myocardial infarction, or stroke. The pathogenesis is unknown. Symptoms may last a year or more, and it is important to reassure patients about the eventual good outcome.

In young people instability of the glenohumeral joint is a commonly unrecognised cause of shoulder pain. It causes aching and a "dead" sensation in the arm that is precipitated by throwing. The shoulder is least stable inferiorly, and a gap may be felt between the acromion and the head of the humerus when the muscles are relaxed—a positive sulcus sign. Intervention other than advice on strengthening exercises is usually not necessary unless instability is severe and leads to recurrent dislocation.

Patients with polymyalgia rheumatica often present with bilateral shoulder pain and stiffness. This may be mistaken for an intrinsic glenohumeral disorder, as polymyalgic symptoms can improve because of systemic absorption of locally injected corticosteroids. Osteoarthritis involving the glenohumeral joint is uncommon as a primary disorder, and if it is present an underlying cause should be sought.

Treatment

Rotator cuff disorders usually respond to rest, non-steroidal anti-inflammatory drugs, and, if persistent, injections of mixtures of hydrocortisone acetate and local anaesthetic into the subacromial bursa. Long acting depot preparations of corticosteroids such as methylprednisolone should be avoided because of the possibility of atrophy of soft tissue or rupture of the tendon if this is injected inadvertently. Tears of the rotator cuff are often managed conservatively, but continuing pain and functional impairment may require either arthroscopic or open repair of the rotator cuff. The acromioclavicular joint is easily palpated and readily accessible for injection.

Treatment of adhesive capsulitis is directed towards giving adequate pain relief, restoring range of movement, and correcting any underlying cause if present. Intra-articular injection of corticosteroid or a short course of oral corticosteroids for two weeks given early in the course of the condition can sometimes help to control pain but does not restore range of movement. The patient should be instructed in stretching exercises when the pain subsides. Manipulation under anaesthetic may be used if restriction of movement persists despite easing of symptoms.

The acromioclavicular joint is often overlooked as a site of shoulder pain and is easily injected.

Elbow pain (tennis elbow and golfer's elbow)

Thermogram of patient with lateral epicondylitis showing "hot spot" over right lateral epicondyle.

Lateral epicondylitis is characterised by variable arm pain aggravated by gripping or twisting movements. Tenderness is greatest over the lateral epicondyle. Useful confirmatory tests are pain on resisted extension of the wrist or on forced radial deviation with the elbow extended. With medial epicondylitis, pain often radiates across the flexor aspect of the forearm. Tenderness over the medial epicondyle and pain on resisted pronation of the wrist confirms the diagnosis. Referred pain from the cervical spine is often felt around the elbow and may mimic soft tissue lesions.

Treatment

Most cases of epicondylitis settle with one or two injections of hydrocortisone acetate mixed with local anaesthetic. Again long acting corticosteroids should not be used because of the risk of skin atrophy. The injection is often extremely painful for one or two days, and patients should be warned about this. Elbow splints and ultrasound treatment may also be of use. For recurrent epicondylitis, deep massage or frictions can be helpful. Several surgical procedures are described for treating resistant lateral epicondylitis, but none is outstandingly effective.

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