Evaluation and Management of Neck Pain in Urgent Care

Urgent message: The differential diagnosis of neck pain is broad. A systematic and effective approach is required to rule out life-threatening conditions.

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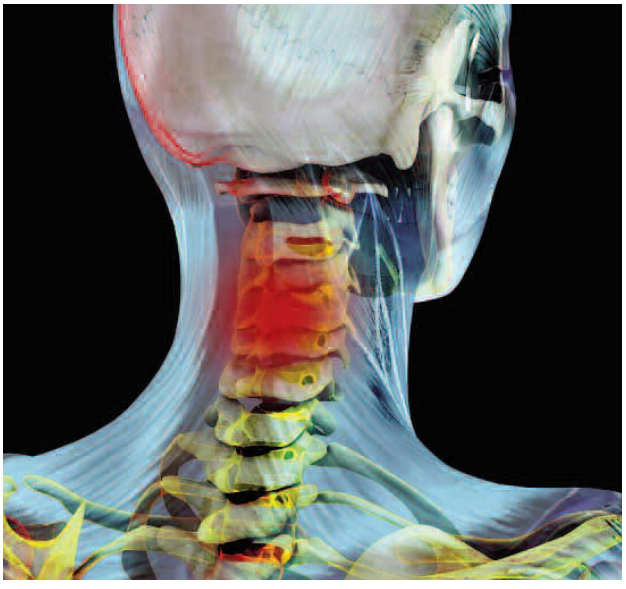
Neck pain is a frequently encountered complaint in urgent care. About two-thirds of the population will experience neck pain at some point in their lives.[1] Many patients experience a sense of debilitation with every movement of their neck.

Patients may perceive neck pain anywhere in the posterior aspect of the cervical spine, ranging from the superior nuchal line to the spinous process of the first thoracic vertebrae.[2] Management of acute neck pain in an urgent care clinic can be challenging because a determination first must be made about whether the condition is life-threatening to the patient.

The differential diagnosis of neck pain is broad, as indicated by the conditions listed in **Table 1**.

Because of the wide range of potential diagnoses and their significance, it is important for an urgent care provider to have a systematic and effective approach for evaluating and managing neck pain, such as that described in this article.



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Determining the Origins of Cervical Problems

Neck pain can be classified into one of two groups, based on its origin. In some patients, the pain arises mainly from the joints, ligaments, and muscles of the neck, whereas in others, the signs and symptoms represent radiculopathy (that is, they are attributable to a single nerve root) or myelopathy (signs or symptoms due to a spinal cord lesion, stenosis, or compression).[3] **Table 2** summarizes the important differences between symptoms of mechanical pain and neck pain associated with radiculopathy or mylopathy.

Patients with radiculopathy often present with neck pain that is intense and sharp and complain of a burning sensation that may radiate to the trapezius muscle, periscapular area, or down each arm. Weakness and paresthesia may occur, even weeks after the pain's initial onset. Neck pain that progresses insidiously is common with myelopathy, and these patients may complain of dexterity problems (clumsy hands), gait disturbances,

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and sexual or bladder dysfunction.[3] A thorough history and physical examination are essential because management of neck pain differs depending on whether it is from injury involving the joints, ligaments, and muscles or involves radiculopathy or myelopathy.

History and Exam

An urgent care provider's clinical approach to the patient with neck pain first should take into consideration whether the underlying etiology is life-threatening, such as fracture, dislocation, instability, or a structural injury that requires special care and surgical intervention.[4] A history must be obtained, including onset, location, and duration of the neck pain, and chronology as well as information on a recent or remote history of trauma. Any precipitating factors, associated symptoms (headaches, stiffness, and deformities), neurologic symptoms (weakness, numbness, paresthesia, changes in sensation, gait or vision), or constitutional symptoms (fever, weight loss) should be noted.[3]

