

Non-traumatic persistent neck pain

Joint disease accounts for over half of all chronic health problems in the over 65 years group. In Europe chronic neck pain affects between 10–20% of the population. In North America about 5% of the general population of all ages is disabled because of neck pain.¹

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In the elderly presenting to general practice, neck pain presents a diagnostic and therapeutic challenge. Neck pain due to postural problems or muscular strain can be resolved in a matter of weeks. However, where degenerative problems are more common in the older age groups, many will continue to have prolonged neck pain. In all age groups 50–85% will report recurrence of neck pain 1–5 years later.² Poor socialisation, psychological ill-health and reduced coping strategies are important determinants of continuing neck pain,³ all may be problematic in the elderly.

Whilst GPs recognise that the majority of neck pain in the elderly is due to degenerative change, cervical spondylosis, they also acknowledge that the elderly with severe neck pain are impaired in daily activities, may go to bed with the pain, resort to neck collars and need to balance the adverse effects of medication against their chronic pain. They may also require patient orientated education about the do's and don'ts of living with their condition. In addition, the GP

needs to identify those patients with unusual presentations, causes and complications whose health is likely to deteriorate. This article reviews three groups:

1. Chronic neck pain
2. Neck pain in which radiculopathy, myelopathy, drop attacks and/or dizziness are features
3. Neck pain in which there is also headache, known as cervicogenic or hemicranial pain, and/or occipital pain.

Aetiology of neck pain

Age, smoking, previous injury and whiplash are all risk factors for neck pain. Most neck pains are due to mechanical problems, strains and poor posture. With age, degenerative problems are more likely (cervical spondylosis). Possible causes of chronic neck pain are listed below.

- Skin: shingles
- Muscular pain: strain, tension, poor posture and poor postural habits at home or work
- Fibromyalgia with trigger

points

- Psychosomatic and depression symptomatology
- Infection
- Intraoral problems
- Migraine
- Giant cell arteritis at occipital artery
- Occipital nerve neuralgias
- Atlantoaxial and atlanto-occipital joint pain
- Osteomalacia
- Paget's disease
- Rheumatoid arthritis
- Ankylosing spondylitis
- Osteoporosis
- Metastatic and occasionally primary cancer
- Osteoarthritis
- Cervical disc prolapse.

Cervical spondylosis

Cervical spondylosis is a degenerative disease that occurs with age. It is often asymptomatic but is the commonest cause of neck pain in the elderly. It can cause arm pain, occipital pain, cervicogenic headache, myelopathy and vertebrobasilar insufficiency. In

10–15% of cases it is associated with nerve root or cord compression requiring surgery.⁴

The history, past medical history and examination are the most reliable indicators of neck pain cause and management in the elderly.

History

The history should cover the site, severity, duration, progress, radiation and referral of the pain. Is there a position of the neck which reproduces or aggravates the pain? What is the effect on the patients daily routine? What treatments have they already tried?

Red flags include the need to exclude trauma. Ask about sensory and power changes, incontinence, drop attacks, systemic symptoms and night pain. Ask about a past history of bone disease, cancer, previous pain, past interventions for neck pain and past neck surgery.

Patients may report neck pain, stiffness, tenderness, restricted posture and movement and neck crepitus. The pain may also be in their shoulders or referred into their arms. The pain may radiate onto the skull as far as the back of the eyes. There may be dysesthesia, numbness, clumsiness or loss of power. Patients may also suffer dizzy spells or episodic collapses.

Examination

Healthcare professionals should inspect for neck posture, the site of the pain as well as the skin. Muscle wasting, particularly the small muscles of the hand (C8/T1) and winging of the scapula (C6/7) also needs to be checked. Thenar wasting is not unusual

in the elderly population due to median nerve entrapment but may be symptomatic of cervical nerve entrapment also.

Palpate the neck for tenderness and masses. Can pressure reproduce the pain? Observe the patient's gait and movements of the neck. The atlanto-occipital joints receive the occipital condyles of the skull and allow nodding of the head. Other movements are flexion, extension, lateral flexion to right and left, rotation to right and left.

A upper limb neurological examination should be performed and if symptoms or signs are found then there should also be a lower limb examination. Hoffman's test (reflex thumb flexion on finger stimulation) is not a usual GP examination but is the parallel to the up-going plantar but at the thumb. Using knowledge of dermatomes, myotomes and reflex origins, the GP can localise the problem with reasonable accuracy.

There are no trials of performing these tests specifically in the older age group. A number of elderly may have neck instability which would contraindicate manipulation. However, patients may self report that these movements aggravate or reproduce their pain. Tests that can be performed include:

Lhermitte sign: sudden electric-like shocks down the spine triggered by flexing the head forward. This suggests compression of the cervical spine.

