TBI: THE BASICS

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I. INTRODUCTION

Traumatic brain injury (TBI) has been called the "silent epidemic" because for years many such injuries went undiagnosed and untreated. Complaints of memory loss, personality change, and diminished mental abilities by victims of trauma were dismissed as "litigation neurosis" or ignored altogether. Persons with acquired brain injury were often left with disabling injuries that went uncompensated because many in the legal profession did not recognize the extent to which the injury had affected their client. The situation was further complicated by the fact that many of the changes in mental function were masked by, or attributed to, the use of narcotic pain killers immediately following the injury.

Slowly the true picture of how acquired brain injury can affect a survivor has emerged as more research in the area has been conducted. In recent years the need for attorneys with specialized knowledge in the field of brain injury has become apparent. Representation of those with acquired brain injury is a rewarding and challenging undertaking for even the most experienced attorney. Effective representation of persons with acquired brain injury requires a basic understanding of how such injuries occur, how they are diagnosed and treated by the medical profession, and the effect brain injury may have on a survivor's ability to work and interact with others. This article will discuss some of the basic concepts that must be mastered to effectively represent survivors of acquired brain injury.

II. BASIC MEDICAL CONCEPTS

A. Definition

An acquired brain injury is an injury to the brain caused by trauma, neurotoxins, vascular disorder or anoxia. According to the Centers for Disease Control and Prevention about 2.8 million TBI-related emergency department (ED) visits, hospitalizations, and deaths occurred in the United States in 2013. Trauma is the most common cause of brain injury in the United States. Among all age groups, motor vehicle crashes were the third overall leading cause of TBI-related ED visits, hospitalizations, and deaths. When looking at just TBI-related deaths, motor vehicle crashes were the third leading cause (19%) in 2013.

Traumatic injuries to the brain are divided into two categories: open head injuries and closed head injuries. The most frequent type of traumatically acquired brain injury is the closed head injury. A closed head injury is defined as an injury to the brain without penetration or breech of the skull. Much of the information we know about closed head injuries and how they occur is the result of animal studies and studies of human cadavers. In those studies researchers subjected the brains of both human cadavers and living primates to trauma and then studied the physical changes by autopsy. The results confirmed that trauma may cause physical changes to the brain without penetration of, or damage to, the skull. In recent years, advanced neuroimaging combined with neuropsychological testing has added significantly to our understanding of how brain injury affects human behavior and functioning.

A closed head injury occurs when the head is subjected to rapid acceleration/deceleration such as when a car rapidly decelerates after striking an object or rapidly accelerates after being struck by another vehicle. Three different forces act to cause injury to the brain during rapid acceleration/deceleration. Those forces are: a) impact with the skull; b) cavitation; and c) rotational acceleration. Each of these forces causes a different type of injury.

Injuries to the brain are divided into two types depending on the event that leads to the damage: primary damage and secondary damage. Primary injury occurs as a result of physical forces applied to the brain at the moment of trauma and includes contusion, damage to blood vessels, and axonal shearing, in which the axons of neurons are stretched and torn. Secondary damage occurs in the hours, days and weeks following the initial injury and results from processes initiated by the primary damage. There are many processes that result in secondary damage, including increased pressure within the skull which reduces the flow of blood to the brain and chemical injury caused by dying neurons. TBI is a process, not a momentary event.

B. Classification

Medical professionals generally classify traumatic brain injuries as mild, moderate or severe. These classifications may be misleading because they are based on an initial assessment of the potential for the injury to result in the death of the victim following the trauma and not the long term consequences of the injury to the individual. The Glascow Coma Scale (GCS) was developed to enable medical professionals to quantify brain injury in acute trauma patients. The scale is based on a separate assessment of eye, verbal and motor responsiveness. The initial GCS is not always a good indicator of long term prognosis, particularly in cases of so called "mild" brain injury.