Inquiries about past medical history should focus on known neck disorders (osteoporosis, osteoarthritis, disk disorders), surgery, risk factors for infection (such as immunosuppression, intravenous drug use, penetrating trauma or bacterial infections), prior episodes of neck pain, past diagnostic studies and treatment, and comorbid conditions (such as arthritis or cancer).[3,5]

Physical examination should begin with evaluation of the patient's vital signs, posture, movement, and facial expression. Evidence of weight loss, pallor or adenopathy should also be noted. Neck pain can cause "splinting of the head" during position changes, therefore, active and passive range of motion should be assessed with rotation (chin to shoulder), lateral flexion (ear to shoulder), and flexion-extension.[3]

Lesions associated with inflammatory or neoplastic disorders usually are widespread and cause symmetrical restriction of pain and movement, whereas asymmetrical lesions are common with many types of mechanical neck pain, and the result is limited or painful movements.[3] Palpate the structures of the head and neck for any bony abnormalities or deviations from the midline and evaluate for spinal and trigger point tenderness.[4,6] A thorough systematic musculoskeletal and neurologic examination includes inspection and palpation of the posterior cervical triangle, the supraclavicular fossa, carotid sheaths, anterior neck and the extremities. Sensory, motor, and reflex testing should be conducted bilaterally, while noting any neurologic deficits. This enables one to determine the level of the sensory and motor involvement.

Table 1. Differential Diagnosis of Neck Pain

- Biomechanial neck disorders
- Traumatic events (i.e. whiplash, hyperflexion-hyperextension injuries)
- Vertebral degeneneration
- Disk herniation
- Cervical spondylosis and stenosis
- Infiltration (metastatic cancer/spinal cord tumors)
- Inflammation
- Myofascial pain syndrome
- Temporal arteritis
- Infection
- Compression (epidural hematoma/abscess)

Table 2. Distinguishing Between Mechanical Pain and Pain Associated with Radiculopathy or Myelopathy

Hallmarks of Mechanical Pain

- Deep, dull ache, often episodic
- Localized, asymmetric ligament and muscle pain
- Neck movement aggravates symptoms; rest provides relief
- No history of specific injury
- Stiffness accompanies pain
- Pain referred from upper cervical spine toward head and from lower segments to upper limb girdle

Hallmarks of Radiculopathy or Myelopathy

- Sharp, intense, "burning" root pain
- Headache with involvement of upper cervical roots
- Neck hyperextension exacerbates symptoms
- Radiation to trapezius, scapula, or arm
- Numbness and motor weakness in myotomal pattern
- Shock-like sensations down spine to extremities

For example, A C5-C6 root lesion will often elicit tenderness over the brachial plexus at the Erb point in the supraclavicular fossa, whereas a C8-T1 root lesion will often cause tenderness over the ulnar nerve at the elbow.[3] Bilateral or multilevel involvement usually implies a serious pathology.[3]

Table 3 lists the cervical roots and their corresponding sensory and motor functions and reflexes. [3]

Sensory symptoms of pain are difficult to evaluate, especially when motor signs are absent. That is often the case with cervical radiculopathies because of the discrete separation of the motor and sensory nerve roots at the cervical neural foramina and can explain motor-sparing deficits despite severe sensory symptoms.[3]

Provocation tests for neck pain can be performed and are useful in reproducing symptoms of radicular involvement. The Spurling test occurs when the practi-

Table 3. Signs and Symptoms of Cervical Radiculopathy

Neck, scalp
- Disc space and its cervical root: C1-C2 (disk space); C2 (cervical root)
- Sensory abnormality: scalp
- No associated motor weakness or altered reflexes

Neck, shoulder, and upper arm
- Disc space and its cervical root: C4-C5 (C5)
- Sensory abnormality: Shoulder
- Associated motor weakness: Infraspinatus, deltoid, and biceps muscles
- Associated altered reflex: Reduced biceps reflex

Neck, shoulder, upper medial, scapular area, proximal forearm, thumb, and index finger
- Disc space and its cervical root: C5-6 (C6)
- Sensory abnormality: Thumb and index finger, and lateral forearm
- Associated motor weakness: Deltoid, biceps, pronator teres, and wrist extensors muscles
- Associated altered reflex: Reduced biceps and brachioradialis reflex

