

**Back To Chiropractic Continuing Education Seminars  
History & Exam Evaluating Patients with PTSD ~ 4 Hours  
Presented by Steven C Eggleston, DC, Esq.**

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Marcus Strutz, DC

Back To Chiropractic CE Seminars

## **History & Exam – Evaluating Patients with PTSD**

### **Presented by Steven C Eggleston, DC, Esq.**

#### Objectives

Participants will be taught the importance of taking a history of trauma patients which includes basic PTSD screening questions. They will be taught how PTSD is caused, the risk factors and the major symptoms. They will be advised of the importance of making appropriate referrals to other doctors and therapists when they encounter a patient with PTSD.

#### Hour 1

Treatments are explained including Eye Movement Desensitization & Reprocessing (EMDR), the percentages of men and women who experience traumatic events and the percentage of all people who will have PTSD in their lifetimes. The specific criteria for diagnosing PTSD will be presented and discussed including re-experiencing symptoms, avoidance symptoms and hyperarousal symptoms.

#### Hour 2

The differences between how adults, children and teenagers experience PTSD will be explained as well as the different symptoms for each category. Participants will be taught to understand why some get PTSD and others do not because of certain risk factors and resilience factors.

#### Hour 3

Treatment options for PTSD will be explained including talk therapy, involving family and friends in recovery and cognitive behavioral therapy (CBT). CBT will be broken down into its three sub-treatments including exposure therapy, cognitive restructuring and stress inoculation training. The value and risks of medications for PTSD will be discussed. The risk factor of ongoing stress is discussed because it makes recovering from PTSD more difficult and the chiropractor can counsel patients in this area.

#### Hour 4

The endocrine system will be discussed and the effects of PTSD and concussion on TSH, ACTH, LH, FSH and ADH, the five most important hormones that become imbalanced following brain trauma. The functions of each hormone are discussed and how these functions become dysfunctional following brain trauma in some patients. A number of studies will be cited to show percentages of patients with long term post-concussion syndrome, PTSD and other neuropsychiatric disorders linked to brain trauma patients such as car accident patients which chiropractors see frequently in their offices.

My best friend is a personal injury lawyer. He told me recently that he had heard for over forty years his clients talk about their anxiety after car accidents. He kind of downplayed and didn't take these people all that seriously until he, himself, was in an accident in 2013.

He described his own anxiety as a “scary dark cloud” over his head. He now believes all the stories he heard for all those years. I have found from my own personal experience as a chiropractor for thirty years and a lawyer for ten years that more patients have anxiety after car accidents than have neck pain.

After my car accident in 2012, I had enormous anxiety when driving a car or even as a passenger in a car. The most obvious symptom was that I was always looking around my car and in my rear view mirror to see which car was about to hit me. My palms got sweaty and my heartbeat was fast every time I stopped for a red light or slowed down for traffic on the freeway. It was an irrational fear that I was going to get hit again. However, just because the fear was not “rational” did not make it any less real. That was the thing that amazed me the most. My brain was telling me, “Steve, there is no reason to be fearful.” No matter how many times I tried to talk myself out of it, the fear and anxiety continued to interfere with my life.

Another strange manifestation that I had and most of my patients and clients experience is jumpiness after an accident. Whenever a car would pass mine (and enter my peripheral vision) I would jump and my startle reflex would make me twitch or recoil. This was very strange indeed. I knew in my brain that I should not be doing this and yet it was involuntary nonetheless. This is a reflex (the startle reflex) over which you have no control just like when the doctor taps your knee reflex.

I am a chiropractor so I understand the neurology of the startle reflex. Despite this rational knowledge, I was completely unable to stop it or overcome it or minimize it at all. I felt helpless. No amount of trying to think my way out of this bizarre problem could help. There was no “mind over matter” when it came to this anxiety from the car accident.

### **Eye Movement Desensitization & Reprocessing**

I finally sought help from a therapist and she performed a treatment called EMDR on me. In my case, it took only three EMDR treatments to rid me of this driving anxiety. It stands for Eye Movement Desensitization and Reprocessing and is often used in the treatment of Post-Traumatic Stress Disorder (PTSD.)

The theory is that severe trauma can overwhelm normal cognitive and neurological coping mechanisms. It is no wonder that telling myself to “just stop it” was not working. Apparently, the memories from these traumatic events are not processed fully by your conscious brain and those memories are stored in a different and isolated memory network. You may wonder, “How can a car accident be as traumatic as soldiers that are in war with people shooting at them or trying to blow them up?” According to the National Institutes of Mental Health (U.S. Government), it just can. The NIMH states on its website that car accidents are a common cause of PTSD. Research seems to indicate that any life-threatening event can cause PTSD.