A "mild" head injury is defined as an injury resulting in unconsciousness of less than 30 minutes or an initial Glascow Coma Scale (GCS) of 13-15. It includes an injury that causes the injured person to become dazed or disoriented but not to lose consciousness. It is now recognized by most medical professionals that an individual may suffer brain injury resulting in long term cognitive deficits without loss of consciousness. A "moderate" head injury is one resulting in unconsciousness lasting from 30 minutes to 6 hours or a GCS 9-12. If the initial GCS is less than 9 or the period of

unconsciousness is greater than 6 hours the injury is classified as “severe”.

The Mild Traumatic Brain I injury Committee of the Interdisciplinary Special Interest Group of the American Congress of Rehabilitation Medicine adopted the following definition of mild brain injury:

> A patient with mild traumatic brain injury is a person who has traumatically induced physiological disruption of brain function, as manifested by **at least** one of the following:
>
> 1. Any period of loss of consciousness;
>
> 2. Any loss of memory for events immediately before or after the accident;
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> 3. Any alteration in mental state the time of the accident (e.g., feeling dazed, disoriented, or confused); and
>
> 4. Focal neurologic deficit(s) that may or may not be transient;
>
> but where the severity of the injury does not exceed the following:
>
> * loss of consciousness of approximately 30 mu\minutes or less;
>
> * after 30 minutes, an initial Glascow Coma Scale (GCS) of 13-15; and
>
> * posttraumatic amnesia (PTA) not greater than 24 hours.

It is essential to note that while these general classifications of brain injury provide some indication of the patient’s ultimate prognosis, they **do not** reflect the severity of the post concussive symptoms a patient may experience, nor do they reflect the extent to which the injury may eventually disable the patient. Patients with “mild” head injuries may be so severely debilitated by the injury that they are unable to return to any gainful employment. Conversely, patients with a “moderate” or even “severe” brain injury may recover sufficient mental functioning to return to employment and relatively normal, productive lives. Many factors, such as educational level, coping skills, employment skills, family support, and the presence of other disabling injuries will contribute to the final outcome.

C. Mechanism of Injury

1. Impact with Skull

The consistency of the brain is often compared to that of Jell-O. It sits within the skull surrounded by cerebral spinal fluid which circulates over the brain and spinal cord and cushions the brain from shock. The inside of the skull is not smooth. There are many bony prominences or ridges which the

brain rests upon, particularly in the lower half of the skull.

Several basic principles of physics explain how the brain is injured when rapidly accelerated or decelerated. One such principle, is Newton's First Law of Motion, which states that once an object is in motion, it tends to remain in motion at a constant velocity until acted upon by sufficient force in the opposite direction to stop it. When the head stops moving suddenly, such as when it strikes an object within the interior of an automobile, the brain continues to move within the skull at the original velocity of the car until it strikes the inside of the skull. Because of its soft consistency, the impact of the brain against the skull and the bony ridges within the skull, causes bruising and microscopic bleeding within the brain tissue.

If the bleeding is severe, such as rupture of a blood vessel, it may require surgical intervention or evacuation. These injuries are known as mass lesions. The brain is surrounded by the dura, a tough, leathery membrane. A epidural hematoma is a lesion that occurs between the dura and the skull. A subdural hematoma is a lesion between the dura and the brain.

2. Cavitation

Cavitation is the formation of microscopic bubbles within brain tissue as it is pulled away from the skull when the head suddenly stops or accelerates. Cavitation occurs when an object moves rapidly through a liquid, such as when the brain moves through cerebral spinal fluid. The formation and collapse of these bubbles causes disruption of brain tissue. Cavitation injuries occur on the opposite side of the brain from the point of impact. They are sometimes referred to as *contrecoup* injuries.