Neck, posterior arm, dorsum proximal forearm, chest, medial third of scapula, and middle finger
- Disc space and its cervical root: C6-7 (C7)
- Sensory abnormality: Middle finger and forearm
- Associated motor weakness: Triceps and pronator teres muscles
- Associated altered reflex: Reduced triceps reflex

Neck, posterior arm, ulnar side of forearm, medial inferior scapular border, medial hand, ring, and little fingers
- Disc space and its cervical root: C7-T1 (C8)
- Sensory abnormality: Ring and little fingers
- Associated motor weakness: Triceps, flexor carpi ulnaris, and hand intrinsics
- Associated altered reflex: Reduced triceps reflex

tioner applies gentle pressure to the patient's head during extension and lateral rotation, which will reproduce radicular pain with radiation into the ipsilateral (same side) of the upper extremity. The abduction relief test is done by having the patient place his/her hand of the affected upper extremity on the top of the head to obtain relief. That may indicate a soft disk protrusion causing radicular pain.[3,4] Also, if neck pain occurs on the side away from the head movement, a ligamentous or muscular source of the pain should be suspected because these structures are stretched.[4]

Early cervical myelopathies can be recognized only if the examiner looks for them during a complete neurologic examination. Findings in patients with myelopathy include hyperreflexia, upper extremity weakness, impaired fine hand movement, and upper extremity spasticity.[3] For example, if a cord compression is suspected, the Lhermitte sign can be elicited. This an electric shock–like sensation that radiates down the spine and often into the extremities when the neck is flexed. If there is concern for an upper motor neuron lesion, a Hoffman sign can be elicited. The test for this is to flick the tip of the middle finger as the hand is relaxed in a neutral position. A positive response is flexion of the patient's thumb and index finger into a pinching motion.[3]

Neck pain may also represent pathology in the lymph nodes, salivary glands, or thyroid gland and an urgent care provider should be conscious of those possibilities. Auscultate the carotid and the subclavian arteries for bruits, assessing for potential cerebral insufficiency, and the latter for a thoracic outlet or vascular steal syndrome. Examine the temporal artery and palpate for signs of inflammation or tenderness, because temporal arteritis can cause neck and shoulder pain.[3]

Table 4 lists selected "red flags" suggestive that neck pain has a serious underlying etiology that may require urgent attention.[5,6] Evaluation for such problems should begin with initial patient triage.[7]

If you have any suspicion of a serious unstable life-threatening condition in a patient with neck pain, have the patient transported to the nearest emergency department for further management. If you are concerned about a cervical fracture, dislocation, or suspected instability, place a hard neck collar on the patient for stabilization before transport, or (if a collar is unavailable) have the first responder stabilize the patient's neck manually with both hands.

Imaging

The diagnostic need for imaging studies in a patient with neck pain depends on the clinical condition suspected and the duration of pain. Acute symptoms (ranging from days to weeks) of uncomplicated, nonradicular, nonmyelopathic, atraumatic neck pain usually require no imaging studies because the cause is likely benign and the treatment would be conservative.[3]

Plain films of the cervical spine may reveal pathologic changes in the bones or may indicate the potential for instability. There may be some benefit in obtaining a three-view cervical spine radiograph in patients with chronic neck pain symptoms (ranging from weeks to

Table 4. Selected Neck Pain 'Red Flags' Suggestive of Serious Etiology

- New-onset pain in patient younger than age 20 or older than age 55
- Patient history of neck surgery or violent trauma
- Dizziness/blackouts with movement
- Intractable/increasing pain
- Insidious progression
- Sensory changes in the hands
- Symptoms suggestive of neurologic changes (e.g., problems with walking or continence)
- Unexplained weight loss
- Lymphadenopathy

months), those who have neck pain and a prior history of malignancy or remote neck surgery, and patients with neck pain and any preexisting spinal disorders, such as rheumatoid arthritis, ankylosing spondylitis, or psoriatic spondyloarthropathy.[3]