EMDR therapy focuses on processing these scary and traumatic events so that they become just part of your normal memory and, thus, your conscious brain can deal with them. It was very successful for me and I was able to overcome driving anxiety in just a

few weeks. Dozens of my clients have reported similar success. I am a big fan of EMDR and recommend that you find an EMDR therapist to help you overcome driving anxiety.

## **Post-Traumatic Stress Disorder (PTSD)**

The United States has a lot of veterans who have seen combat duty since the country seems to keep getting involved in wars about every ten or fifteen years since the end of World War II. The Veterans Administration (VA) has done a lot of research to figure out what is wrong with our returning soldiers and why they are acting so strangely.

If you have had a traumatic or life-threatening event, it is common to have nightmares, recurring upsetting memories of that event, increased jumpiness and/or trouble sleeping. If your brain is able to process the traumatic event on its own, these symptoms go away in a relatively short time. However, if these symptoms do not go away or get worse, the diagnosis is PTSD.

There is a very close relationship between PTSD, brain concussions and pain from physical injuries. The Veterans Administration organized a special committee on PTSD in 2008 and quickly determined that evaluating its own treatment protocols for PTSD and MTBI (concussions) without doctors who could evaluate these patients for pain and chronic pain would be incomplete at best. The best treatment plan for patients who have experienced a traumatic event is to bring together doctors from various disciplines so that pain management, PTSD and brain concussion are all addressed simultaneously for the patient's good.

If you have (or know someone who has) been through a traumatic event such as a car accident, you need "...an interdisciplinary treatment plan that coordinates and incorporates input from all necessary specialty services" according to the think tank at the Veterans Administration. I will focus on the PTSD aspect of car accidents in this chapter and why this is an essential part of your recovery from the car accident if you are having symptoms of anxiety.

## **How Common is PTSD?**

About 60% of men and 50% of women experience at least one traumatic event in their lives. Nearly 8% of people have PTSD in their lifetimes. It appears that not everyone that is exposed to a traumatic (PTSD inducing) event goes on to actually experience full blown PTSD. The reason is that it is natural to experience stress during or after a traumatic event. We now know that the way your brain and body process the stress-inducing event can be affected by (and even damage) your genes and brain. For example, some people have PTSD-like symptoms for only a few hours or days and they just go away. Others experience these symptoms for a few weeks and this is called Acute Stress Disorder (ASD.) However, when symptoms last more than a month and start to negatively affect your life in many ways, PTSD is probably the correct diagnosis.

## **How To Diagnose PTSD**

A health professional or mental health professional with specialized training is the only one that can “diagnose” PTSD. However, it turns out that most primary care doctors are not routinely screening for PTSD and, because of that, people with PTSD are not being identified and not being treated. The reason primary care doctors are supposed to routinely screen their patients is that most patients are too embarrassed to tell their doctor that they are having all these “weird” symptoms.

The technical criterion to be able to correctly diagnose PTSD is that the patient must have all of the following for at least one month: (1) At least one re-experiencing symptom; (2) at least three avoidance symptoms; and (3) at least two hyperarousal symptoms.

### **Re-Experiencing Symptoms**

After a traumatic event such as a car accident, a patient may re-experience the stress all over again when reminded of the trauma. People in car accidents are frequently reminded every time they drive or even ride in a car. Those situations can trigger an unconscious fear that you just cannot overcome by trying to “think it away.” Words or objects can also be triggers that remind you of the trauma and cause you to re-experience not just the event, but the stressful feeling that occurred during the trauma. The three examples of re-experiencing are:

- Flashbacks
- Bad dreams
- Frightening thoughts

Flashbacks are experiences where you relive the trauma over and over. You are likely to have physical symptoms like sweating or a fast-beating heart. I have been having “hot flashes” like a menopausal woman ever since my 2012 car accident. I have experienced night sweats as well. There have been days where I have experienced some combination of hot flashes and night sweats up to eight or ten times a day. There are other days when I have had only one or two hot flashes a day. As I write this book, it is now more than two years since the accident and I still have to turn up the air conditioner in my car and open my windows at night while I sleep so that I don’t experience as many hot flashes and night sweats.

You may not even know that you are experiencing bad dreams since you do not remember your dreams unless you wake up during that dream. One way to find out is to ask your husband or wife if they notice you murmuring, fidgeting, talking or even jerking around in your sleep. Ask if he or she has ever noticed whether you are acting frightened or as if you are trying to get away from something while you are sound asleep. This may be a sign that you are having bad dreams even though you may not remember having the nightmare.

