Brain Damage

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Most people who have been used in prostitution have been beaten up, knocked out or choked out repeatedly. They accumulate brain injuries which are not extremely severe or life threatening. These make their lives so much harder, and usually the person has no idea why. Few counselors recognize these injuries at all, and the professional studies needed to define them are outrageously expensive. This paper is written as a self help piece for the majority of survivors who will be on their own.

Injuries to the brain are different from injuries to other parts of the body, because the brain is different in three important ways:

1. The brain is soft, about the consistency of stiff jello. It needs the protection of the bones of the skull.

2. It is entirely dependent on glucose (the simplest form of sugar) and oxygen to function. Cut off either of these, or the blood carrying them, and the brain starts to die.

3. It cannot replace cells that die. It can learn to use other cells to perform the functions of cells that have died, up to a point. After an injury, (such as an alcohol binge) some cells are sick but not dead. A person's functioning may improve, often over several months, as the sick cells recover.

Types of Injury

The brain can be injured in several ways:

1. **It can be prevented from ever developing properly.** Addicted mothers seldom eat well. In addition, alcohol can "wash out" whatever vitamins may be available. Vitamins and food provided after birth may not completely repair the damage.

   The process by which it is put together can be disrupted. As brain cells multiply in the unborn baby, those which do the thinking must actually crawl out over the framework cells. They are programmed to arrive at a specific place and time, to connect to the other cells with which they must work.

   If this movement is stopped by alcohol, even for a short time, some cells are never hooked up properly. The person may never be able to do some things, such as reading or understanding complicated ideas.

2. **Blood supply can be cut off** by a blood clot, by vessels going into spasm, or by rupture and bleeding into the brain. The brain cells which were fed by that blood vessel begin to die.

   This is called a stroke. Most happen to older people, but they can happen at any age. A person who uses a lot of amphetamine or cocaine, which raise blood pressure and may send vessels into spasm, may have a single large stroke, or many very tiny ones.

   People who know such a person notice that he or she changes over time, becoming slower and less organized in thinking, and less able to learn new things.

3. **Brain tissue can be damaged directly.** A blow to the head causes the skull to crash into the brain, killing some cells, and tearing others away from their connections. Sometimes the skull is actually penetrated, as by a bullet, or by pieces of broken skull which are forced into the brain.

   The amount of function lost is directly related to how many and what kind of cells are killed. Cells which are killed, and later partly replaced by scar tissue, can be seen on scans. Cells which are disconnected, but their bodies are not destroyed, may show little change on CAT or MRI scans.

   In general, the severity of the injury is related to the length of time the person was unconscious, plus the time spent awake but confused. It is possible to have a serious brain injury, with permanent changes, without being knocked out.

4. In crude terms, the brain is a computer made out of meat instead of wire and plastic. It runs on chemicals rather than electricity. **Hitting the brain over and over again with drugs and alcohol** can change how it works, even if very few cells die.

   Most people who have used a lot of alcohol and drugs have run into paranoia, mood problems, or hallucinations at one time or another. In the beginning, these go away with time clean and sober. As time goes on, they last longer and longer. In some people they become permanent.

   They can be treated, at least partially, with the medications used for regular mental illness.

5. Like any part of the body, **the brain can be infected by bacteria or viruses**. Before penicillin was discovered, many people became mentally ill and even died from syphilis of the brain.

   Syphilis is no longer common, but it has been replaced by AIDS. In about a third of AIDS patients, mental symptoms are the first changes to appear. Some

medications can slow AIDS down, but so far, there is no cure.

Studies have shown that about a quarter of people with psychological symptoms eventually are found to have medical problems which partly or completely account for their symptoms.

The list of infections which can produce mental changes, at least occasionally, is very long.

6. **Accumulating damage**: People who come to jail often have damage from more than one cause. The damage adds up with repeated injuries. There is no “safe" level.

   The amount of damage from a given incident is completely unpredictable. It may range from very minor, to fatal. Avoiding further injury can be literally a matter of life or death.

   The effects of brain injury can come in two forms:

   a. Functions which are damaged or <u>lost</u>, such as memory, control of emotions, or speed of thinking.

   b. Unwanted things which may be <u>added</u>, such as tremors, seizures, or hallucinations.