Spurling's test: there are no studies of Spurling's test in the elderly neck. A number of elderly may have instability which would preclude manipulation.

Provokation testing to reproduce arm pain: contra-lateral rotation of the head and extension

of the arm and wrist on the affected side produces pain radiating down the arm in association with cervical root irritation.

Vertebrobasilar (VB) insufficiency

Drop attacks or dizzy spells may be associated with vertebral artery compression from cervical osteophytes. Compression of the vertebral artery impedes blood flow to the cerebellum and brain stem. A number of patients have fallen when extending their necks to take down curtains or paint ceilings. Movement of the neck before neurological compromise, possibly presenting as a cerebrovascular accident, should alert the GP to possible neck aetiology.

Drop attacks may occur from VB insufficiency or from acute spinal cord compromise at the neck. The patient may have acute tetraplegia with quick recovery. There are few case reports of permanent tetraplegia in patients.

Classification of neck pain

The World Health Organization declared that the decade of 2000 to 2010 would be the decade of the Bone and Joint. As part of this the task force on neck pain, reporting in 2008, suggested classifying neck pain for all ages into four groups:²

Grade 1:

There are no signs or symptoms of structural pathology and no or minor interference with patient activities.

Grade 2:

There are no signs or symptoms

of structural pathology but major interference in patient's activities.

Grade 3:

There is no evidence of structural pathology in signs or symptoms but patient has neurological signs eg. reduced or lost reflexes, weakness, sensory deficits.

Grade 4:

There is major structural pathology, fracture, myelopathy, neoplasm, systemic disease.

Investigation of neck pain

No investigation for neck pain is needed for grades 1 and 2. Whereas a grade 4 neck pain, should include investigations such as FBC, biochemistry with bone profile, ESR, and CRP to exclude secondary causes.

X-ray is not useful for suspected cervical spondylosis. Most people over 60 years old have cervical degenerative changes on X-ray which do not correlate with symptoms or outcome. In one study 85% of patients aged 60 or more who were referred for an X-ray examination of the neck in one year were reported as having cervical spondylosis. There were no unexpected findings of infection or malignancy at any age. There was no significant difference in the prevalence of cervical spondylosis between these patients and a control group, although the severity of the disc changes was greater among cases than controls. There was no consistency between symptoms and changes seen on X-ray films.⁵ However, X-ray may be valuable in considering a destructive neck disease.

MRI scans are not indicated in grade 1 and 2 neck pain. MRI changes in the cervical spine are common (up to 78%) in asymptomatic subjects and increase significantly with age. The presence of MRI abnormalities does not correlate with the patient's neck pain if there is no radiculopathy.⁶ Even in grade 3 neck pain with cervical MRI findings of a hard disc or extrusion of disc material through the cervical posterior longitudinal ligament these findings are often not in agreement with the surgeon-reported findings at surgery.⁶

Needle EMG may be helpful for those patients with grade 3 neck pain, radiculopathy, as it is the gold standard to provide evidence of nerve denervation.

There are also diagnostic facet injections. Whilst some patients reported good pain control the studies have not shown reliability or validity in identifying facet joint pain as the cause of neck pain.⁶

Treatment of grade 1 and grade 2 neck pain

Pain relief and early intervention to prevent disability are required. Short courses of analgesia and anti-inflammatories are helpful but the sequelae of indigestion, diarrhoea, hypertension and heart failure preclude long term anti-inflammatory use in these elderly vulnerable groups.

Nortriptyline and amitriptyline may be helpful in increasing synaptic concentrations of serotonin and/or noradrenaline for neuropathic pain. They should be started at low dose in the elderly due to concerns about sedation, cardiovascular and anticholinergic

side-effects.

The antiepileptic drugs are used in the younger age groups for neuropathic pain but there is little evidence for their use in the elderly.

Patient education and educational videos with supervised exercise programmes can also be beneficial.⁷ Acupuncture showed benefit in studies of patients of all ages.⁸ There is no clear benefit of one treatment above another.

Patients with grade 2 pain interfering with activities need GP follow up with possible psychotherapy and pain management strategies.

There is insufficient evidence for the use of cervical pillows in neck pain, many studies being described as of poor quality.⁹ However a number of patients buy them and find them helpful. Collars may prevent the patient from exercising the neck, reduce movement and encourage muscle wasting. Patients with collars should be advised that there is no long term evidence of benefit but if bought for comfort then to use them for short periods and remove them for the rest of the day and implement exercises.

