

Traumatic Brain Injury

By Patrick Malone

Traumatic Brain Injury (TBI) is an insult to the brain caused by an external physical force that produces a diminished or altered state of consciousness. This results in an impairment of cognitive (thinking) abilities or physical functioning. It can also result in the behavioral or emotional problems. Traumatic brain injury is the leading cause of death and disability in children and young adults. Shaken Baby Syndrome is a form of traumatic brain injury.

This article discusses the symptoms of traumatic brain injury, how the brain gets hurt, resources for victims and families, and tips for talking to a lawyer if someone was at fault in causing the brain injury.

Statistics:

- An estimated 5.3 million Americans - more than 2% of the country - are currently disabled due to traumatic brain injury.
- About 1.5 million Americans suffer a traumatic brain injury every year.
- More than 50,000 people die each year from traumatic brain injury. This is a leading cause of death for persons under age 45.

When a person survives a traumatic brain injury, the brain damage resulting from a TBI frequently leaves the individual in need of assistance in order to accomplish the basic tasks of daily living. Access to services such as health care and rehabilitation, home, assisted-living facility, and community-based support services, job coaching and placement, and income support can make the difference between a wasted life and a fulfilled life in the community.

Symptoms:

Symptoms of TBI vary widely from patient to patient. Since the brain performs so many functions, many different symptoms can arise depending on the location and size of the brain injury.

The classic chronic symptoms of TBI include:

- Paralysis, difficulty moving body parts, weakness, poor coordination
- Body numbness or tingling
- Difficulty speaking, slurred speech, difficulty swallowing
- Vision changes (blurred vision or seeing double, sensitivity to light, loss of eye movement, blindness)
- Dizziness, balance problems
- Respiratory difficulties
- Problems with digestion, stomach upset
- Lethargy, fatigue
- Headache

- Confusion
- Ringing in the ears, hearing problems
- Difficulty with thinking skills (difficulty thinking straight, memory problems, poor judgment, poor attention span, a slowed thought processing speed)
- Inappropriate emotional responses (irritability, easily frustrated, inappropriate crying or laughing)
- Loss of bowel control or bladder control

How the brain gets hurt:

(This discussion is taken from the [Traumatic Brain Injury Guide](#).)

Each year in America, one million people are seen by medical doctors due to a blow to the head. Of that number, 50,000 to 100,000 have prolonged problems that will affect their ability to work and/or affect their daily lives. The majority of people that I see are injured in car accidents. It is important to note that you do not have to be traveling at a high rate of speed to get a head injury. Nor do you have to hit your head on an object (steering wheel, windshield) to injure the brain. Even at moderate rates of speed, traumatic brain injuries can and do occur. Three separate processes work to injure the brain: bruising (bleeding), tearing, and swelling.

BRUISING (BLEEDING)

If a person is driving a car at 45 miles per hour and is struck head-on by another car traveling at the same rate of speed, the person's brain goes from 45 miles per hour to zero in an instant. The soft tissue of the brain is propelled against the very hard bone of the skull. The brain tissue is "squished" against the skull and blood vessels may tear. When blood vessels tear, they release blood into areas of the brain in an uncontrolled way. For example, one might imagine a dam that breaks, causing water to flood the streets of a town.

Why do medical experts seem so concerned about bleeding in the brain? A major problem is that there is no room for this extra blood. The skull, being hard and brittle, does not expand. So the blood begins to press on softer things--like brain tissue. Brain tissue is very delicate and will stop working properly or may even die off. With large amounts of bleeding in the brain, the pressure will make critical areas of the brain stop working. Areas that control breathing or heart rate could be affected, and a life or death situation could develop within hours of the accident. Some people have sustained a head injury from a car accident and seem "just fine" right after at the accident. Some have even gotten out of the car and directed traffic. Within a short period of time, they began to get more and more confused until they eventually lapse into a coma. So, you can see why Emergency Medical Technicians at the scene of the accident are so anxious to have people go to a hospital following a car accident.

There is also an "odd" thing that the brain goes through during a car accident. The brain, which is very soft, is thrown against the front part of the skull, which is very hard, and bruising can happen. But the injury process is not over. The brain, and rest of the body, fly backward. This bouncing of the brain first against the front of the skull and then against the back of the skull, can produce bruises in different parts of the brain. Thus people can have a bruise not only where their

foreheads hit the steering wheel, but other areas of the brain as well. Doctors call this a "contra coup" injury.

TEARING

At some point in time, we've all played with the food "Jell-O". If you put a thin cut in a square of Jell-O with a knife and let it go, the Jell-O will come back to shape if you jiggle it. The Jell-O will look perfectly good up until the time you go to lift it up, and there will be the slice. The brain has a consistency slightly firmer than Jell-O, but the same effect applies. In the case of the car accident, the brain is thrown forward, then bounced backward (remember those car commercials where the crash dummy flies forward, then comes flying backward). In this forward/backward motion, the brain can be torn. The brain can also be torn by the effects of "energy". If you take a block of ice and hit it with a hammer (assuming you don't completely shatter the ice), you will see little cracks in the ice. Energy from the hammer has been transferred to the ice, producing the web-like cracks. Tearing in the brain is very serious. Tearing in the brain "cuts" the wires that make the brain work.

