Traumatic Brain Injuries

By Matthew Willens

Over the years, I have had the privilege of representing several victims of negligence who have suffered traumatic brain injuries (TBIs). Brain injury cases are challenging because, in addition to working on behalf of one's client facing a potentially aggressive defense lawyer, one often finds oneself counseling clients through family problems and relationships, job loss and shattered dreams.

The literature regarding TBI is overwhelming. This is not surprising given the following statistics:

- Every 21 seconds, one person in the United States sustains a TBI;
- An estimated 5.3 million Americans - a little more than 2% of the population - currently live with disabilities resulting from TBI; and
- 1.5 million Americans sustain a TBI each year, and more than 50,000 people die every year as a result of TBI. [1]

TBI, also called acquired brain injury or simply head injury, occurs when a sudden trauma causes damage to the brain. The damage can be focal - contained to one area of the brain - or diffuse - encompassing more than one area of the brain. TBI can result from a closed head injury or a penetrating head injury.[2]

Accidents involving transportation devices (automobiles, bicycles, motorcycles, aircraft, water craft and farm equipment) are the most common causes of TBI. Falls are the second leading cause and are more frequently seen in older adults.[3] Therefore, plaintiff lawyers are likely to encounter TBI cases.

There are three gradients of head injury: severe, moderate and minor. Severe brain injury results in easily observable symptoms including partial or complete paralysis, speech problems, impaired cognitive functioning and brain activity changes. Moderate head injury shares many symptoms with minor head injury, the variable being impairment with relation to judgment. Minor head injury is the most common yet least understood of the three gradients of head injury.[4] As a result, victims of minor head injuries have been neglected by both the medical and legal profession.

The conventional definition of minor traumatic brain injury (MTBI) involves a tripartite analysis: (1) a traumatic event of sufficient intensity to cause concussion; (2) a change in the mental state of the patient (loss of consciousness, confusion, lethargy, etc.) that is only transient; and (3) no evidence of focal brain damage, hemorrhage or skull fracture upon examination or in diagnostic testing.[5] Concussion, by definition, is traumatic: in fact, every concussion is an MTBI. There are three different levels of evaluative criteria for grading concussions: Grade I, II and III. Generally, a Grade I concussion involves no loss of consciousness, but some transient mental state changes or confusion. Grade II involves no loss of consciousness - it can either involve a transient mental state change of greater than fifteen minutes or some post-traumatic amnesia without loss of consciousness. A grade III concussion involves loss of consciousness.

Various Brain Tests:

There are tests which allow one to determine whether the brain has been injured. These tests can help prove to insurance companies, defense lawyers, judges and juries that these injuries are legitimate and not exaggerated. However, if normal results from testing do not confirm that an individual has suffered a brain injury, one's treating doctor or expert (usually a neurologist) can explain that brain impaired patients such as Alzheimer's victims and epileptics can have normal brain imaging test results.

Computed Axial Tomography (CT Scans):

Computed Axial Tomography, often referred to as a "CT Scan" or "CAT Scan" is a technique that provides a series of images that are cross-sectional representations of the brain. CT Scans permit visualization of the anatomy inside the skull and ab-

normalities are seen as variations in tissue density as compared to normal tissue. A CT Scan is more easily administered than an MRI; therefore, a CT Scan often will be the first diagnostic test performed on an individual presenting with symptoms of head injury.

MRI (Magnetic Resonance Imaging):

An MRI provides images of the brain's structures and has a higher resolution than the CT Scan. Therefore, MRI results can show more minor injuries or alterations of brain tissue. However, CT and MRI scans may be less helpful in proving the existence of mild traumatic brain injuries.

Electroencephalogram(EEG):

An EEG is a technique that uses ultrasound to display brain structures on a screen. This technique is fairly non-specific but is better at demonstrating acute abnormalities to the surface of the brain.

Position Emission Tomography (PET):

Position Emission Tomography is a computer-based imaging technique that monitors metabolic and biochemical activity of the brain. The patient is injected with radioactive liquid that is used to measure the metabolic rate of the brain. PET Scans can reveal areas of reduced metabolic rate that are not detectible by MRI or CT Scans.

The advent of PET Scans has enabled plaintiffs' lawyers to present demonstrative evidence of brain injury where more traditional methods have been inconclusive. Generally, a nuclear medicine expert will review the medical data and neuropsycho- logical tests. Then, based on the expert's interpretation of a PET Scan, a differential diagnosis will be presented, leading to the final conclusion of brain injury will be presented.

Neuropsychological testing:

This test is performed by a psychologist who specializes is assessing individuals with brain injuries. Neuropsychological testing may prove invaluable in establishing the existence of a brain injury for medical and legal purposes, especially in those cases where diagnostic tests such as CT and MRI scans are normal.

Neuropsychological tests (or neuro-psyche tests) examine the patient's intellectual function, language processing skills, perceptual skills, high motor function, concentration skills, judgment, reasoning, learning and memory, constructional skills and executive and emotional functioning. Quite often, technicians perform the actual testing but the results are interpreted by a neuropsychologist. A highly credentialed, articulate neuropsychologist is often needed to explain brain injury. The right neuropsychologist can determine whether a person is impaired and the extent of impairment. Neuropsychologists will sometimes speak with the patient's friends, relatives and even co-workers or schoolmates regarding his or her abilities and difficulties in everyday life. Neuropsychologists may also review pre-accident records such as school records, IQ test results and employment files. An occupational therapy assessment, which focuses on assessing a patient's performance in real-life situations, can often complement a neuropsychologist's evaluation. Remember that neuropsychologists are not physicians, as defense counsel may point out. Regardless, the right neuropsychologist may be most-valuable in objectively proving a client's injuries.