There is no study to support chiropractic treatment in the elderly and clearly in mechanic and degenerative neck conditions manipulation may be hazardous.

TENS machines are as effective in producing short term benefit in pain and quality of life as manual therapy in patients of all ages. This benefit reduced over time from therapy to a third of patients finding benefit six months later.¹⁰

There is no evidence to support the use of traction in neck pain with or without radicular symptoms¹¹ in all-age groups. In the elderly this therefore is not recommended.

There is no evidence for injections or surgery for neck pain alone.

Treatment of Grade 3 neck pain

The long term outcome is variable, symptoms may resolve, remain constant or progress. Progression to cervical myelopathy is not a certainty.

GPs can offer pain relief and education. In patients with no contraindications the presence of neurological signs will necessitate early investigation and management. In the presence of motor symptoms and signs this may be urgent. MRI and EMG are likely investigations.

Surgical treatment and injection procedures for radicular symptoms may be considered in patients presenting with severe impairment or with progressive symptoms and signs, severe pain or those not improving after conservative therapy.

In studies of patients of all ages at six months 62% of patients had significant pain relief after cervical epidural steroid injection.¹² Cervical foraminal or epidural injections are associated with minor adverse events, 5–20% incidence, such as infection or worsening pain or pain at the injection site but serious adverse events are unusual (<1%).¹³

No type of surgery can be supported above another. Anterior neck fusion surgery and cervical disc arthroplasty outcomes are similar at 1–2 years. Surgery offers improved pain relief for many patients at three months but at 12 months there was no statistical difference between those patients post op, those who had physiotherapy and those who had a cervical collar.⁴ Long term benefits are not yet clear. After open surgery potentially serious acute

complications are seen in about 4% of patients.¹³

At 12 weeks post-op most patients had at least a 50% reduction in pain, most subjects achieved a 60–70% improvement in functional scores, but as no trials used a nonsurgical control group the neck pain task force¹³ were uncertain whether patients would have achieved these outcomes with nonsurgical care. The Cochrane review found that patients with sensory loss or paraesthesia improved post op at four months but at 16 months fared the same as those treated with physiotherapy.⁴ No studies are specific to the older age groups. The group explored a study using the US National Inpatient Sample database (1992–2001), Wang et al assessed complications and mortality associated with cervical spine surgery for degenerative disease in the US. This database contains only complications reported at discharge. Most cervical spine surgery in the study was for herniated disc disease (56%) and spondylosis (19%). Complications were more common in older patients, after posterior or combined anterior/posterior surgery (9%) and in surgery performed for a primary diagnosis of spondylosis with myelopathy (6%). The odds ratio of inpatient mortality in patients over 75 years of age (compared with patients aged 20–34 years) was 18.5 (95% CI 10.9–31.5). Dysphagia after anterior cervical discectomy or fusion can occur in up to 12% of patients 12 months later. Vocal cord paralysis is also a hazard.¹³ Haematoma and cervical swelling causing respiratory problems may prolong hospital stay.

Treatment of grade 4 neck pain

These patients have underlying

disease processes usually requiring urgent referral to provide diagnosis and management. Treatment would depend on the underlying cause.

Cervical myelopathy

Cervical spondylosis is the most common cause of cervical cord compression in the elderly. In cervical myelopathy the cervical cord becomes compromised and compressed. This may be due to stretching, ischaemia and compression by disc material, osteophytes or ligamentum hypertrophy.¹⁴ It is increasingly being recognised in general practice as the previously well elderly are being MRI scanned for advanced cervical spondylitic symptoms and signs. The MRI scan reveals changes in cord signal representing myelomalacia or permanent damage. CT scanning may be useful in osteophyte evaluation.¹⁴ The concern is that the patient will develop progressive loss of function of hands, upper limb paraparesis or a tetraparesis.

Patients report clumsiness of the hands, loss of sensation, weakness, stiffness in the legs, unsteady gait. Signs mirror the symptoms with LMN signs at the level of compression and UMN signs below. Differential diagnoses are other causes of cord compression, tumour, cyst, multiple sclerosis, amyotrophic lateral sclerosis.