If a degenerative disease is suspected, oblique views of the cervical spine may show cervical foramina and disk space narrowing, osteophyte formation, and any facet abnormalities. A flexion-extension radiogram may be useful if instability is suspected in a patient with rheumatoid arthritis or other inflammatory conditions. No other imaging is needed in patients whose radiographs show normal degenerative changes and who have no neck instability and no neurologic signs or symptoms.[3]

To help in diagnostic assessment of a patient seeking care for neck pain as a result of trauma to the neck, the Canadian C-spine Rule (CCR) (**Figure 1**) and the Nexus Low Risk Criteria (NLC) can be used.[8] These algorithms are indicated for patients who are alert and low risk (history not indicating a serious debilitating injury such as major motor vehicle accident) and can be helpful in determining whether diagnostic imaging should be obtained.[4]

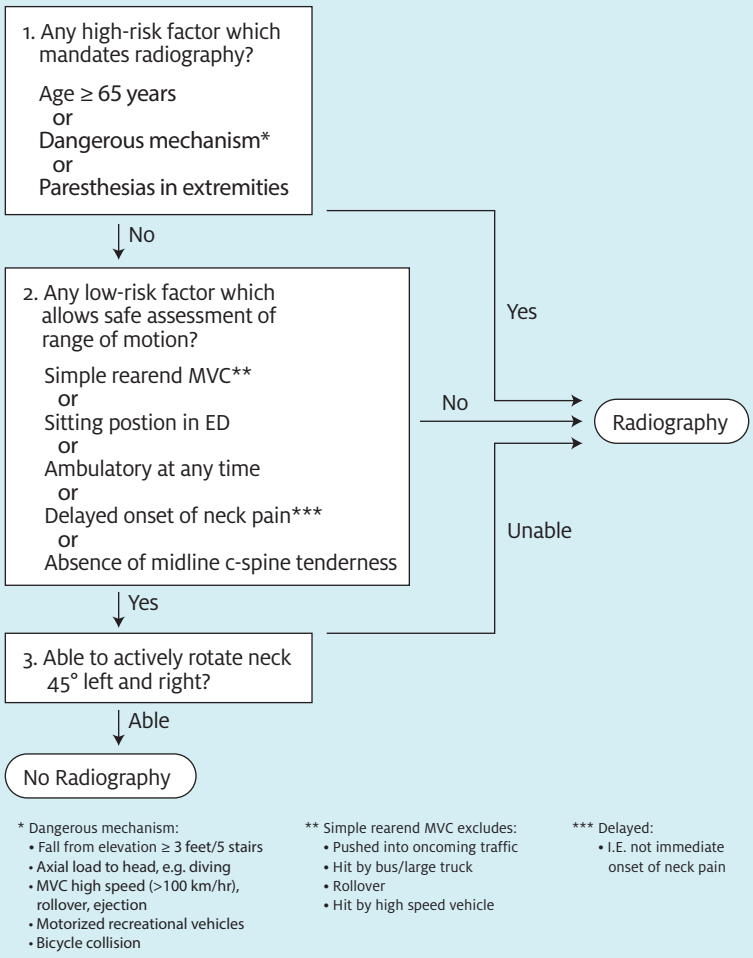
If radiography is indicated, computed tomography (CT) of the neck outperforms the standard radiograph (3 views) in detecting abnormal pathologies. It achieves higher predictability and accuracy and is recommended for patients with significant cervical trauma.[4]

When patients have neck pain with neurologic signs or symptoms, magnetic resonance imaging (MRI) would also be indicated. MRI also is indicated when plain radiographs show bony or disk margins destruction, cervical instability, or abscess. MRI can demonstrate accompanying soft tissue changes, such as epidural hematomas, and any traumatic disc protrusions.[6] The urgency for MRI depends on the patient's clinical condition and potential deterioration. MRI is often difficult to obtain on an emergency basis. Therefore, CT is usually the first modality of choice for a suspected underlying life-threatening condition in an urgent care setting.[4,6]

