

Cervical radiculopathy and cervical myelopathy:

diagnosis and management in primary care

INTRODUCTION

It is important in primary care to be able to differentiate between cervical spine disease that can be managed conservatively and that associated with neurological symptoms suggestive of more serious disease, which may require urgent surgery. This article will cover key points in the history, examination, and management of patients with neck and neurological symptoms, with particular reference to cervical myelopathy and radiculopathy.

The prevalence of neck pain in the general population is high: it has been estimated that 30–50% of adults will experience neck pain in any given year,¹ with the average GP estimated to consult with seven people per week for neck or upper extremity symptoms.² Neck pain with abnormal neurology (usually cervical radiculopathy) is much less common: it has been estimated to affect around 100 per 100 000 males and 60 per 100 000 females.³ Cervical myelopathy is even rarer but is worthy of discussion given that it requires urgent management and needs to be identified from among the many cases of neck and neurological symptoms that a GP sees on a regular basis — the incidence of cervical myelopathy is poorly quantified but studies have estimated it to be around 4 per 100 000.⁴

DEFINITIONS

Cervical radiculopathy is due to compression or irritation of either or both of the dorsal (sensory) and ventral (motor) roots of a cervical nerve at one or more vertebral levels. Compression can result from intervertebral disc herniation, osteophyte formation, or other mass effects near the exit foramen of the cervical spine. This results in lower motor neurone symptoms and often presents with arm pain, weakness, and/or sensory loss, with or without associated neck pain.

Cervical myelopathy is spinal cord dysfunction due to compression caused

by narrowing of the spinal canal. Common causes include disc herniation, spondylosis, and congenital stenosis, often in combination. The compression causes upper and lower motor and sensory neurone symptoms of the arms and legs, and the onset is often insidious.

RED FLAGS

Given the high prevalence of benign non-specific neck pain, it is essential to first highlight the red flags that have been developed to aid clinicians in identifying serious spinal pathology requiring urgent treatment. In addition to cord compression such as cervical myelopathy, it is important to recognise cancer, infection, or trauma-related presentations.

A serious underlying cause is more likely in people presenting with new symptoms before the age of 20 years or after the age of 55 years, weakness involving more than one myotome, or loss of sensation involving more than one dermatome.

Red flags particularly suggestive of cancer, infection, or inflammation are malaise, fever, unexplained weight loss, pain that is increasing, is unremitting, or disturbs sleep, a history of inflammatory arthritis, cancer, tuberculosis, immunosuppression, drug abuse, AIDS, or other infection.

On examination the presence of lymphadenopathy or exquisite localised tenderness over a vertebral body should raise suspicion that there could be a serious underlying cause for the pain.

CERVICAL MYELOPATHY

Although the least common, this article addresses this condition first given the potential consequences of failure of recognition. The presenting features of cervical myelopathy (cord compression) are often non-specific — symptoms such as clumsiness of hands and feet, decreased manual dexterity, and an unsteady gait. Cervical pain may be present but its absence does not exclude this diagnosis. Patients

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Box 1. Key abnormal findings in radiculopathy¹

C5: deltoid and biceps weakness, reduced biceps reflex.

C6: brachioradialis and wrist extensor weakness, reduced brachioradialis reflex, thumb paraesthesia.

C7: triceps and wrist flexion weakness, diminished triceps reflex, paraesthesia in index, middle, and ring fingers.

C8: weakness of distal phalanx flexion (keep your fingers curled), little finger paraesthesia.

Box 2. What to tell my patient about radiculopathy?

The British Association of Spinal Surgeons (BASS) patient information leaflet on nerve root pain says that 75% of patients get better in 28 days but low-grade symptoms may sometimes persist for several months. It gives the encouragement that there is a 90% chance that radiculopathy will not recur within 10 years.⁸

will often describe difficulty undertaking common everyday tasks such as holding a cup or climbing the stairs. These difficulties can be associated with symptoms such as numbness and tingling in the hands and feet. Asking about urinary and bowel function is essential as alterations of these may be an indication of severe cord compression.

Examination is important in cervical myelopathy and is key to suspecting the diagnosis. Both the upper and lower limbs should be examined as cervical myelopathy causes upper motor neurone signs, particularly in the legs (brisk reflexes and Babinski reflex). The Babinski reflex is positive when the big toe is up-going. Other eponymous upper motor neurone signs such as Hoffmann's test have been reported to have a low sensitivity.⁵ Weakness can be difficult to detect but clonus (more than 3 beats) is highly suggestive of cervical myelopathy. Romberg's test may be positive, especially in more severe cases: the patient become unbalanced when standing with arms stretched forward and eyes closed. Toe-heel walking is difficult in cervical myelopathy.

