

Whiplash: still a pain in the neck

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BACKGROUND Whiplash is a common problem, particularly following motor vehicle accidents and may have significant sequelae in terms of disability and financial compensation. Recent research has demonstrated that a number of commonplace medical practices as well as the compensation system may lead to unfavourable outcomes.

OBJECTIVE This article discusses recent research into whiplash and its implications for clinical practice.

DISCUSSION A full assessment of biopsychosocial factors in the acute phase of the injury is essential to predict those at risk of chronicity. Simple therapeutic and educational measures should be employed and early referral to a psychologist or pain specialist considered for those at high risk.



The term 'whiplash' is commonly used in Australia in both professional and lay circles. It is often used in the context of motor vehicle accidents and carries with it the notion of chronicity and compensation. It is the most common injury following motor vehicle accidents and is an important cause of chronic disability in the general population.¹ A number of factors have hindered the development of a better understanding and approach to the management of whiplash. These include: variable definitions of the term 'whiplash', the difficulty of extricating a definable physical condition out of its psychosocial and legal context, and a history of poorly designed research that has resulted in difficulties in establishing its epidemiology and an evidence based approach to its management.

In 1995 the Quebec Task Force defined whiplash as:

'an acceleration/deceleration mechanism of energy transfer to the neck. It

may result from rear end or side impact motor vehicle collisions, but can also occur during diving or other mishaps. The impact may result in bony or soft tissue injuries (whiplash injury).²

In this article the term 'whiplash' is used to describe such injuries in those patients who do not have a cervical fracture. An acute whiplash injury can often develop into a chronic disorder known as late whiplash syndrome. It is the patient who develops chronic symptoms who becomes difficult to manage.

Issues for the general practitioner

There are a number of important, practical issues for the general practitioner and these can be framed as the following questions:

- How do I know if it's whiplash?
- How do I decide whether to X-ray a patient with neck pain after an accident that might be expected to produce whiplash injury?

- Are there any features I can pick up early that would predict an unfavourable outcome?
- How should I manage a person with acute whiplash injury?
- What is the likely prognosis for people with acute whiplash injury?
- What is late whiplash syndrome?
- What can I do for patients with late whiplash syndrome?

How do I know if it's whiplash?

As with any clinical situation a thorough history and careful examination is important. The following features are suggestive of whiplash:³

- history of neck hyperextension/flexion/rotation (may be recent or old)
- cervical fracture/subluxation excluded (using Canadian C-spine rule Table 1)
- disabling neck pain with or without referral to shoulder or arm
- muscular spasm

Table 1. The Canadian C-spine Rule⁴

- Patients must undergo radiography if they are judged to be at high risk due to age (>65), dangerous mechanism of injury or postinjury parasthaesias.
- Patients may safely undergo assessment of active range of motion if they have all five low risk characteristics: absence of midline tenderness, normal level of alertness, no evidence of intoxication or abnormal neurological findings, and no painful distracting injuries.
- Patients DO NOT require cervical spine radiography if they are able to actively rotate the neck 45 degrees to the left and right, regardless of pain.

- point tenderness
- decreased range of movement
- stress, anxiety and/or depression often coexist
- posterior cervical sympathetic syndrome including headaches, facial formication (sensation of ants crawling over the face)
- with chronic symptoms, secondary gain may be present, eg. compensation for accident.

How do I decide whether to X-ray a patient with neck pain after an accident that might be expected to produce whiplash injury?

The Canadian C-spine rule⁴ is a simple evidence based guide that identifies those trauma patients who require cervical spine radiography based on three simple clinical points. It is shown in Table 1. CT scanning of the cervical spine is not helpful, unless specifically investigating the possibility of fractures in the acute phase. MRI scans are generally unhelpful, even with patients with chronic pain, unless they have specific localising neurological signs.

