Disclosures

None
Learning Objectives

- Identifying a whiplash or whiplash associated disorder.

- Introduce current evidence-based understanding of whiplash and whiplash associated disorders.

- Differentiate the difference between Whiplash Classifications

- Reviewing treatment outcomes and prognosis associated with Whiplash classifications.
Health Care and Community Relevance

MVAs causing injury in Nebraska 2020:

Motor vehicle related accidents: 9,847
People injured: 14,100

Prevalence of Whiplash injuries:

7.7% in men, 9.6% in women (2020 G. Kumagai)
What is whiplash?

Quebec Task Force definition:
- An injury caused by an acceleration-deceleration mechanism of energy transfer to the neck.

- S-shaped curve
Type of Injuries

Mechanical potential to cause injury to:

- cervical bone
- intervertebral disks
- spinal cord
- nerve roots
- ligaments
- cervical muscle

Most common injury:

- Strains and dysfunctions of cervical muscle
Whiplash Associated Disorders: Symptoms

Symptoms can arise immediately following injury or delayed

- Delay time has been noted up to 72 hours

Primary Symptoms:

- Neck and shoulder pain, widespread tenderness, stiffness with movement
Whiplash Associated Disorders: Symptoms

30 to 50% of whiplash injuries will develop secondary symptoms including any number of the following:

(Neurological)
- Radicular UE pain/numbness/tingling, vertigo, visual and auditory disturbances, Photophobia, dysphonia, dysphagia, and headaches

(Parasympathetic)
- Palpitations, chest tightness, nausea, gastrointestinal disturbances, hyperhidrosis, cold sensation, poor circulation, and unstable blood pressure

(Psychological)
- Depression, distraction, obsession, irritability, memory loss, anxiety, and insomnia
QTF’s Classification System

Purpose:
- To indicate severity of injury
- To help set prognosis expectations
- Interdisciplinary communication
- Patient education
## QTF: WAD classification

<table>
<thead>
<tr>
<th>QTF Grade</th>
<th>Symptoms</th>
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| WAD 0     | - No physical signs of dysfunction  
           | - No complaints of pain |
| WAD I     | - No physical signs of dysfunction  
           | - Complaints of neck pain/tenderness |
| WAD II    | - Musculoskeletal signs and symptoms  
           | - Complaints of neck pain/tenderness |
| WAD III   | - Neurological signs and symptoms  
           | - Musculoskeletal signs and symptoms  
           | - Complaints of pain, often radiating into and down the arm |
| WAD IV    | - Fracture or dislocation (revealed by radiographic studies)  
           | - Complaints of pain |
Classification: WAD 1

Symptoms:
- Neck pain and stiffness

Signs:
- No significant musculoskeletal findings

Normally resolves within 2 to 3 weeks of neck rest and anti-inflammatory medication

Physical Therapy not required

Note: Symptoms that persist beyond this time require reassessment for musculoskeletal injury
Classification: WAD 2

Symptoms:
- Neck pain and stiffness

Signs:
- Significant musculoskeletal findings
  Examples: decreased cervical ROM, palpable cervical muscle spasms

Normally resolves in 3 weeks to 3 months with outpatient treatment including:
- Physical Therapy to address ROM, strength, joint mobility, and pain
- Beginning therapy as soon as possible to improve outcomes

Cases lasting longer than 3 months are unlikely to resolve with continuation of treatment
Classification: WAD 3

Symptoms:
- Neck pain, shoulder pain, radicular pain the UEs

Signs:
- Significant musculoskeletal findings and Neurological findings
  Examples: UE numbness and tingling with cervical or shoulder movement

Normally resolves in 1 month to 3 months with outpatient treatment including:
- Physical Therapy to address ROM, strength, joint mobility, and pain
- Beginning therapy as soon as possible to improve outcomes

Cases lasting longer than 3 months are unlikely to resolve with continuation of treatment
Classification: WAD 4

Symptoms:
- Neck pain and usually instability

Signs:
- Fracture or dislocation confirmed with Radiography

Medical emergency and may require surgical intervention

Physical Therapy necessity is determined by Orthopedic surgeon based on individual patient needs.
Chronic Symptoms Likelihood

High evidence

- Pain level: ≥ 6/10 on NPS
- High Neck Disability Index ≥ 15
- Classification: WAD II and WAD III

Moderate evidence

- PTSD resulting from same injury
- Cold hypersensitivity
- Hyperalgesia/ mechanical hypersensitivity
No Effect on Outcomes

- Angular deformity of neck
- Impact direction
- Seated position
- Awareness of collision
- Head rest in place
- Vehicle speed
Treatment Approach

Not one size fits all
- Heterogenous presentation and approach

If WAD 1: let healing occur naturally (i.e. 1x/week)
- Early education, neck ROM exercise, encouragement of non-provocative activity

If WAD 2 or 3 trajectory, see more frequently (i.e. 2-3x/week)

Comprehensive evaluation and assessment is key

No cervical collar
Acute PT Treatment

Clinicians should provide multimodal approach that includes:
- Cervical traction, and cervical and thoracic mobilizations
- Cervical ROM exercises
- Upper extremity strengthening
- Scapular mobility exercises

Education on:
- Returning to pre-accident, non-provocative activity
- Symptom education
- Postural education, and HEP
Subacute PT Treatment

- Continuation on Acute treatments if necessary
- Provide neck and shoulder girdle endurance exercises
- May provide cervical manipulations or mobilizations, traction to improve joint mobility AROM, and pain
Chronic Treatment

Provide multimodal approach
- Mixed exercises for scapulothoracic and cervical regions
- Modalities - dry needling, laser, TENs, infrared.
- Mobilization combined with individualized, progressive, submaximal exercise along with strength, endurance, flexibility and coordination
- Pain education, symptom education

Education on fear avoidance behaviors
Modalities for Chronic Symptoms

Low frequency electric stimulation therapy and far-infrared irradiation therapy

- Significantly improved chronic neurological and somatic WAD symptoms

- Researchers found an 80% recovery rate of 22 representative symptoms
Summary

Classifying whiplash injuries:
- Determines severity of injury
- Guides treatment and prognosis
- Enhances interdisciplinary communication and expectations
- Enhances patient education and expectations

Early intervention leads to better outcomes

Symptom education and individualized tolerance based exercises are imperative to treatment
References


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