3. Rotational Acceleration

The brain is composed of billions of nerve cells called neurons. A neuron is a specialized cell which conducts electrochemical impulses. A neuron consists of a cell body and cell extensions called processes. There are two types of processes: long single processes known as axons and short, branching processes known as dendrites. An axon can be up to three feet in length. Some axons are covered by a white fatty substance called myelin. The surface of the cerebral cortex appears gray, because the nerve cell bodies are not covered with myelin (grey matter). The brain is made of several layers. In the lower areas of the brain the nerve cells are covered by myelin (white matter). These layers are of varying consistency or viscosity. When the head stops suddenly the brain rotates on the brain stem where the stem exits the skull in a forward and downward motion. The layers of the brain farthest from the brain stem move faster and farther than the layers which are closest. As the brain moves the layers stretch and pull at different rates.

Diffuse axonal injury occurs when the layers of the brain move at different rates causing the axons to be stretched, torn and twisted. This may damage the myelin covering, which in turn affects electrochemical impulse transmission. Nerve impulses are transmitted from one nerve cell to another by electrochemical transmissions across synapses at the end of the axons. If the myelin is sufficiently damaged the nerve impulse is not transmitted to the adjacent neuron. This causes a loss

of brain function. It is important to note that when the body of a neuron is sufficiently damaged, the cell will die. Unlike many types of cells within the body, neurons do not regenerate. Brain damage resulting from the destruction of large numbers of neurons is permanent. It is now thought that most of the loss of brain function following acceleration/deceleration trauma is the result of diffuse axonal injury.

In extreme cases of diffuse axonal injury the grey matter is virtually disconnected from the white matter in parts of the brain. This disconnection causes the victim to remain completely unresponsive in a persistent vegetative state. A person may remain in such a state for many years without ever regaining consciousness.

D. Brain Function

The brain is divided into two sides or hemispheres. For motor functions, sight and hearing, the left side of the brain controls the right side of the body and the right side of the brain controls the left side of the body ("contralateral"). The two hemispheres of the brain do not function identically. For most right handed persons, the left side of the brain controls language functions and verbal information. Generally, the right side of the brain processes visual and spatial information.

The hemispheres of the brain are further divided into four lobes. They are the frontal lobe, parietal lobe, occipital lobe and temporal lobe. Each of these areas of the brain is responsible for a different function. Obviously, the effect an injury to the brain will have on an individual depends in large part on where the injury occurs. The two areas most susceptible to injury by the forces involved when the brain is subjected to rapid acceleration/deceleration are the frontal and temporal lobes.

The higher cognitive functions of our brains which separate us from other life on the planet and give us our distinctly human qualities are controlled by the frontal lobe. The frontal lobe is responsible for all activities related to goal directed behavior and for cognitive flexibility. These include foresight, judgment, initiation, organization, planning and execution. Patients with frontal lobe injury frequently display an inability to control their emotions characterized by severe mood swings. They also experience a loss of inhibition and difficulty maintaining concentration and attention. Injury to the frontal lobe will often result in profound personality changes.

The temporal lobe interprets verbal and nonverbal auditory information, and is responsible for our awareness of time. The hippocampus is located within the temporal lobe. The hippocampus plays a major role in the function of memory. Thus, damage to the temporal lobes can severely affect an individual's ability to remember new information or to recall existing information. Damage in this area may also affect the victim's ability to discriminate speech sounds and understand what they hear.

The parietal lobe enables us to comprehend spatial information and differentiate shapes, sizes and textures. Other functions include right/left differentiation, mathematical abilities and the ability to

express or comprehend emotion. Injury in this area interferes with reading, math, attention to the contralateral hemispace and results in a flattened affect. The perception and understanding of emotion in others may be compromised in some individuals with injuries in this area.

Rotational forces seldom cause injury to the occipital lobe because of its location in the lower rear portion of the skull. Damage to primary visual cortex in the occipital lobe causes blindness while damage to adjacent areas impairs the individual's ability to understand and interpret visual information.

