

Cervical Whiplash: Considerations in the Rehabilitation of Cervical Myofascial Injury

Canadian Family Physician

Volume 32, September 1986

Arthur Ameis, MD

Dr. Ames practices physical medicine and rehabilitation, and is on the Faculty of Medicine at the University of Toronto.

SELECTED REVIEW:

In whiplash mechanism, the protective and adaptive biologic mechanisms [muscular reflexes] against movement injury seem to often fail.

"If the forces of deceleration are considerable, as they are in a head-on collision, there may be lap bruising and knee-cap injury from dash impact."

Because of the lap belt, the "low back or the thoraco-lumbar junction may be hurt by being suddenly arched or flexed as the torso moves in an arc while the pelvis is fixed from below."

"The ultimate acceleration of the head is greater than the peak acceleration of the car."

During a rear-end collision, head extension can reach 122°, while the maximum physiologic extension is 75°; "this differential explains, in part, the relatively greater severity of extension injury."

"Most of the initial movement is completed before the nervous system can react purposefully."

If the impact forces are high enough, the shoulder or chest will be bruised by the shoulder belt.

Seat belts do not offer much protection in side collisions.

"For the elderly, neck injury can be very serious. The degenerative spine—over age 50, 50% of the patients will have some radiographic changes, and over age 65, two-thirds will show such changes—is biomechanically 'stiffer', behaving more like a single long bone than like a set of articulating structures. Deforming forces are less evenly dissipated, and more damage is done."

For the elderly, this increased stiffness may cause vestibular contusion and "vestibular dysfunction, symptomatic as dizziness. Proprioceptive signals from the neck cannot compensate if the neck is injured. The brain no longer knows the head's location in space, leading to vertigo."

Additional accidents increase the risk of degenerative change and degenerative disease.

"Each accident must be analysed in its own right. Auto speed and damage are not reliable parameters." "Age of patient, angle of head at impact, and impact force and direction are relevant."

The symptoms of neurogenic thoracic outlet syndrome may appear months after initial injury.

"The severity of injury does not seem to correlate with time of onset [of symptoms]."

Mild (first degree spinal myofascial strain) soft tissue injuries to the neck "may develop immediately or more slowly after injury, will heal rapidly, with minimal work time loss and a symptom-free status about six months post injury. 'Mild' may inadvertently connote the trivial."

Moderate (second degree spinal myofascial strain) may develop symptoms over 24 hours. "These persons will experience serious problems with substantial work loss of weeks or months, but will recover a normal lifestyle within six months to two years."

"Within one year, about 50% of patients in the 'moderate' category will have recovered to the level of 'functional recovery': a full range of activities of daily living will be restored, but often with intermittent symptoms of rheumatism in damp or cold, and intolerance of a prolonged neck position or of extreme turning or extension."

"After 18 - 24 months, almost all patients [with moderate injury] will have reached functional recovery, although some report recovery up to five years later."

"For second-degree spinal myofascial injuries, the plateau will be reached between 12 and 36 months post injury."

"15% of patients fail to achieve a full functional recovery, and some 40% - 70% find some mild symptom persistence."

"Severe injuries (third degree) are disabling in the very long term or even permanently."

"About 10% - 15% of motor vehicle cervical injuries fail to achieve a functional recovery even after the passage of two to three years. This failure may be the result of physical impairment, minimal brain damage from head injury, or chronic pain syndrome."

"Overall, a patient with a neck injury has a 85% - 90% chance of achieving a functional recovery. Anywhere from 40% - 70% of such patients retain some degree of intermittent, unpleasant, unnatural symptoms in the injured tissues."

About 50% of the more seriously injured will have recovered by the end of the first year. About 25% additionally will recover in the next 6 months (18 months since injury). About 15% will recover 18 months post injury. Therefore, it is premature to claim that a patient has failed to recover until at least 18 months after injury, and possibly even longer. **[Important]**

39% of patients suffering neck injuries will develop radiological cervical joint degeneration by the second or third year after being injured. **[Important]**

Two other real syndromes are caused by whiplash trauma, but they are often misdiagnosed:

- 1) Post-Traumatic Anxiety Neurosis:
Characterized by anxiety, palpitations, diaphoresis [excessive sweating], and panic attacks.
- 2) Post-Traumatic Stress Syndrome, seen in 19% - 35% of collision victims:
Repetitive reliving the event, fear of being in cars (abandonment of pleasure trips), and symptom preoccupation. "It is closely related to the rape experience and other 'assaults' of a deeply personal nature."