   Any individual brain injured person may have problems from either group, or both.

Things Lost

Although there are a great many functions which can be lost, four areas of loss are common:

1. **Memory** is processed and stored in a number of ways, but most must pass through an area called the “hippocampus”. This area of the brain does little remembering on its own. Instead, it decides where to store something, and how to get it back.

   It uses oxygen faster than almost any other part of the brain, and is one of the first things damaged when oxygen is cut off. How the oxygen is cut off is not important - it may be failure to breathe for a time during a drug overdose, or lack of blood flow through a brain swollen by a blow to the head. Poor memory is probably the most common result of a brain injury, regardless of cause.

   Usually there is no problem repeating words right after they are spoken, because

they have not yet been put into storage. There is usually little trouble remembering the distant past, because those memories were laid down before the brain was injured.

The difficulty usually is with short term recall, the period between 3 and 30 minutes. During that time, the memory must make it "over the hump" from immediate to longer term storage. Things which do not get into long term storage are lost forever.

People with this kind of injury need to keep notebooks, and write down anything important immediately, rather than take a chance on losing something they need to know.

These losses are often "patchy", not complete, and are worse when tired, upset, sick, or when overloaded by a lot of other things going on.

2. **Control of emotions** results from a balance between the forces in the brain which get a person upset, and those that slow a person down. About two thirds of your brain cells are involved in controlling or stopping things, and one third start and continue things. If you were a car, you would be two thirds brakes and one third gas pedal.

   Any damage to the brain is likely to do more harm to the brakes than to the gas pedal. What happens is that a person is upset by the same things that upset others, but that the emotions are more extreme and last longer.

   Drugs and alcohol often act as a temporary worsening of brain damage. A lot of people come to jail for things they did while loaded, when their emotions and impulse control were worse than usual.

3. **Talking** involves three steps : having an idea, putting the idea into words, and then physically saying the words. For example, you see a big grey animal, find the word "elephant", then say elephant.

   To understand someone, you must physically hear the words, then connect the word elephant to the big grey animal.

   The same process applies to reading and writing, math, and even recognizing signs.

   In right-handed people, and most left-handed people, the areas of the brain which use words are located in the left temporal area. Unfortunately, most abusers are also right-handed, and tend to hit the left side of the face and head.

   A history of abuse as a child, followed by assaults as an adult, are common in people who come to jail. So are problems using and comprehending words.

People with these kinds of injuries often avoid talking, because by the time they find the right words, the conversation has gone on to something else. Sometimes they are told that their words have come out garbled, or do not make sense.

The reverse may also be true--sometimes other people talk, and seem to be making sense, but the person cannot comprehend what is said. Sometimes they get in trouble because they try to act like they understand, when they do not.

These problems are called “dysphasia", and often are completely unrelated to overall intelligence.

4. People with brain injuries often notice that they **think more slowly** than before. This also may, or may not, be related to lowered intelligence. Developing a picture of what a brain injured person has to work with must consider not only speed, but accuracy. There are four patterns:

    a. Some people think fast and right (and the Air Force wants them for fighter pilots).

    b. Others think fast and wrong (usually because they have trouble focusing and maintaining attention. They react before they have all the facts.)

    c. Many brain damaged people think slow but <u>right</u>. (and need learn ways to create delays, so they can think something through, before answering.)

    d. A few people are so severely injured that they think slow, <u>and</u> wrong.

The pattern of thinking “slow and right” is the most common, and ways can be found to work around most problems. People who think “fast and wrong”, when they can learn to slow down and block out “background noise”, usually can convert to “slow and right”.

Those who think “slow and wrong” usually do best by finding someone they can trust to give advice on what to do, and then following it. This may be very hard to do, especially if the person’s trust has been betrayed in the past, or if they can remember all too well that they functioned much better in the past.

Four <u>less</u> common problems also may appear in some people after brain injury:

1. **Damage to the front of the brain** can happen in many ways, but two ways are common:

    a. In automobile accidents and assaults, you are usually facing forward when hit. The frontal lobes are directly in the “line of fire”.

b. Before birth, alcohol may slow or stop brain cells which are traveling to their pre-programmed places in the developing brain. Cells in the frontal lobes are the most vulnerable because they have the farthest to go.