There is, though, a wide differential for these symptoms and signs and patients suspected to have cervical myelopathy may later be diagnosed with a primary neurological condition such as multiple sclerosis, motor neurone disease, or Parkinson's disease.

CERVICAL RADICULOPATHY

Although in practice it may be difficult to distinguish between non-specific neck pain and cervical radiculopathy (without objective signs), the distinction between the two is worthy of discussion given that guidelines⁶ recommend earlier referral, imaging, and use of neuropathic agents for cervical radiculopathy (see below).

Pain is a common presenting symptom for cervical radiculopathy and is classically sited in the neck with radiation down the shoulder and arm in a dermatomal distribution. A more generalised non-dermatomal arm ache, occipital headache, or inter-scapular pain are other common presentations.

Asking about associated motor or sensory symptoms can help discriminate non-specific neck pain from cervical radiculopathy. The sensory symptoms are most usually unilateral with dermatomal numbness or tingling (C5–C7 levels are most commonly affected). Motor symptoms, although less common, are also usually unilateral and in a myotomal distribution.

A focused musculoskeletal and neurological examination is necessary to differentiate between radiculopathy and myelopathy. Additional examination of the shoulder will help to exclude a primary shoulder problem from referred pain from cervical radiculopathy.⁷ In those presenting with radicular symptoms, the myotomes and dermatomes of the upper limb can be assessed as described in Box 1.

MANAGEMENT AND WHEN TO REFER

For cervical myelopathy, any positive signs or symptoms warrant an immediate referral as this condition often requires urgent surgical decompression to prevent further neurological deterioration. This is most appropriately referred by telephoning the on-call orthopaedic or spinal registrar. Decompression is achieved using an anterior cervical decompression and fusion (ACDF) or posterior laminectomy or laminoplasty.

Many cases of cervical radiculopathy, even with neurological symptoms, will resolve spontaneously and can initially be managed conservatively, as with non-specific neck pain (Box 2). Early distinction between the two is therefore not essential and patients often accept this clinical uncertainty, although for some a descriptive label provides reassurance and for the clinician a management framework.

Physiotherapy in combination with home exercises for 6 weeks substantially reduces neck and arm pain compared with a wait-and-see approach in the early phase.⁹ The National Institute for Health and Care Excellence (NICE)⁶ suggests simple analgesia (ibuprofen, paracetamol, or codeine) and a trial of a neuropathic agent (amitriptyline, pregabalin, or gabapentin) for those with neurological signs or symptoms lasting over a month. However, the guideline acknowledges that there is little specific evidence supporting the use of any of the agents in neck pain and its recommendation is based on extrapolation from other non-neck pain studies.

If symptoms of cervical radiculopathy persist for longer than 4 to 6 weeks, or there is earlier evidence of abnormal neurology, referral for imaging or specialist assessment should be considered.⁶

Cervical spine radiographs are unlikely to be useful in making a diagnosis and are not recommended.⁶ Magnetic resonance imaging (MRI) is the investigation of choice, although the prevalence of asymptomatic degenerative disease in people >30 years old is high, so findings must always be correlated with the clinical

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picture to avoid overdiagnosis. Therefore, a non-urgent referral to a spinal clinic (or open-access MRI if local guidelines allow) is appropriate even in the presence of lower motor neurone signs. It is recommended that non-specific neck pain lasting longer than 3 months is referred to a pain clinic with or without a trial of neuropathic agents.

When considering a referral to a spinal clinic, it is important to remember that there is not clear evidence of surgical treatment for cervical radiculopathy providing better long-term outcomes than non-operative measures,¹⁰ but it may provide some benefit in a very carefully selected population. In a small prospective randomised control trial comparing ACDF and physiotherapy with physiotherapy alone in patients referred to a secondary care clinic, over 90% of patients treated with ACDF and physiotherapy rated their symptoms as at least ‘better’ over long-term follow-up compared with around 60% of patients in the non-surgical group,¹¹ suggesting some benefit of surgical intervention.

CONCLUSION

Non-specific neck pain is common and can be managed conservatively. Although less common, those with an isolated radiculopathy can be initially managed in a similar manner to those with non-specific neck pain with referral to a routine outpatient spinal clinic (or for MRI) if conservative measures fail. However, patients with much rarer cervical myelopathy (Box 3),

Box 3. Take home message

The physician should ask about lower-limb symptoms when patients have neck pain and/or upper-limb neurology. Identifying signs or symptoms of abnormal neurology in the legs will help the physician not to miss a problem such as cervical myelopathy, which could require urgent surgery.

presenting with bilateral neurology, gait disturbance, or bowel or bladder problems (with or without neck pain), should be discussed urgently with the on-call spinal or orthopaedic team. These conditions highlight the importance of meticulous clinical assessment to discern red-flag diagnoses from much more commonly occurring muscular and positional causes of simple neck pain.

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