E. Diagnosis of Brain Injury

The diagnosis of brain injury is not usually difficult in cases of moderate or severe injury. By definition, a person has sustained a brain injury once loss of consciousness or change in mental status has been established. Diagnosis is more difficult in cases of mild brain injury. Often the patient is not certain whether they have lost consciousness. Because symptoms may be masked by medications or other acute injuries, the diagnosis of mild brain injury may not be made for days, weeks or even months following an accident. The diagnosis of traumatic brain injury is completely missed in many cases of mild brain injury. Sometimes, cognitive deficits may not become readily apparent until the person returns to work or school and attempts to perform their normal routine. Several diagnostic tools are available to medical clinicians to assist in the diagnosis of brain injury.

1. Neurologic Examination

The basic neurologic examination typically begins with a history and review of symptoms. The physician then evaluates motor strength and tone, balance, reflexes, coordination, gait, sensory and cranial nerve function. The physical examination is followed by a mental status examination which includes an assessment of the patient's orientation to person, place and time, their mood or affect, as well as assessments of gross memory and judgment. It is not unusual for the standard neurologic examination to be within normal limits in persons with mild or even moderate brain injury.

2. Imaging Techniques

Mass lesions such as epidural or subdural hematomas are typically visible on MRI or CT scans. However, it is well recognized in the medical literature, that due to the limitations of current imaging technology, in many instances the microscopic injuries caused by diffuse axonal shearing will not appear on MRI or CT scan. A normal MRI or CT does not rule out the diagnosis of brain injury. Other imaging techniques, such as DTI (Diffusion Tensor Imaging), may prove useful in confirming the diagnosis of mild brain injury.

3. EEG'S and Brain Mapping

The electroencephalograph or EEG is used for diagnosis of epileptiform brain wave activity. It is most useful in the acute stages of injury to confirm the presence of seizures in a patient following

brain injury. EEG's are typically normal in cases of mild injury.

QEEG is essentially a computerized version of the EEG. It takes the electrical activity that is recorded in various parts of the brain and digitizes it, then the information is analyzed by a computer to detect variations in brain activity that cannot be seen with visual analysis of polygraph EEG's.

4. Neuropsychological Testing

Neuropsychology is the study of the relationship between the brain, brain function and behavior. Neuropsychological testing is widely recognized as a useful diagnostic tool for persons suspected of having brain injuries, particularly in cases of mild brain injury. It consists of a series or battery of tests, a review of the patient's history and symptoms together with a clinical evaluation. The individual tests within the battery are designed to assess the functioning of a different part of the brain and thereby lateralize or focalize the point of injury. Neuropsychological testing is the only method available to accurately assess and quantify the cognitive deficits and personality changes that occur after brain injury. Neuropsychological testing can also be used to establish the pre-morbid level of intellectual functioning of a person with acquired brain injury.

In order to obtain the most accurate assessment of the injury, testing should be performed at least two times. The optimum time for initially testing a person suspected of having a mild brain injury is within a few months following the trauma. In cases of moderate to severe injury, testing should be delayed until after the acute period of recovery ends. A second battery performed after the client has reached maximum medical improvement can be used to assess how well brain function has recovered.

A neuropsychological test battery should include tests to evaluate attention, memory, concentration, reasoning and problem solving, learning, visual perception functions, receptive and expressive language skills, academic skills, speed of information processing, motor and psychomotor function, and mental flexibility. It should also include an evaluation of visual, tactile and auditory sensory function. Neuropsychological testing also typically includes tests of effort. The entire test battery and evaluation requires 8-10 hours to complete.

F. Effects of Brain Injury

There is no such thing as a "typical" brain injury. The effect that a brain injury has on the individual depends on what areas of the brain are injured and how much brain tissue is damaged. The sequelae from a mild brain injury are often referred to as "post-concussive syndrome." Post-concussive syndrome includes a wide variety of physical, cognitive and emotional symptoms which may follow brain injury.

The physical symptoms of brain injury include nausea, vomiting, lethargy, headache, blurred vision, tinnitis (ringing in ears), dizziness and quickness to fatigue. Some persons with brain injuries

develop persistent seizures. Other physical sequelae include loss of muscle control and coordination, spasticity, paralysis, loss of sensation and difficulty with balance. Many persons with traumatic brain injuries experience disruption of their sleep cycles, causing them to awaken frequently in the night or develop severe insomnia.