Many years ago, doctors actually wondered whether the front part of the brain really did anything. People with obvious injuries, such as gunshot wounds to the head, sometimes recovered enough to walk, talk, and try to go back to their previous lives. Yet those who knew them noticed they were somehow different after the injury.

After years of research, especially with head injured veterans from World War II, it was discovered that the frontal lobes do three important things:

a. Focus and maintain attention: some "attention deficit disorder" runs in families, but the effects of alcohol and various kinds of injury account for many other cases.

b. Skills in getting along with other people in acceptable ways. Brain injured people sometimes lose their previous personality, and become rude, crude and inconsiderate of others. They may lose jobs and relationships over and over.

c. Make and carry out plans. To have a successful life, a person must be able to:

    a. decide on a goal

    b. figure out the steps necessary to reach the goal

    c. track their own actions to see whether the needed steps are getting done

    d. know when the goal has been reached and to stop what they are doing

    e. recognize that a plan is not working, change to a new plan, and start again

Often the person has some general goals (e.g., to go to school, or get a better job...) but nothing really comes of it.

They often act on impulse, fail to recognize the likely results of their actions, and fail to learn from previous experience. Others describe them as having "poor judgement". After their injuries, their lives just drift.

2. **The sense of balance** comes mainly from three pairs of tiny, curved, fluid filled tubes, like carpenter's levels, in the inner ears. Movement of the fluid which comes from changing position, is sensed by tiny “nerve hairs”, with calcium crystal “paddles” on their ends, which extend out into the fluid.

   Powerful blows to the head may knock some of the paddles off, or even crack the tubes, making the nerve hairs much less able to track movement. The brain then has less information about which way is “up”.

   The brain does its best to compensate by using eyesight and sensations from the legs and feet to maintain balance. A common test for this problem is to ask the person to stand with feet together and eyes closed, which takes the backups out of action. They may then sway or even fall if left alone.

   The backup use of eyes and feet is less accurate and uses a lot more brain “computer time”. Life generally is harder for people with this kind of injury.

3. A type of damage which is very confusing and hard to describe is **damage to the brain’s “mapping system”**. An area of brain at the upper rear of your head keeps track of where everything is, from where your body parts are, to where you left your car keys.

   This injury may produce problems such as trouble telling right from left, getting lost easily when traveling, losing things, being unable to identify things in your hands with eyes closed, and difficulty putting together “easy to assemble” toys.

   The brain may “neglect” one side of your body and environment. A touch on exactly the same place on both sides of your body at the same time may be felt as a touch only on one side. This results in “clumsiness”, especially dropping things and bumping into things on the side that your brain tends to ignore.

   Driving may be very hard, due to difficulty judging distance and tracking cars moving around you. People having this kind of injury often have a lot of “fender benders”, and have the same kind of accident repeatedly (e.g. running into things with only the left side of the car).

4. People exposed to a lot of violence tend to accumulate **body parts that no longer work very well**. This may take the form of weakness or paralysis of a part, or changed or lost sensation in some areas.

   These changes may come from damage anywhere in the chain from the brain, to the spinal cord, through the nerves, to the nerve endings themselves.

The losses may be temporary, (as in the tingling and numbness from handcuff injuries) or permanent (as in having a facial nerve crushed where it comes out of its opening in the skull, during a beating.)

Sensation may be lost because nerve endings were destroyed (such as in a very deep burn), as a result of pressure on the nerves carrying information to the brain (as in a "slipped disc" in a back injury), or because the brain no longer pays attention to messages coming in, due to damage to the brain itself.

Muscles become weak, uncoordinated, or completely paralyzed when the impulses carried by the nerves are no longer getting through. When the brain stops sending out messages, the muscles are at first paralyzed, then become spastic (many cases of cerebral palsy).

How well the nervous system can recover varies, depending on the part involved and how it was injured.

a. Some recover on their own (most handcuff injuries).

b. Some can be treated (giving vitamins to alcoholics, surgical repair of a cut nerve).

c. In some, the process of damage can be stopped, but not reversed (control of bleeding or swelling in the brain).