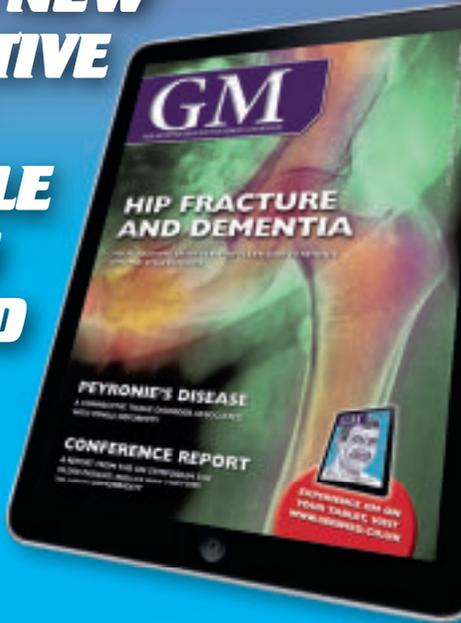
The long term outcome is uncertain. It is progressive in 40% of patients.¹⁴ Rigid collars may be used to prevent spinal movement in patients unfit or not wishing to contemplate surgery.

Surgery in cervical myelopathy is performed to

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decompress the spinal cord. This may be an anterior or posterior approach and may include bone grafting. Symptoms may improve in 50% of patients.¹⁵ Posterior laminectomy was the treatment of choice but some patients develop further neurological deterioration post-op and anterior approaches with cervical fusion are more commonly used now¹⁴ in order to prevent spinal instability. Poor prognostic factors for surgical outcome are severe preoperative neurologic deficits, abnormal signal changes within the spinal cord and/or spinal cord atrophy seen on MRI, and severity of cord compression seen on radiographic studies.¹⁵ There is work progressing on using artificial cervical discs. In those with mild myelopathy there was an improvement post-op at six months compared to the non operated group who had a soft collar intermittently, NSAIDs and intermittent bed rest. At 36 months there was no difference in symptoms and ability to walk 10m.⁴ There is a need for more randomised controlled trial and a larger number of older patients to be recruited into trials of surgery.

More minor surgical approaches are being developed for foraminal or central canal stenosis. Dorsal laminoforaminotomy can be performed using a microendoscope.¹⁵

Hemicranial pain/cervicogenic headache

Chronic hemicranial pain is also known as cervicogenic headache. The terms refer to pain referred to the head and face from bony structures or soft tissues of the neck. The referral onto facial structures arises because of the anatomical closeness of the trigeminal nuclei to the upper and mid cervical nerve roots. The pain commonly arises at the occiput and spreads up the skull to the forehead. It is usually described as dull and is moderate or severe. There are often degenerative changes of the cervical spine on X-ray and MR imaging but these are neither specific nor sensitive to cervicogenic headache patients.

The prevalence of cervicogenic headache in a review by Haldeman¹⁶ is estimated at 0.4–2.5% of the population with a ratio of females to males of 4:1. In patients with chronic headache it is as high as 20%. In this review the mean length of headache was 6.8 years and the mean age 42.9 years.

Patients may have altered neck posture and reduced range of movement of the cervical spine. The pain may be reproduced by movement or by pressure over the occiput, particularly laterally around the atlanto-cervical joints. This area is complex. The first two cervical vertebrae are

unique (atlas and atlantis), being flattened and shaped to fit the occiput and each other, including the odontoid process. The atlanto-occipital joints have ligaments and synovial joints. There are a number of muscles and the nuchal ligament moving the upper neck. The greater occipital nerve, C1-3, also gives a branch to the trigeminal nerve and ascends on the skull to the vertex. The occipital artery runs with it. There is a high prevalence of osteoarthritis in the population, one study showing 5% of patients had osteoarthritis at the atlanto-axial joint at 50–60 years old and 18% at 80–90 years old.¹⁷ Likewise there are no specific MRI findings for cervicogenic patients, degenerative changes being more common with age.¹⁴ Treatment is as for grade 1 and 2 neck pain. There is no evidence that surgery is helpful.

A differential might be migraine. Neck pain and muscle tension are common symptoms of migraine, the pain can occur in the aura, migraine or recovery phase. New migraine would be unusual in an older patient and therapy problematic. Unusual but important differential diagnoses are: primary and secondary tumours, vascular compression, Chiari- malformations, giant cell arteritis of the occipital artery. Drugs for neuropathic pain, antidepressants and anti-epileptics are an option. Biondi¹⁸ in his review of this condition found that trigger point injections with local anaesthetics may provide temporary relief and relax muscle spasm. Anaesthetic blockade may be helpful in multiple disc or spine degeneration. Greater and lesser occipital nerve blockade can be helpful in some cases. If diagnostic blockade is helpful then neurolytic

procedures could be considered.

Not surprisingly there is evidence that neck pain becomes more difficult to treat with the age of the patient,¹⁹ is more likely to be persistent or recurrent. GPs are expert in treating chronic pain and need to be vigilant for neurological complications of cervical spondylosis.

Conflict of interest: none

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