One of the problems with tearing is that it happens on a microscopic level (the brain has about 100 billion of these "wires"). This tearing may not show up on typical medical tests. Devices that take pictures of the brain will not see these small tears. Two common ways of viewing the brain are with a CT Scan (using X-rays) and an MRI (using magnetic fields) to create pictures of the brain. Both of these techniques are very good at seeing blood and tumors in the brain, but they are not good with tears (which are very small). In a number of medical studies with people who have head injuries, only 10 to 15 percent had "positive" CT Scans or MRI findings. By the way, a "positive" in the medical business is NOT a good thing. It means that they found something that is abnormal in the brain.

SWELLING

If I drop a bowling ball on my foot, my foot will turn "black and blue" due to blood leaking under the skin. But my foot will also do something else--it will swell up. The body realizes that the foot has been injured and sends agents to heal the injured area. The problem with the brain is that there is no extra room and the pressure begins to build up. This pressure pushes down on the brain and damages structures in the brain. If there is too much pressure, this can stop important structures that control breathing or the heart rate. Sometimes, doctors will install a "relief valve" (intra-cranial pressure monitor or ICP) to let off the excess pressure.

OPEN VERSUS CLOSED HEAD INJURY

Not too long ago, doctors made the distinction between open and closed head injury. In an open head injury, the skull is fractured and doctors assumed this would produce a severe head injury. In closed head injury, the skull is not broken and doctors assumed these produce less severe injuries. Wrong! In closed head injury, pressure builds up and damages brain tissue. If you fracture the skull, you may let off excess pressure thus saving the brain from further damage. Because of the wide variation in patients, these terms are no longer used.

Resources:

Read more from an online text by Dr. Glen Johnson, a Clinical Neuropsychologist in private practice. This popular online text for families and patients provides detailed but easy to understand descriptions of what it's like to deal with a traumatic brain injury. He discusses coping with the effects of traumatic brain injury and the prospects for getting better.

[Traumatic Brain Injury Guide](#)

These sections of the [TBI guide](#) discuss many serious chronic symptoms of TBI and coping strategies for each symptom.

- [Memory](#)
- [Headaches](#)
- [Problems Getting Organized](#)
- [Getting Overloaded](#)
- [Sleep Disorders](#)
- [Fatigue](#)
- [Anger and Depression](#)
- [Word-finding](#)

Other helpful resources:

[A great clearinghouse of books and other printed resources](#) for people with brain injuries and their families.

[Check out a self-help column](#) specifically written for brain injury patients and their families.

[BrainInjuryChat.org](#) allows you to talk to other patients with TBI and use chat rooms and view message boards for TBI survivors and their families.

[The Brain Injury Association](#) provides a collection of personal web sites, created by patients coping with TBI.

[This job site](#) provides a service designed to help increase good employment opportunities for people with disabilities. Post your resume or look for a job.

[Parrot Software](#) is a provider of software programs that assist in rehabilitating brain injured patients. This software develops skills in areas such as Memory & Attention, Reading and Word Finding, Logic and Reading, and others.

[Brain-Train Cognitive Retraining software](#) was developed over a 20-year period in a clinical setting providing outpatient services to clients diagnosed with acquired neurological disorders. The software addresses basic cognitive skills and helps train TBI patients in the skills required to obtain a job.

[Stroke Family's speech and word-finding software](#) helps in-home stroke patients practice talking at home using their own computer. They have a free online demo of the program. They also have products for stroke and TBI patients' families.

Further Reading for Parents

This is an excellent book: *Children with Traumatic Brain Injury: A Parents' Guide*, edited by Lisa Schoenbrodt (Woodbine House 2001).

Legal Consultation:

Traumatic brain injury lawsuits are defended aggressively by insurance companies. Any family who is thinking about bringing a lawsuit needs to consult with an experienced lawyer who knows the ins and outs of these cases. The lawyer needs to be very conversant with the medicine of the brain. He or she also needs to have the financial resources to fund the litigation, which can be very expensive.

Here are some specific questions I urge people to ask when looking for a personal injury lawyer in general. These questions also apply to traumatic brain injury.

- What kind of cases does this lawyer handle on a day-in, day-out basis?
- How long has the lawyer been working in the field in which you need a lawyer?
- Does the lawyer try lawsuits in court, or is every case settled out of court or referred to other lawyers to try?
- What is the lawyer's track record of verdicts and settlements?

You can read my explanation for these questions, and get more tips for finding a lawyer, in my article, "Eleven questions to ask before hiring a personal injury lawyer," which can be downloaded from my website, www.patrickmalonelaw.com, as part of our "free injury fact kit."

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