A very rough “rule of thumb” is that about 85% of the recovery will be seen in the first 6 months after injury.

Most recovery after that is the result of surviving brain cells learning to do the jobs of those which died. This last 15% takes place over about two years.

Things Added

In addition to things that have stopped working normally, there is the problem of the body doing things which are not supposed to happen at all:

1. **Seizures** (convulsions) may be inherited, may result from current disease (a brain tumor or abscess), may come from a past injury, or may arise for no known reason. Only if the seizure occurs repeatedly is it called epilepsy.

   A seizure is the result of abnormal electrical firing in the brain. It may involve the whole brain (generalized), or only a part (partial). In some people, a partial seizure may extend and become generalized. There are many subtypes.

Generalized seizures (called “grand mal”) produce complete loss of consciousness, and the person has no memory for anything which went on during the seizure. He or she may fall, lose bowel and bladder control, or be injured (such as biting lips or tongue).

A partial seizure may be “simple”, that is, involves only one part of the body, without any loss or change in consciousness.

A partial seizure is “complex” if it involves more than one type of event, and consciousness is at least partly impaired. Partial, complex seizures are actually the most common, but do not attract the attention that generalized seizures do. Unfortunately, partial complex seizures are easily mistaken for mental illness or intoxication.

Seizures usually can be controlled with medication, or in rare cases, surgery. It is very important to get clean and sober, and to avoid further injuries.

2. **Movement disorders** include tremors, poor coordination, and specific repetitive movements.

   Tremors (shaking) may be “fine”, that is small and rapid, or “coarse”, with larger, slower movements.

   The tremor of Parkinson's disease is fairly large and slow, and is worse when the person is at rest. This is seen most often in older people, but also can be a side effect of some medications. Repeated blows to the head, as in boxing or domestic violence will produce it in some people.

   An "intention" tremor is one which is not seen at rest, but becomes obvious when the person tries to <u>do</u> something. These come mostly from damage to the cerebellum, the part of the brain which coordinates movement, and are common in alcoholics. People with this kind of damage walk slowly and clumsily, with feet wide apart.

   Some tremors will be present whether the person is trying to move or not. Alcohol withdrawal is an example of these.

   Another group of movement disorders consist of more complicated movements such as twisting or throwing movements of an arm, facial twitches or lip smacking, or even making noises.

   People who have used a lot of amphetamine or cocaine sometimes develop repetitive, senseless movements such as neck twisting, hair tossing, and picking at clothing and skin.

Movement disorders due to drug use often fade away after a long period of sobriety. Others may be controlled with medications specific to the underlying cause, but some are permanent.

In addition to getting clean and sober, lifestyle changes may be necessary to avoid further injury.

3. **Hallucinations** are false messages coming in through the senses. These may include sights (tracers), sounds (voices), smell, taste, and touch. They may be caused by drug and alcohol use, major mental illness, brain injuries, or even seizures.

   They are hard to recognize on your own, because they use the same systems in the brain as real experiences and therefore seem absolutely real.

   Once a person gets used to the rather horrifying idea of <u>having</u> hallucinations, some are easier to pick out because they are so clearly different from normal life (God talking to you from the TV set).

   Other kinds of hallucinations, and the ideas based on them, are almost impossible to identify on your own, especially if they only change the <u>meaning</u> of things that are otherwise real.

   Some, but not all, hallucinations can be stopped with medication. "Holing up" alone, away from people and things which help keep you oriented to reality, usually will make hallucinations worse. So will drugs, alcohol, and other kinds of re-injury.

   First appearance of hallucinations, while clean and sober, should be considered a medical problem until proven otherwise. Only after medical causes have been ruled out should mental health treatment be sought.

A very hard part of having a brain injury is that you usually look fairly normal to others physically, but **your life is so much harder work.** There are so many things you cannot do well, or cannot do at all.

Other people may say you are stupid, not trying hard enough, or even faking.

Competent medical care is important, but so is support from other people who understand brain injuries, and who will focus on what you <u>can</u> do, rather than what you cannot.