Neck Pain Presentations

Mechanical neck disorders can involve neck strain, neck sprain, hyperextension strain, acceleration-deceleration injury, hyperextension-hyper-

Figure 1. The Canadian C-Spine Rule for alert (Glasgow Coma Scale score = 15) and stable trauma patients where cervical spine injury is a concern



flexion injury, and whiplash. The majority of urgent care cases are a result of motor vehicle accidents, falls, sports and work-related injuries.[3]

A whiplash injury is a result of a sudden acceleration-deceleration event that occurs when the patient is in a stationary vehicle while it is struck from behind. These patients often complain of pain and stiffness. On physical examination, there may be tender paracervical muscles with a decrease in range of motion. The pain associated with a whiplash injury is often delayed for a number of hours after the accident. Other complaints may include headache, vertigo or dizziness, spatial instability, dysphagia, or hoarseness. If neurologic findings are noted after a whiplash injury, then brain/spinal cord injury or carotid and vertebral artery dissection should be considered and the patient should be transported to the nearest emergency department or trauma center.[3]

A major complication from a hyperflexion-hyperextension injury is central cord syndrome. This syndrome can occur in the presence of cervical spondylosis, spinal stenosis, ankylosing spondylitis, or a disk herniation. Patients with central cord syndrome have weakness that is disproportionately greater in the upper extremities than in the lower extremities and accompanied by variable sensory loss.[3]

Cervical disk herniations can produce either acute radiculopathy or occasional myelopathy. The symptoms of acute cervical disk herniation include neck pain, headache, pain radiating to the shoulder and along the medial scapular border, and dermatome pain and dysesthesia in the spinal root distribution to the shoulder and arm. Patients with herniation will have motor deficits presenting as fasciculations, atrophy, weakness in the dermatome distribution of the spinal root, and loss of deep tendon reflexes. Those with cervical myelopathy, in contrast, present with hyperreflexia of the lower extremities, a positive Babinski sign, and rarely, loss of any sphincter control.[3]

Cervical spondylosis can present as loss of cervical flexibility, neck pain, occipital neuralgia, radicular pain, or progressive myelopathy and it is progressive and degenerative. It is caused by degeneration of the disks, ligaments, and facet joints. Osteoarthritis of the neck and degenerative disk disease are common clinical terms that are used for this condition. Cervical spondylosis is diagnosed on the basis of osteophytes, disk space narrowing, or facet disease on cervical radiographs combined with symptoms. Osteophyte spurs encroaching on the spinal canal can produce a cervical myelopathy.[3] Spinal stenosis is usually a degenerative disease resulting from osteoarthritis. MRI can reveal a narrow spinal canal, which would confirm such a diagnosis.[6]

Metastatic cancer should always be considered and suspected in patients with chronic neck pain. Spinal cord compression may be the first sign of cancer. The patient may complain

of unremitting night pain, which can be indicative of a malignant process. Neck pain can be caused by metastasis to the cervical spine of lung, breast, or prostate cancer, lymphoma or multiple myeloma.[3] Plain radiographs have a poor sensitivity and a 10% to 17% false-negative rate in detecting spinal metastases but can reveal bony destruction in the vertebral bodies, lytic lesions at the pedicles, and pathologic compression fractures. MRI is the gold standard in detecting spinal metastatic disease and cord compression.[3]

Radiculopathy can be confused with myofascial pain syndrome because both cause chronic neck pain. Psychological distress can contribute to the conversion of emotions into bodily complaints, such that nonpainful sensations are perceived as painful. Patients with such concerns have pain that is not on a dermatomal pattern, but rather, occurs in the neck, scapula, and shoulder. The neurologic examination of a patient with myofascial pain syndrome is normal.[3]

A patient with cervical epidural hematoma will present with neck pain followed by symptoms and signs of cord compression. That should be considered in someone taking anticoagulants or in a child with hemophilia.[3]

