### Evaluation and Management of Posterior Neck Pain

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**Learning Objectives**

- Correlate anatomy and the patients’ signs and symptoms of neck pain in order to locate the neuromusculoskeletal lesion.
- Enable differential diagnosis of neck pain.
- Elicit a focused neuromusculoskeletal patient history for neck pain.
- Provide “Evidence-based and patient-centered” evaluation procedures.
- Organize a clinical thought process while performing an orthopedic examination.
- Identify injured and painful tissues through careful assessment and intelligent use of orthopedic testing.

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### Incidence of Neck Pain

- 10% of people will have neck pain in any given month.
- 1% of all visits to primary care.

### Cervical Anatomy

![Cervical Anatomy](image)
Key to Success

• “Diagnosis is the key to successful treatment!”

Differential Diagnosis
Biomechanical Causes

• Axial Neck Pain
• Whiplash Associated Disorder
• Radiculopathy
• Cervical Myelopathy
• Infection
• Neoplasm

Axial Neck Pain

The result of the complex interaction of muscular and ligamentous factors related to posture, sleep habits, ergonomics such as computer monitor and bifocal position, stress, chronic muscle fatigue, postural adaptation to other primary pain sources (shoulder, temporomandibular joint, craniocervical), or degenerative changes of the cervical discs or facet joints.

Alan B. Douglass, MD, and Edward T. Bope, MD

Axial Neck Pain

• Axial neck pain is the most common cause of neck pain and has a high rate of spontaneous resolution.
Whiplash Associated Disorder

Is a special case of acute or subacute neck pain resulting from acceleration/deceleration transfer of energy to the neck.


Whiplash Associated Disorders (WAD)

- In the United States, 1 million cases of WAD occur annually as a result of motor vehicle accidents.


Cervical Radiculopathy

The pathology underlying the symptoms is heterogeneous. Seventy to ninety percent of cases are associated with foraminal encroachment by degenerative bony changes; herniated disk material is present in most of the remainder.


Cervical Radiculopathy

Is motor and/or sensory changes in the neck and arms resulting from extrinsic pressure on a cervical nerve root, usually by osteophytes or disk material.


Myelopathy

Is the manifestation of long tract signs resulting from a decrease in the space available in the cervical canal for the spinal cord.
Myelopathy

• A number of factors contribute to extrinsic pressure, including the congenital cord diameter, osteophytes, protruding disk material, dynamic changes in canal diameter and the cord itself, and the vascular supply to the cord.

A Call to Revolutionize Chronic Pain Care in America: An Opportunity in Health Care Reform

• The Mayday Fund 2009

Chronic Pain Treatment

• Current systems of care do not adequately train or support internists, family physicians and pediatricians, the other health care providers who provide primary care in meeting the challenge of treating pain as a chronic illness.

Coordination of Chronic Pain Care

• It is an unusual patient who has access to coordinated interdisciplinary therapy for ongoing pain symptoms.

Chronic Pain Care

• Instead of receiving effective relief, patients with persistent pain often find themselves in an endless cycle, seeing multiple health care providers, including many specialists in areas other than pain, who are not prepared to respond effectively.
Chronic Pain Care

- Primary care providers often receive little training in the assessment and treatment of complex chronic pain conditions.

Chronic Pain Care

- They tend to work under conditions that permit little time with each patient and few options for specialist referrals.

Chronic Pain

- Historically, the health care system has failed to recognize chronic pain as a legitimate condition. However, it is clear that persistent pain is a complex illness that has many causes and affects every part of life, and in the process, exacts enormous social costs.

Cervical Spine Assessment Protocol

- History
- Observation
- Physical examination
  - Inspection
  - Palpation
  - Range of motion
  - Orthopedic maneuvers/Special tests

History of Present Illness

- The L, M, N, O, P, Q, R, S, T process is suggested for all patients presenting with neuromusculoskeletal conditions.

History Taking and Observation

- Rust’s sign
- Dejerine’s sign
- Bakody’s sign
- Lhermitte’s sign
**Inspection**
Observation of behavior

- Posture
- Body movements
- Gait
- Speech

**Rust’s Sign**
- May grab head upon removal of cervical collar
- May use hand to lift head when rising from supine position

**Bakody’s Sign**
Sign of cervical radiculopathy

**Lhermitte’s Sign**
Cervical myelopathy
Multiple Sclerosis

**Orthopedic Palpation**

- Static palpation
- Flat palpation
  - Superficial
  - Deep

**Cervical Range of Motion Testing**
- Flexion
- Extension
- Rotation (R/L)
- Lateral Flexion (R/L)
Range of Motion Evaluation
Active, Passive and Restricted

- **Check motions**
  - Symmetrical
  - Free of restriction or aberrant motion
  - Pain free or provocative movement
  - Crepitation

Range of Motion Evaluation
Active, Passive and Restricted

- **Active** checked first
  - General and least specific
- **Passive tests** for ligament damage
- **Resistive** tests for muscle damage
  - Passive and resistive for involved joints only.

Orthopedic Test

An orthopedic test is a provocative maneuver (most often) involving stretching, contracting or compressing of tissues in order to duplicate the patient's pain and identify the involved tissues.

Orthopedic Maneuvers

- **Anatomical structure tests**
  - Dural tension
  - Foraminal canal patency
  - Spinal canal patency
  - Ligamentous
  - Muscle
  - Tendon

O’Donoghue’s Maneuver

- First cervical special test recorded following range of motion testing.

Valsalva Maneuver

- First special test performed for spine conditions
- Valsalva maneuver for IVD syndrome or tumor (space occupying lesion)
Shoulder Abduction Test or Arm Elevation Test

Bakody’s sign for nerve root irritation is also known as “Abduction Relief Sign”

Cervical Compression Tests

- Foraminal compression (passive)
- Jackson’s
- Spurling’s (in favor)
- Extension/Flexion

Cervical Compression Tests

- Positive findings all indicate radicular pain

Posterior Cervical Compression

- Imbrication of zygapophyseal joints with increased pain
- Reduction of HNP and pain

Cervical Distraction Test

- Distraction test for nerve root, facet, or myospasm
- Positive test relieves pain
- Negative test increases pain

Shoulder Depression Test

- Contralateral neck/arm pain indicates nerve root or joint
- Ipsilateral cervical/shoulder pain indicates muscle
Motion Radiography

MRI

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ICD 9 Codes

- Axial Neck Pain 723.1
- Whiplash Associated Disorder 847.0
- Post-traumatic Chronic Pain 338.21
- Cervical Radiculopathy 723.4
- Cervical Myelopathy 721.1

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