"Rest is not only benign; it may be pathologic," because:

- 1) "Soft tissues shorten if not regularly stretched."
- 2) Muscles will atrophy.
- 3) Cardio-respiratory fitness deteriorates 1% per day.
- 4) "After a few weeks of rest, patients may complain of spinal or peripheral joint tightness, general fatigue, loss of energy and of general strength, and inability to cope with pain, personal problems or the challenge of work."

The clinician should not consider it necessary to use a cervical collar, and by the end of the fourth week after injury the cervical collar should be discouraged.

"A critical prophylactic achievement is making the patient understand that 'hurt' does not equal 'harm', and that movement should not be avoided."

Patients invariably expect treatment to result in pain-free status. "Instead, it should be stressed that recovery of *function* is the primary goal."

Arm paresthesia (pins-and-needles sensation) is usually the result of irritation of the brachial plexus by the adjacent thickened fibrous bands and spastic muscle contraction of the muscles of the thoracic outlet.

For most patients, the treatment goals are the reduction of spinal tightness and improvement of postural imbalances. **[Important]**

KEY POINTS FROM DAN MURPHY

- 1) During the whiplash mechanism, protective muscular reflexes are inadequate to protect the patient from injury.
- 2) Because of lap belts, the "low back or the thoraco-lumbar junction may be hurt by being suddenly arched or flexed as the torso moves in an arc while the pelvis is fixed from below."
- 3) During the rebound flexion phase of a rear-end collision, the "ultimate acceleration of the head is greater than the peak acceleration of the car."
- 4) During a rear-end collision, head extension can reach 122°, while the maximum physiologic extension is 75°.
- 5) Seat belts do not offer much protection in side collisions.
- 6) In the elderly, neck injury is very serious because their degenerative spine is biomechanically 'stiffer', behaving more like a single long bone than like a set of articulating structures resulting in more damage.
- 7) 50% of patients over age 50 have degenerative joint disease.
- 8) 66% of patients over age 65 have degenerative joint disease.
- 9) The elderly in collisions often develop vertigo.
- 10) Whiplash trauma increases the risk of degenerative joint disease.
- 11) Auto speed and damage are not reliable parameters of a patient's injuries.
- 12) The symptoms of neurogenic thoracic outlet syndrome may appear months after initial injury.
- 13) Mild soft tissue injuries to the neck are associated with minimal work time loss and a symptom-free status about six months post injury.
- 14) 'Mild' soft tissue injury does not connote a trivial injury.
- 15) Moderate soft tissue injury patients experience substantial work loss of weeks or months, but will recover a normal lifestyle within six months to two years.
- 16) At one year, 50% of patients with 'moderate' soft tissue injury will have achieved 'functional recovery': engaging in a full range of daily activities, but with intermittent symptoms of rheumatism in damp or cold, and intolerance of a prolonged neck position or of extreme turning or extension.

- 17) Moderate soft tissue injuries take about 12 - 36 months to recover.
- 18) Some patients with moderate soft tissue injuries take 5 years to recover.
- 19) 15% of patients with whiplash injuries fail to achieve a full functional recovery
- 20) 40% - 70% of patients with whiplash injuries have some mild symptom persistence.
- 21) Severe whiplash injuries give long term or permanent disability.
- 22) About 15% of serious whiplash injuries will recover after 18 months since injury.
- 23) 39% of patients suffering neck injuries will develop radiological cervical joint degeneration by the second or third year after being injured. **[Important]**
- 24) Two other real syndromes are caused by whiplash trauma, but they are often misdiagnosed:
 - A)) Post-Traumatic Anxiety Neurosis:
 - B)) Post-Traumatic Stress Syndrome
- 25) Post-traumatic stress syndrome is seen in 19% - 35% of collision victims.
- 26) Resting injured soft tissues injuries is "pathologic:"
- 27) After whiplash injury, controlled movement is necessary for recovery, even if it causes the patient some pain.
- 28) Arm paresthesia (pins-and-needles sensation) is usually the result of irritation of the brachial plexus by the adjacent thickened fibrous bands and spastic muscle contraction of the muscles of the thoracic outlet.
- 29) For most patients, the treatment goals are the reduction of spinal tightness and improvement of postural imbalances. **[Important]**