Cervical Spine

The cervical spine is a complex of 35 joints, which permits exceptional mobility.

The main causes of neck pain are vertebral dysfunction, especially of the facet joints, and traumatic strains or sprains affecting the musculoligamentous structures of the neck. Spondylosis, also called degenerative osteoarthritis, is also a common cause, especially in the elderly patient. Intervertebral disc disruption is also a relatively common problem in the cervical spine, especially at the lower levels C5-6 and C6-7.

**Serious Disorders Not To Be Missed**

Neck pain and stiffness may be a sign of meningitis or subarachnoid hemorrhage. Angina and myocardial infarction should be considered in anterior neck pain. Metastasis to the cervical spine should be kept in mind, especially with persistent neck pain present day and night.

A neurologic examination for nerve root lesions (C5 to
T1) is indicated if the clinical assessment identifies the presence of neurological symptoms and signs such as pain, paresthesia or anesthesia in the arm. Nerve root pressure is indicated by:

- Pain and paraesthesia along the distribution of the dermatome
- Localized sensory loss
- Reduced muscular power
- Hyporeflexia
Position of relief with a C7 radiculopathy

Neck Pain in Children
In children and adolescents neck pain, often with stiffness, may be a manifestation of infection or inflammation of cervical lymph nodes, usually secondary to tonsillitis or pharyngitis. It is vital to consider the possibility of meningitis. Sometimes a high fever associated with a systemic infection can cause meningism. Acute torticollis is common in this age group.

Neck Pain in Adults
In adults the outstanding causes are dysfunction of the joints and spondylosis. The painful acute wry neck can affect all ages and is considered to be caused mainly by acute disorders of the facet joints rather than disc herniation. Disc herniation can cause referred or radicular pain. In the elderly radicular pain can be caused also by impingement of the nerve root in the intervertebral foramen, which has become narrowed from the degenerative changes from longstanding spondylosis. Problems with a higher probability with increasing age include:

- Cervical spondylosis with radiculopathy or myelopathy
- Atlantoaxial subluxation complicating rheumatoid arthritis
- Polymyalgia rheumatica
- Metastatic cancer
- Pancoast's tumor of the lung
- Angina and myocardial infarction
- Pharyngeal and retropharyngeal infection and tumor.

Brachial Plexopathy
There are numerous causes of this condition and common to all of them is the constellation of symptoms consisting of neurogenic pain and associated weakness that radiates into the supraclavicular region and upper extremity. Common causes of brachial plexopathy include:

- Compression of the plexus by cervical ribs or abnormal muscles (thoracic outlet syndrome)
- Invasion of the plexus by tumor (Pancoast's tumor)
- Direct trauma to the plexus (stretch injuries)
A smoking history should suggest the possibility of Pancoast's tumor.

Thoracic Outlet Syndrome is the name given to a constellation of signs and symptoms including paresthesias and aching pain of the neck, shoulder, and arm that are thought to be due to compression of the brachial plexus and subclavian artery and vein as they exit the space between the shoulder girdle and the first rib. It is most commonly seen in women between 25 to 50 years of age.
**Myofascial Band** neck pain presents as a pulling or burning and the patient will make a sweeping motion with the fingers along the band. The band beginning in the interscapular muscles causes symptoms of pain deep under the occiput with a burning or pulling pain from the upper back to the neck. The upper trapezius band causes a pulling or burning pain from the tip of the shoulder to the mastoid bone. Torticollis can present as a myofascial band of the sternocleidomastoid muscle.

**Herniated trigger points** capable of referring pain to the posterior neck include those found in the trapezius, multifidi, levator scapulae, splenius cervicis and infraspinatus muscles. Neck pain with the head tilted to the side of pain is often due to a trigger point in the upper trapezius muscle. The patient will have an ache at the base of the neck and will push on the muscle. When a patient suffers from a "stiff neck" with markedly limited rotation, trigger points in the levator scapulae and upper trapezius muscles are usually responsible.
**Enthesopathies** of the cervical spine usually develop at the origin and insertion of the cervical ligaments. Motor vehicle accidents are a common cause of enthesopathy. If the enthesopathy recurs shortly after treatment with a return of symptoms, this is an indication for manipulation. The patient will point with one finger to the point(s) of pain.

**Superficial Fascial Disruptions** will usually present as neck spasm, and double thumb technique is used. If the neck pain is vague, diffuse, difficult to locate, or moves from one area to another, this also indicates fascial disruption. The patient may also squeeze the neck or complain of numbness/tingling of the neck.

**Synovial Joint Disruption Type of Cervical Joint Dysfunction** causes tightness in the neck and stiffness in the cervical joints. If occipital pain spreads below the occiput, it is likely to originate from the atlanto-axial or C2-3 joints. If the pain is only occipital, it is more likely to come from the occipito-atlantal joints. Pain behind the ear with the patient pointing with one finger to the rim of the atlas indicates a synovial fixation. These joint dysfunctions are treated with a neutral thrust.

**Myofascial Layer Disruption Type of Joint Dysfunction** causes a deep ache in the neck. To determine if traction or compression should be used with thrust, traction the neck. If traction lessens the neck pain, manipulation with traction is indicated. If the neck pain is aggravated by traction, this indicates the need for manipulation with compression.

Passive intervertebral joint play assessment is used to determine the level of dysfunctional spine joints. This is performed by exerting pressure against the lateral aspect of the spinous process and the tip of the transverse process of the atlas. Assessment of end feel and the patient's verbal and non-verbal indications of discomfort are used to determine the dysfunctional segments.
Before employing cervical manipulation procedures, it is important to determine if the patient can perform an active extension-rotation test without evidence of vertebral artery impairment. There is a very rare chance that cervical manipulation may cause thrombosis with subsequent brainstem infarction.

References


