Neck

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Introduction

- Careful examination of the neck begins with a thorough history and physical examination including strength and sensory testing as well as observation of gait to exclude neurologic involvement. Obtaining a history of aggravating factors is helpful in narrowing down the etiology of pain. For example, pain worse with prolonged neck flexion may signify a disc issue as opposed to pain worse with neck extension, which may suggest facet-mediated pain. Pain worse with lateral flexion causing ipsilateral neck pain may indicate neural compression due to narrowing of the ipsilateral neuroforamen.

Physical Examination

- ***Inspection*** should include the positioning of the neck in the sagittal plane and should note whether there is loss of normal cervical lordosis. The forward head position may point to a source of neck pain as there is increased work requirements of the cervical musculature due to the weight of the head by this posture [1].
- ***Palpation*** is important for evaluation of myofascial pain. Fibers that compose the upper trapezius muscles may particularly be tender in those with poor neck posturing in the head forward position. The sternal and clavicular heads of the sternocleidomastoid muscles should be palpated as well as the posterior cervical muscles which can cause referred pain to the head. Segmental evaluation of the facet joints can be performed by translating each segment from right to left or vice versa in a flexed, extended, or neutral position of the neck as well as direct palpation over the facet joints [2].
- ***Range of motion*** of the neck should be assessed in flexion, extension, lateral bending, and rotation. The atlantoaxial (C1–C2) joint accounts for 50 % of the rotation of the cervical spine while 50 % of neck flexion and extension occurs at the occiput and C1 vertebral body. Distal to C2, flexion and extension of the cervical spine is greatest at C5–C6 and C6–C7 while lateral bending and rotation occurs mostly at C3–C4 and C4–C5 [2].
- Although there remains great variability in measurement of range of motion of the cervical spine as well as varying ranges due to age of the subject, below is a sample range of degrees seen with motion of the cervical spine
  - Normal Range of Motion [3]
    - Cervical flexion: 54–69°
    - Cervical extension: 73–93°

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R.J. Yong et al. (eds.), *Pain Medicine*, DOI 10.1007/978-3-319-43133-8_11

- Lateral bending: 30–66°
- Lateral rotation: 50–94°

- The following are ***special tests*** of the cervical spine that may individually provoke or alleviate the patient's symptoms

  Spurling's Test

  This test is performed by extending the neck and tilting the head toward the painful side while applying downward pressure to the top of the patient's head. This test is considered positive if pain radiates into the ipsilateral limb at which the head is rotated potentially indicating a cervical radiculopathy. Prior studies have demonstrated a sensitivity of 30 % and specificity of 93 % when evaluating cervical radiculopathy [4].

  Caution must be used during this test as axial pressure may worsen the radiculopathy. The test may be done initially with no axial pressure, followed by gentle pressure to carefully elicit radicular symptoms.

  Shoulder Abduction test

  This test is based on the principle that by raising the arm above the head, there is relief of ipsilateral radicular symptoms caused by nerve root compression. A positive test is signified by a reduction or relief of radicular arm symptoms by active or passive abduction of the ipsilateral shoulder. This test may also be helpful to distinguish shoulder pathology such as a rotator cuff related pain in which shoulder abduction may aggravate the patient's pain.

  Neck distraction test

  This test is performed with the patient laying supine with the examiner placing one hand under the chin of the patient and the other hand around the occiput and slowly lifting the patient's head. Pain relief with this maneuver is considered to be a positive test, indicating relief of pressure on the cervical nerve root.

  Hoffman's Sign

  The origin and clinical significance remains disputed, however it is postulated that a positive sign indicates an upper motor lesion or damage to the spinal cord due to conditions such as a cervical myelopathy. This test is traditionally described as follows: Support the subject's hand so it is relaxed and the middle finger is grasped in partial extension. The nail of the middle finger is snapped by the examiner's thumb nail and the sign is considered positive if there is flexion of the thumb or index finger. There is disagreement on whether the sign is positive if only the thumb flexes.

- Neck pain can be nonspecific, but commonly recognized syndromes of neck pain include cervical postural syndrome, acute nerve root pain, whiplash injury, and acute wry neck. Cervical postural syndrome is characterized by head forward and rounded shoulder position which is commonly seen in sedentary occupations. These patients may present with aching pain across the shoulders and neck that is relieved by movement. Patients subsequently develop tightness in the upper trapezius and pectoralis muscles while presenting with weak and inhibited deep neck flexor and lower trapezius muscles. Physical therapy aimed at adjusting posture and strengthening the weakened muscles often improves pain associated with this syndrome.

Question

1. Where is the most cervical flexion and extension range of motion seen? What about for cervical rotation? Atlantoaxial (C1-C2) joint and atlanto-occipital joint, respectively.
2. What is the significance of the Hoffman's sign? May signify an upper motor neuron process.

References

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Suggested Reading

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