Cognitive symptoms may include impaired concentration and attention. Visual, verbal and spatial perception may be affected. Impairments in short term memory and the ability to process new information are common. Both verbal and non-verbal communication skills also may be greatly affected. The injured person may become rigid and inflexible in their thinking resulting in impaired problem solving skills.

Emotional/psycholgical symptoms include extreme mood swings (emotional lability), personality change, depression, irritability, lowered self-esteem, sexual dysfunction, inability to cope with stress, agitation, anxiety, denial, poor insight and judgment, reduced motivation, quickness to anger and inappropriate affect.

G. Prognosis following brain injury

The National Institute of Health estimates that each year between 50,000 to 90,000 brain injury survivors are unable to return to a normal life because of physical, psycholgical, communication and vocational limitations. Research has shown that approximately 85% of those persons who suffer from a mild traumatic brain injury will eventually recover to the point they can resume a normal lifestyle. However, due to the large number of brain injuries that occur each year, the remaining 15% who do not recover constitute a large number of survivors. For these TBI survivors, even those who have suffered "mild" brain injury, the symptoms of post-concussive syndrome will be permanent and debilitating.

These survivors face a life that few people would voluntarily chose to live. The headaches and short term memory loss make every day activities difficult. Depression drains their energy and further diminishes the little pleasure in life that remains. Vocational limitations create terrible financial strain. Reduced coping and problem solving skills cause little problems to seem overwhelming. Just getting to and from the grocery store may become a difficult task. Interpersonal relationships suffer from the mood swings and irritability. Friends, family and co-workers avoid contact with the survivor. Slowly the TBI survivor withdraws from social settings and becomes more and more isolated. Statistics show that the divorce rate for TBI survivors exceeds 90%.

While the initial period of unconsciousness (Glascow Coma Scale) may give some indication of a patient's prognosis for full recovery, it remains extremely difficult to determine which patients will fully recover and which will not. Most brain injury patients will reach maximum medical improvement within 1-2 years. For those who continue to experience symptoms past the 2 year time period, the odds are very high that the symptoms will be permanent.

Research has also shown that survivors of traumatic brain injury may develop seizures 10, 15 even 20 years post injury. Other research suggests a strong link between acquired brain injury and the early onset of Alzheimer's Disease and other forms of dementia. In addition, it has been shown that the effects of brain injury are cumulative. That means that once a person has sustained a brain injury they are more susceptible to such injuries in the future and the effect of future trauma will be greatly magnified.

III. NEUROLAW

Representation of persons with brain injury presents several unique difficulties for the attorney. Difficult decisions about whether the client should be declared incompetent and a guardian appointed may be necessary. Due to personality changes caused by the injury the client may not be very likeable. They may frequently become angry and abusive to you and your staff. They may become rigid in their approach to a problem and refuse to accept your advice. They may demand that you settle their case immediately or attempt to discharge you as their attorney without cause.

The insurance carrier may deny that the client is really injured or attempt to diminish the effects of the injury on the survivor. In short, there are a myriad of problems that face an attorney representing an individual with an acquired brain injury. Because mild brain injury is the most common type of injury and because such injuries present the greatest challenge to the attorney, the remainder of this article will concentrate on the challenges associated with representing clients with mild brain injury.

A. INITIAL CLIENT INTERVIEW

It is not unusual for the diagnosis of mild brain injury to be missed following an automobile collision. Three factors in the way medical care is delivered in this country contribute to the failure of medical professionals to diagnose mild brain injury following trauma. First, the patient may not be accompanied by a spouse, family member or significant other in the examination room immediately following an injury. A patient with mild brain injury is a poor historian as to many of the symptoms of mild brain injury. They may simply be unaware of changes in attention and memory or of personality changes or mood swings which are readily apparent to those who are most familiar with their behavior. Second, because of specialization, HMOs, change of health insurance carrier, etc., many patients do not have a long term relationship with a physician. Thus, the physician does not have an opportunity to make her own comparison of the patient's speech, personality and memory. Third, the physician does not spend enough time with the patient to observe symptoms of post-concussive syndrome. In many cases, the doctor will only spend 5-10 minutes in the presence of the patient. Many people with mild brain injuries will appear completely normal during a casual encounter. It is only after spending a few minutes with them that their deficits become apparent.