Table 2. Yellow flags: psychosocial issues to explore in the history⁵

Attitudes and beliefs about back pain

Belief that pain is harmful

Belief that all pain must be abolished before attempting to return normal activity

Passive attitude to rehabilitation

Behaviours

Use of extended rest

Reduced activity level with significant withdrawal from activities of daily living

Avoidance of normal activity

Report of extremely high intensity of pain, eg. above 10, on a 0-10 visual analogue scale

Sleep quality reduced since onset of pain

Compensation issues

Lack of financial incentive to return to work

Current compensation claim

History of claim(s) and/or extended time off work due to injury or other pain problem

Health professional(s) sanctioning disability and/or not providing interventions that will improve function

Experience of conflicting diagnoses or explanations for pain, resulting in confusion

Advice to withdraw from job

Emotions

Fear of increased pain with activity or work

Depression (especially long term low mood)

Feeling under stress and unable to maintain sense of control

Family

Over protective partner, socially punitive partner

Extent to which family members support any attempt to return to work

Lack of support person to talk to about problems

Work

History of manual work (including nurses)

Work history, including patterns of frequent job changes, experiencing stress at work, job dissatisfaction, poor relationships with peers or supervisors, lack of vocational direction

Belief that work is harmful; that it will do damage or be dangerous

Unsupportive or unhappy current work environment

Low educational background, low socioeconomic status

Job involves shift work or working unsociable hours

Are there any features I can pick up early that would predict an unfavourable outcome?

A recent systematic review of the prognosis associated with acute whiplash injury has provided inconclusive results.⁶ The authors concluded that: '...there is little consistency in the literature about the prognostic factors for the recovery of

whiplash [but that] it is becoming obvious that the insurance and compensation systems have a large impact upon recovery from acute whiplash injuries'. They also concluded that older age, female gender, baseline neck pain, baseline headache intensity, and baseline radicular symptoms are predictors of delayed recovery. A more recent prospective study suggests that cervical range of