Management

Treatment of neck pain differs depending upon whether the condition is simple, involves radiculopathy, or involves myelopathy.[3]

Neck pain without radiculopathy or myelopathy

Most causes of neck pain without any clear underlying pathology improve with minimal intervention. Patients should be advised to avoid any activities that would exacerbate the pain and to return to their daily routines. In the urgent care clinic, if there is no contraindication, a patient can be given a ketorolac (adult: 30 to 60 mg) intramuscular injection or another oral nonsteroidal anti-inflamatory drug (NSAID) to help alleviate the pain. On discharge, the patient can be given a prescription for a NSAID, muscle relaxants, or a short course of oral opiates and encouraged to make a follow-up appointment with a primary care physician within 1 week to determine the need for any future physical or manipulative therapies.[3]

Patients with acute neck pain following a whiplash injury may also benefit from initial treatment with NSAIDs, muscle relaxants, or a short course of opiates. They should be advised to maintain neck motion as tolerated and to return to their daily activities.

Treatment of neck pain in patients with a rheumatologic or neoplastic condition depends on the stability of the cervical spine and/or presence of cord compression. Analgesic medications with a course of oral glucocorticoids may be given if neither instability nor cord compression is present. However, admission and neurosurgical consultation should be considered if either complication is present.[3]

Providing relief from muscular tension and addressing psychobehavioral issues both should be considerations when prescribing treatment for a patient whose neck pain is a result of a myofascial pain syndrome. Include muscle relaxants and a short course of non-opioid analgesics for severe symptoms in initial treatment and advise follow-up with a primary care physician so that therapy can be optimized.[3]

Depending on the patient's history and clinical condition, osteopathic manipulation may be beneficial. Certain soft manipulative techniques can alleviate some of the discomfort from a neck strain or sprain. Patients usually present with tenderness mostly at the paracervical muscles, but tenderness also can occur at the sternocleidomastoid muscles. The Jones Strain-Counter-Strain technique is a simple treatment that can be used in an urgent care setting. It involves locating tender points along the neck's anterior and posterior muscles, assessing the patient's pain level, and applying pressure at the specific tender points when the neck is at a position of comfort. The pressure lasts about 90 seconds and its goal is to release the muscle tension in the neck.[9]

Radiculopathy-associated neck pain

As long as a patient has no evidence of myelopathy, initial treatment in an urgent care setting can consist of conservative management, such as activity modification, oral medication (anti-inflammatory agents, opioids analgesics, muscle relaxants, and a course of a self-weaning steroid dose pack). Immobilization with a soft or semihard cervical collar also can be considered. A patient should be encouraged to schedule a follow-up appointment within 3 to 5 days with his or her primary care physician for consideration of a specialist consultation, electrodiagnostic evaluation, and additional rehabilitation interventions. Indications for hospital admission include acute or progressive symptoms, signs of myelopathy, progressive upper extremity weakness, and intractable radicular pain that is unresponsive to outpatient treatment.[3]

Myelopathy-associated neck pain

Treatment decisions for patients with symptoms and signs of cord compression should be made in consultation and

conjunction with a specialist. Cervical spondylotic myelopathy is the condition in the spondylosis spectrum that causes the most impairment and disability. A patient with such a problem should be referred to a neurosurgeon for possible consideration of decompressive surgery. Additional therapy, such as steroids, can be prescribed along with the neurosurgical consultation.[3] Once again, if there is any concern about progressively worsening symptoms, then a direct consultation with a specialist and admission to a hospital are required.

Conclusion

Neck pain is a complaint commonly encountered in urgent care. The discomfort can be debilitating to a patient and it is the provider's responsibility to appropriately evaluate and manage the condition. A thorough history and physical examination are essential, as well as heightened awareness of any "red flags" that signal an underlying serious condition. Applying such a systematic approach ensures that medical decisions and treatment options are appropriate to the individual patient who presents with neck pain. ■

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