Therefore, the attorney should carefully screen every case for evidence of post concussive syndrome. At the initial interview the attorney should inquire, not only of the client, but also a close friend, family member or significant other, as to whether the client has exhibited any symptoms of brain injury. Find out if client has experienced any of following: loss of consciousness, feeling dazed or

confused following the injury, short term memory loss, headache, dizziness, ringing in ears, blurred vision, sleep disturbance, amnesia, speech problems, word finding difficulty, or personality change. If so, further investigation may be warranted.

B. INVESTIGATION

If you suspect that client has suffered a TBI, obtain the following information: accident report, ambulance call report, ER records, records from any hospital admission, records of follow up visits from all physicians who have treated client since the injury, records from military service, educational records, employment records, and any other information that can be used to establish the client's premorbid level of functioning. Review the medical records, particularly the ambulance call report and the ER notes, to determine whether there are any references to loss of consciousness, confusion, dizziness, nausea, sensitivity to light or sound, signs of trauma to the head, abnormal reflexes, pupil dilation, or eye movements.

Inspect the vehicle for signs of damage to the interior which may indicate client's head struck steering wheel, windshield, etc. Check the positioning of the head rest. If not properly positioned, the head rest may act as a ramp and increase the risk of injury to the brain. Interview friends, co-workers, family members for changes in behavior, motivation, personality job performance or memory loss.

C. EVALUATION

If it appears that the client may have sustained a brain injury after reviewing all of the information gathered thus far, consider having the client evaluated by a neuropsychologist to determine how much impairment the injury has caused. If possible, have another treating physician make the referral to a neuropsychologist you have chosen. Because of the cost involved (approximately $3-5,000) for a complete neuropsychological test battery, you may chose to initially have a neuropsychological screening performed. The screening is an abbreviated version of the test battery. If the screening suggests the presence of brain injury, the entire battery can be completed. After the examination request a complete report from the neuropsychologist. The neuropsychological evaluation and report should always include: a) a complete history for the patient; b) general symptoms and complaints as stated by the patient; c) observations made by the examiner during the testing and clinical interview; d) an assessment of the patients cooperation and effort; e) a listing of the tests administered; f) an assessment of the patient's overall psychological functioning; g) an assessment of the degree to which psychological factors may have affected test performance; h) a discussion of whether disorders or factors other than brain injury may account for the dysfunction observed; I) a summary of the test results and the implications of those results in terms of neurologic functioning; j) a prognosis; and k) a summary of how the deficits reported are likely to affect the patients activities of daily living and ability to work.

If the deficits will significantly impact the client's ability to work or earning capacity a vocational

evaluation may also be in order. The vocational evaluation can be used to: a) Establish the presence of any disabling conditions; b) Identify any functional limitations that will likely result from the conditions identified; c) Assess whether the disabling conditions cause functional limitations that will interfere with the clients ability to secure and maintain competitive employment; d) Determine whether vocational rehabilitative services can enable the client to work in a competitive situation; and e) estimate the cost of those services and the length of time required to assist the client in re-entering competitive employment.