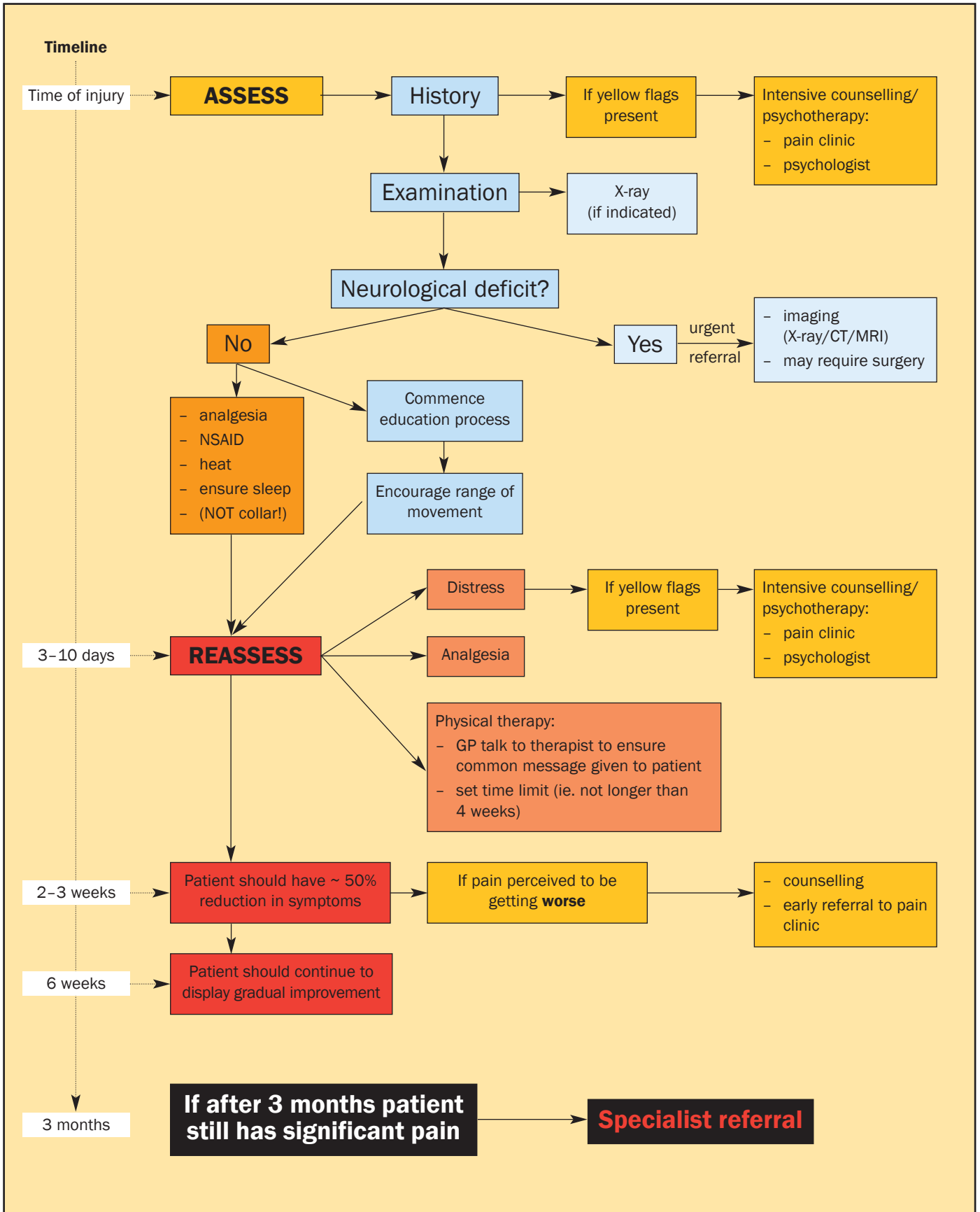


Figure 1. Flowchart outlining the treatment of whiplash injury

motion is a useful estimator of future handicap.⁷

Yellow flags

The concept of 'yellow flags' was developed for low back pain (Table 2).⁵ Yellow flags are psychosocial factors that increase the risk of developing, or perpetuating long term disability and work loss associated with pain. There has been insufficient research to validate the yellow flag concept in neck pain. In practice however, it is reasonable to adopt the yellow flag approach for whiplash. At the first and subsequent consultations a full psychosocial history should be taken to identify factors that may suggest the acute injury could progress to become a chronic problem. These factors can be thought of in terms of: attitudes, beliefs, behaviours, compensation issues, emotions, family and work situation.

How should I manage a person with acute whiplash injury?

Clearly, treatment will vary depending upon what is found from the history and examination, and how long it is since the whiplash injury occurred. Figure 1 summarises the recommended treatment and referral pathways.

Four recent reviews of the literature provide a basis for treating acute whiplash injury.⁸⁻¹¹ It is important to note that there are relatively few high quality studies to provide good evidence for treatment. It is clear however, that immobilisation, rest and soft collars are detrimental. Manual therapies, such as physiotherapy are commonly employed, but currently there is no good evidence to support their use. Patients should be advised to mobilise early and maintain usual activities as much as possible. Neck exercises to encourage range of motion are commonly employed, but have been shown not to be more effective than non-specific mobilisation.

Patients should be given adequate analgesia. This is important for both short

term care and to reduce the likelihood of chronic pain.¹² Paracetamol should be considered as a first line drug. Ibuprofen can be used as an alternative. Stronger analgesia is acceptable on a short term basis. A heat pack can also be used to relieve pain and assist with mobilisation.

Diazepam is commonly used for muscle spasm although there is no evidence to support its use. Poor quality of sleep is suspected to be a factor in developing chronic symptoms. Simple measures to promote sleep would seem reasonable. Anecdotally, firm supportive pillows may be supportive and short term benzodiazepine use may be justified in some cases. The potential benefits of benzodiazepine use must be weighed against its side effects: drowsiness may prevent patients from mobilising early, and dependence is always a possibility.

One role of the GP is to identify 'yellow flags' at the first opportunity and, where possible, intervene in the process. This may take the form of a:

- simple educational process to correct erroneous beliefs
- short course of cognitive behavioural therapy, or
- early referral to a psychologist or pain clinic if indicated.

Once two or more health professionals become involved in the management of a patient it is important for effective communication to take place so as to ensure the patient receives a consistent message. It is vitally important that health professionals do not sanction or collude with behaviour or beliefs that are likely to adversely affect outcomes.

What is the likely prognosis for people with acute whiplash injury?

Acute whiplash injury has been described above as an acute soft tissue injury. It is recognised that certain factors predispose to continuing problems, commonly referred to as late whiplash syndrome. Research has also shown that there is no 'chronic injury' component of late

whiplash syndrome.¹³ In other words, although patients may have continuing pain, parasthaesia and other symptoms, recognisable pathology is usually not identified in the neck.

In many western societies confounding factors have made it difficult to define and therefore understand the natural history of acute whiplash injury. Studies in Canada have shown rates of chronic symptoms approaching 50% at one year postcollision. At the other extreme, recent studies in Lithuania, Germany and Greece have shown that resolution of symptoms occur in over 90% of patients by four weeks postcollision, with the remainder having improved by three months. These studies also showed the prevalence of chronic neck pain was the same in the general population as it was in those who had been involved in a motor vehicle accident.¹³

Why is there so much variation and how do you explain persisting symptoms in the absence of pathology? The biggest influences that over-arch all the yellow flags relate to fiscal compensation for injury and a national culture or perception of the likelihood of chronic problems in both the lay population and health professionals.