Neuropsychiatry:

Neuropsychiatrists are physicians who usually have completed a residency in neurology or psychology and have received additional training in neurology or neuropsychiatry. These physicians can prescribe psychotropic medications as part of a treatment plan for an individual with a brain injury.

An attorney prosecuting a major brain injury case should consider retaining both a neuropsychologist and a neuropsychiatrist to evaluate their client. Of course, it would be even better if the plaintiff's doctors made that unnecessary.

Medical Records:

As in every personal injury case, the plaintiffs' attorney must get EMT and ER records and films. Generally the paramedics, emergency room nurses and physicians will score the patient according to the Glasgow Coma Scale (GCS). An examiner scores an individual based on eye opening, best motor response and verbal response. Usually a minor head injury is defined by a GCS score of 13 or more, 15 being the highest possible score, indicating that a patient has full brain function. However, some people suf-

fer from persistent disabilities notwithstanding a high GCS score.

Researchers have concluded that the GCS may not be the most valid and sensitive indicator of a mild brain injury and have suggested that a more sensitive measure may be necessary because of the potential long-term deleterious effects in patients with mild head injuries.[6] Dr. Brian Jennett, creator of the GCS, makes the point that the scale was originally designed to classify severe injuries:

> ...it was not intended as a means of distinguishing among different types of milder injury. Many of these patients are oriented by the time they are first assessed and therefore score at the top of the GCS. Yet some of these patients have had a period of altered consciousness, either witnessed or evidenced by their being amnesic for events immediately following injury. Impairment of consciousness is indicative of diffuse brain damage, but these can also be marked local damage without either alteration in consciousness or amnesia.

By the time the paramedics arrive at the scene of an accident or a person is assessed in a hospital, a substantial amount of time has usually passed. Therefore, it is crucial to interview the people who had the first access to a patient after an accident, including eyewitnesses, immediate post-occurrence witnesses, policemen, etc. A person who may score 13 to 15 on the GCS may have been a "different person" prior to being assessed by a paramedic, emergency room nurse or physician.

Biochemical Engineers:

In a case where there has been minimal impact to an individual, defense counsel may attempt to establish - sometimes through a biochemical engineer - that the forces of an accident were not sufficient to cause a brain injury. Therefore, a plaintiffs' lawyer may consider retaining a biochemical engineer of his or her own. Take the case of a rear-end motor vehicle accident with minimal property damage: we've all heard of the theory that instead of the vehicle absorbing the impact, the people inside the vehicle did. Having a well-qualified biochemical engineer to evaluate the forces involved in the accident and explaining them to a jury may prove crucial to establishing the cause of a client's brain injury.

Recovery factors:

In an article entitled *Assessment of Outcome Following TBI*, the following factors were listed as indicators of whether or not a patient should have a good/rapid recovery or a poor/slow recovery:

Probable good/rapid recovery curve (uncomplicated head injury):
- very mild injury;
- no collateral injury;
- no known structural-histological lesions;
- no short loss of consciousness or post-traumatic amnesia;
- no pain;
- young adult; age range
- good general health;
- average to high intellectual/cognitive abilities;
- no previous head injuries;
- no other neurologic disorder;
- no history of alcohol/drug abuse or use at time of injury;
- no previous psychiatric history or present depression;
- strong socioeconomic and vocational support system;
- head injury information provided to hospital/followup;
- no pending litigation;
- no lasting post-concussive syndrome.

Probable poor/slow recovery curve (complicated head injury):
- more severe injury;
- collateral injury;
- possible structured-histological lesions;
- longer loss of consciousness and post-traumatic amnesia;
- pain;
- older adult or young child; age range
- poor general health;
- low pre-morbid intellectual cognitive abilities;
- very high functioning;
- previous head injury;
- other neurological disorder;
- history of alcohol/drug abuse and/or use at time of injury;
- previous psychiatric history and/or present depression;
- poor socioeconomic and vocational support system;
- no head injury information provided at hospital/no followup;
- pending litigation/continuing post-concussive syndrome.[7]

The above factors should be useful to help plaintiffs' attorneys better "discover" and assess the value of each brain injury case.

Closing Comments:

Some victims of head injury may not even become aware of or admit the extent of their symptoms until they attempt to return to normal activities of daily living. In such cases, the evidence for mild or moderate traumatic brain injury must be reconstructed. Mild or moderate TBIs may also be overlooked in the face of the more obvious physical injuries such as broken bones.

Personality change often occurs after a head injury. Therefore, as important as medical evidence will be to prove a case, reliable lay evidence from family, friends, coworkers and other persons in the community can be just as important - if not more so - to prove changes in an injured person following a brain injury.

Many victims will experience cognitive deficit, become easily confused or distracted and have problems with concentration and attention. These types of symptoms may make such a case even more challenging for a plaintiffs' lawyer. The rewards in helping a brain-damaged client, however, can also be equally satisfying.

ENDNOTES

[1] Brain Injury Association of America, www.biausa.org.

[2] National Institute of Neurological Disorders and Stroke, www.ninds.nih.gov/health_and_medical/pubs/TBI.htm.

[3] Sbordone, R.J., Saul, R.E. *Neuropsychology for Health Care Professionals and Attorneys*. 2nd Ed. Florida: CRC Press LLC. 2000.

[4] Dicker, B.G. *Preinjury behavior and recovery after a minor head injury: A review of the literature*. The Journal of Head Trauma Reha*and Mental Retardation*. Philadelphia: Lippincott Williams & Wilkins, 2002.

[6] Jennett, B. And Teasdale, G. *Management of Head Injuries*. Contemporary Neurology Series, volume 20, F.A. Davis Company, 1981.

[7] Schatz P, Barth JT, *Assessment of Outcome Following TBI*. www.nanonline.org/nandistance/mtbi/modules/outcome.

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