D. SETTLEMENT

Because claims of mild brain injury have become more common in recent years, they have come under increased scrutiny by liability insurance carriers. In many instances, insurers treat claims of mild brain injury with the same level of skepticism that they treat claims for soft tissue injuries, "If you can't see it or show it by an objective test, it does not exist." The attorney must be prepared to establish that the injury in the case in question is real. The settlement brochure should compare and contrast the client's level of functioning before and after the injury and should include the following:

a. Accident report;
b. Ambulance call report; All information contained in the ambulance call report which tends to document any period of unconsciousness should be clearly highlighted;
c. Initial ER records;
d. Complete copy of all hospital records as well as follow up notes from any physicians who have treated client for injuries sustained in accident;
e. Reports of any abnormal diagnostic tests such as MRIs, CT scans, EEGs, etc.;
f. A summary of the client's medical treatment;
g. The identity of all potential lay witnesses as well as a summary of each witnesses' testimony about the changes in behavior or functioning they have observed in the client;
h. The *Curriculum Vitae* and a brief summary of the experience of the neuropsychologist or neuropsychiatrist who diagnosed the client's brain injury. If a vocational assessment has been made, information about the person who performed the assessment should also be included.
i. Photographs of any obvious signs of trauma to the head, such as lacerations, bruising or swelling;
j. Documentation of any lost earnings or lost earning capacity; and
k. A credible settlement demand.

In some cases you may wish to include:

2. An analysis of lost future earning capacity and report by an economist setting forth the present value of any such loss in future earning capacity.
3. Grade transcripts, and results of standardized tests such as CAT, SAT or IQ testing

from any educational institutions attended by the client both prior to and after the injury;

4. Military service records;
5. Employee records or personnel files;
6. Photographs of vehicles involved or accident scene;
7. "Day in the Life" film,
8. Any other information which can be used to compare and contrast the client's medical condition, cognitive functioning and performance in life, before and after injury.

Evaluate the case realistically, stick to that evaluation and be prepared to try the case if necessary. Unfortunately, due to the difficulty in proving these claims by objective evidence, many mild brain injury cases simply do not settle.

E. TRIAL

If you have thoroughly prepared for settlement, most of the information needed at trial will already be in your file. Your first goal should be to establish that your client's symptoms are the result of a physical injury to the brain and that they are not "psychological." Through the use of expert testimony from a biomechanical engineer, a neurologist, neurosurgeon or neuropsychiatrist, establish how the brain is injured on a microscopic level when rapidly accelerated/decelerated. Explain why MRIs, CT scans, X-rays, EEGs, etc. may be normal. Have the doctor instruct the jury on how the brain works and what the general function of each area of the brain is. Have her tell the jury which areas of the brain are most susceptible to injury and review the functions of those areas. Have the doctor explain how injuries in different parts of the brain will affect behavior and cognitive functions. Use charts, diagrams and models whenever possible.

After you have established the base facts, begin discussing your client. Wherever possible, draw correlations between the obvious external signs of physical injury to the head, the function of that area of the brain, the expected symptom from an injury to that area and the client's symptoms. Make sure that the jury understands that the client's symptoms are consistent with injury to a specific part of the brain in the area of the trauma and that injuries to brain tissue are permanent.

It is extremely important to explain to the jury how one part of the brain can be injured and result in significant disability and yet other areas of the brain may function normally. In all likelihood your client will appear perfectly normal. Your greatest challenge will be to make the jurors understand that the functional limitations that result from "mild brain injury" are severe, incurable and deserving of compensation.

The use of lay witnesses to compare and contrast the client before and after injury is essential. Friends, co-workers and family members are all excellent candidates. Make sure that these witnesses have spent significant time with the client both before and after the injury. Several brief witnesses are preferable. The testimony of the witnesses may only last ten minutes or so. The questions to

each witness should be essentially the same. After two or three of these witnesses, the jury should understand the day to day effect of the brain injury on your client and their family. It is often said that brain injury is an injury to the entire family unit and not just the survivor because of the tremendous impact it has on relationships within the family.

IV. CONCLUSION

Hopefully, as medical science continues to grow and treatment methods for brain injury improve, the "silent epidemic" of brain injury will slowly fade into oblivion. In the meantime, representation of individuals with acquired brain injuries will continue to be a challenging endeavor for trial attorneys. People with acquired brain injury need and deserve attorneys who have made the commitment to master this difficult area of medical jurisprudence and who understand the full spectrum of their injuries and damages.