Elimination of compensation for whiplash injury in Canada has shown a decreased incidence and improved prognosis of acute whiplash injury.¹ Indeed, in countries such as Lithuania, Greece and Germany there never has been monetary compensation available for acute whiplash injury. This has influenced peoples' expectations. It is said of the Greeks that:

'perhaps by not receiving (and then failing to respond to) multiple therapies, no anxiety is created. Patients do not change their activities to any extent, or stop work, and will not develop poor posture or poor physical fitness. Whiplash victims in Greece do not hear frightful diagnoses that mean to them chronic disability. In other countries, however, the media and medical com-

munity attention to whiplash enforces the notion that it causes chronic pain'.¹⁴

What is late whiplash syndrome?

Given the combination of lack of physical pathology, and the association with monetary compensation there has been a tendency to label patients with either a 'psychiatric problem' or as a 'malingerer'. This has been unhelpful. Patients can end up on the merry-go-round of specialist referrals and normal investigations - which only serves to increase their symptoms, stimulate depression and anxiety, and prolong their disability. Therefore, they may become dependent upon narcotic analgesics.

The biopsychosocial model¹³ of whiplash injury considers there to be a triad of influences that lead to chronic problems:

- symptom expectation
- symptom amplification, and
- symptom attribution.

Expectation

The combination of cultural factors, added to the fact that motor vehicle accidents often do produce serious injury lead patients to expect their injury to be troublesome. The fact that acute pain can indeed be very unpleasant serves to compound this.

Amplification

Symptoms may be amplified by unhelpful behaviours that result from patients' expectations. Patients may withdraw, change their posture or have their symptoms amplified by lack of sleep or anxiety. Patients who are asked to keep pain diaries will focus on their symptoms and therefore prolong them. Poor posture will generate pain in healthy subjects and most certainly amplify it in those with whiplash.

Attribution

Symptom attribution occurs when, for example, poor posture creates new pain that the patient believes to be 'chronic

injury'. Side effects from medications (particularly benzodiazepines and narcotic analgesics) may be attributed to the chronic injury. Even new, unrelated benign symptoms may be wrongly attributed to the chronic injury. These new symptoms are themselves substrate for yet more symptom amplification.

Therefore, the biopsychosocial model is not a 'psychogenic' one that assumes the physical symptoms are merely the expression of psychological disorder, but rather suggests that what the patient expects, how they perceive symptoms, and how they focus and attribute symptoms will in turn alter the character of those symptoms and the patient's behaviour, and that the symptoms have various physical sources in some cases. If you add to this a contribution from anxiety, depression and compensation systems, then late whiplash syndrome is born.

What can I do for patients with late whiplash syndrome?

Clearly, the first answer to this question is: 'do your best to prevent it'! However, there is no good evidence from the literature about which interventions are most effective. From a GP's perspective it is important to:

- throw away the soft collar!
- resist the urge to over treat and over investigate patients. In particular use the lowest doses of the simplest medications possible
- reward patients for 'becoming well' rather than for remaining ill. Assist and encourage a return to normal activities
- do not sanction behaviours that promote disability
- do not enhance the patient's own expectations of a poor outcome and chronic disability
- reduce, where possible, the influence of lawyers, and especially discourage the use of symptom diaries
- continue the education process regarding behaviours and beliefs

- diagnose and treat depression and anxiety where these coexist
- involve a multidisciplinary pain clinic at an early stage where there is a likelihood of the patient developing chronic symptoms
- ensure effective communication between health professionals so that the patient receives a consistent positive message.

SUMMARY OF IMPORTANT POINTS

- Whiplash is the commonest injury following a motor vehicle accident and is a common cause of disability.
- Acute whiplash injury should be managed by simple analgesia, early mobilisation, maintaining normal activities, and promoting the fact that the underlying damage is not serious, and should resolve quickly - most people will have resolution of symptoms in 2-3 weeks.
- X-rays should only be performed when indicated by the Canadian C-spine rule.
- There are number of factors that may be obtained from history and examination that predict a poor outcome ('yellow flags').
- Active interventions need to be put in place to address these psychosocial 'yellow flags'.
- Compensation systems and lay and medical cultures have a marked effect on recovery from the acute injury.
- Chronic problems (late whiplash syndrome) are best understood and managed using the biopsychosocial model.

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