

Closed-Head Injuries In Plaintiffs: Part II

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The last APLA update contained an article on identifying closed-head injuries in accident victims.

In this Update the different types of head injury are described and procedures for testing for brain damage are discussed.

It is estimated that in the United States nearly half of all head injuries stem from automobile accidents. It can be reasonably assumed that a similar ratio applies in Australia. It is likely, however, that a great many victims of head injuries, from motor vehicle and other accidents, do not claim damage for this injury because it is not properly identified either by the treating doctor or the plaintiff's lawyer.

Head injuries can generally be divided into two categories:

- I. Open-head injuries in which both the skull and brain are damaged;
- II. Closed-head injuries where the brain is damaged but the skull is not.

Of the two types, closed-head injuries are the most common.

Four Types Of Closed-Head Injuries

1. Injuries involving acceleration and deceleration

These injuries occur as a result of the skull moving while the brain remains stationary. When the head suddenly stops moving, the brain smashes into the interior wall or the base of the skull. The result is haemorrhaging, bruising or swelling of the brain.

2. Compression Injuries

The brain has a limited amount of space inside of the skull. When bleeding inside the skull occurs, this results in compression of the brain, thus affecting its functions.

3. Rotational Injuries

Rotational injuries occur where the brain twists around the axis of its stem just above the spine where it enters the skull. This results in a shearing of the brain stem or damage to its nerve fibres.

4. Anoxia

Damage occurs to the brain when it is deprived of oxygen or when the amount of oxygen to it is reduced as a result of reduced blood flow.

The results of closed-head injuries are often overlooked by both the acute care physician and by the patient. The effects of these injuries are often delayed and subtle.

Testing

A common way of testing for brain damage is through neuro-psychological techniques. Neuro-psychology is the study of the relationship between the brain and behaviour. Clinical neuro-psychology (involving psychometric testing) relies on the concept of deficit measurement. It assumes that the injured person once functioned in a certain manner. If a behaviour change has emerged, there is a corresponding deviation from the normal expected pre-morbid pattern of test performance.

The most reliable psychometric testing involves a comparison of pre-injury standardised tests to the results of post injury tests.

Commonly, however, pre-injury tests are not available and the neuro-psychologist will assume that the injured person was an average person before the tests and compare the post injury results to average test scores. This method can



further be refined by estimating whether the injured person's pre-injury level was above or below average based upon his or her educational or vocational history.

Testing performed by the neuro-psychologist is designed to evaluate personality and behaviour, motor skills and intelligence. As any individual test may give a false impression, testing is usually conducted by giving the patient an extensive battery of tests designed to provide detailed information from many different sources.

Symptoms Of Brain Damage

Due to the anatomy of the skull's interior contours, acceleration injuries are more likely to impact frontal lobe and the poles of the temporal lobes. Thus, the most common type of brain injuries resulting from automobile accidents are to those areas of the brain.

The frontal lobes are the portion of the brain primarily responsible for judgment, insight, creativity and foresight. These lobes are critical to the ability to maintain concentration, perseverance and response inhibition. In addition, the ability to smell requires an intact frontal lobe.

Persons sustaining injuries to the orbito-frontal area of the frontal lobes often exhibit behaviour which is hostile, compulsive, and sexually inappropriate. Such behaviour is often described as silly, childish and outlandish.

Persons suffering from injury to the dorso-lateral part of the frontal lobes often become apathetic and indifferent. In addition, the victims of such injuries often suffer from an inability to concentrate, have difficulty carrying out sequential tasks, and they repeat themselves frequently when speaking.

Injuries to the medial-frontal area often result in a variety of movement disorders, called akinesias. This most often results in a lack of

spontaneous movement or the loss of the ability to initiate motor activities. In addition, persons sustaining severe injuries to these areas are often incontinent.

The temporal lobe of the brain has three major functions:

the interpretation of a variety of auditory functions, including written and spoken language;

the awareness of the relevance of time, which includes memory; and

the regulation of some forms of emotional expression and primitive drives and effects.

Thus, damage to the temporal lobes may impair the victim's ability to discriminate words and to understand speech sounds. In addition, extensive injuries to the temporal lobes may result in severe anterograde amnesia and impaired ability for new learning. Retrograde amnesia, which involves difficulty in remembering events prior to the onset of the amnesia, is also commonly present.

The parietal lobes of the brain govern much of the appreciation of many kinds of sensation, including touch, temperature, pain, pressure, vibration and the ability to distinguish among a variety of shapes, sizes and textures. Persons suffering damage to the right parietal lobe may become easily disorientated. Damage to the left parietal lobe often leads to confusion between the left and the right sides of the body and inability to calculate and to write. The occipital lobe of the brain is primarily devoted to visual perception and recognition. When injuries occur to this area of the brain, the symptoms include a range of visual field deficits, bizarre visual hallucinations or illusions, and an inability to recognise persons who should otherwise be familiar to the patient and a loss of colour vision.

(This article is adapted from a paper given by John Powers, attorney to the annual conference of American trial lawyers).