Frightening thoughts can be conscious or sub-conscious. As I stated before, certain events, words, or objects can be a sudden triggering reminder and cause you to sweat, feel your heart racing or give you sweaty palms. You may not be reliving the car

accident with conscious thoughts but deep down you may be reliving the feelings and fear that you had during the car accident.

It turns out that we store our frightening memories in the same part of our brains no matter how many traumas we have experienced and no matter how long ago it may have been. Think of this area of your brain as a black box where you have put all your scary memories and put a lid on that box to keep them from getting out. When you have a new traumatic event, the lid comes off the box in order to put that new scary thought into the box but sometimes, you cannot get the lid back on the box. If that occurs, you cannot get closure on the frightening and scary experiences from the car accident. Worse yet, you can even begin to re-experience some old and long-forgotten fears associated with some trauma from your past.

There are many events that are considered traumatic to the human psyche. Experiencing war, living through a natural disaster (hurricane Katrina and its aftermath), having a life-threatening illness, being in a car accident or other serious accident where you were injured, physical abuse as a child, being mugged or attacked, being raped or even being coerced into an unwanted sexual experience, having been seriously injured or “escaped death”, having a close family member or friend die a violent death, witnessing a stranger get seriously injured or killed or even witnessing a situation where you feared some person would be seriously injured or killed are all forms of traumatic events that can cause PTSD.

It is possible that you may have experienced one or more of these traumatic events in your lifetime and now, suddenly, you are involved in a car accident and it opens up the black box in your brain where you had stored all these painful memories and kept them “under control.” Since the car accident may have opened up old emotional wounds, you may find that you have to deal with them again with your mental health professional along with the trauma from the car accident in order to get them back into the box and get the lid closed on all these emotions again.

### **Avoidance Symptoms**

People avoid activities that remind them of the car accident. I have heard many patients tell me that they take a different route to work after an accident so they do not have to drive through the intersection where the accident occurred. Some have stopped driving their car and their husband or wife has to drive them everywhere. This is not easy given all the doctor appointments a person has after being injured in a car accident.

Avoidance symptoms means that you are consciously or sub-consciously changing your daily routine or your brain has kind of “shut down” its emotions in order to not feel the strong emotions associated with the car accident. Your brain can close down other bad emotions and even good emotions just to avoid the severe emotional roller coaster that you may be experiencing after a car accident.

The five main avoidance symptoms are:

- Staying away from places, events or objects that remind you of the dangerous event
- Feeling emotionally numb
- Feeling strong guilt, depression or worry
- Losing interest in activities that were enjoyable in the past
- Having trouble remembering the dangerous event

## **Hyperarousal Symptoms**

These symptoms are present in your life pretty much all the time as opposed to the other symptoms which only come on when “triggered.” The hyperarousal symptoms are:

- Being easily startled
- Feeling tense or “on edge”
- Having difficulty sleeping
- Angry outbursts

These four hyperarousal symptoms can make you feel stressed and irritable. In my own experience, they can wear you out. Your body is basically in a constant “fight or flight” mode and adrenalin and other chemicals are flooding through your body as your brain and endocrine system are out of conscious control.

My own experiences with hyperarousal symptoms were difficult to say the least. I had all of them and it wore me out physically, mentally and emotionally. I found that I could get a few hours of work done and then I was emotionally drained and had to leave my office because I was exhausted.

Your body needs rest. Normally, your mind and body rest while you sleep. Your short term memories are moved to a different area of your brain where long term memories are stored. You normally work in a calm state of mind, not a constant fight or flight condition (unless you are a fighter pilot in combat.) When adrenalin and other fight or flight chemicals never go away, it is really difficult to get to sleep, stay asleep all night or get quality sleep.

If you are not resting your mind and body during sleep, you can have another long list of symptoms associated with sleep deprivation. One of the most common is short term memory loss. This means you can remember your high school teacher’s name but cannot remember what you did yesterday. The reason for this is that your short term memory is deleted from your brain when you sleep.

Dreaming serves a function of transferring your short term memories over to long term memory. If your memories never get transferred and are deleted by the time you wake up, they are gone forever. There is a period of about six months after my car accident that I do not remember. I would say that 95% of what occurred in my life that I did not write down during the six months after my accident are gone completely from my life. It feels to me as if those six months were only about a week long based on how much of that time I can remember.

## **An Official PTSD Diagnosis**

You must have a combination of at least one of the re-experiencing symptoms, at least three of the avoidance symptoms and at least two hyperarousal symptoms for a period of at least one month before an official PTSD diagnosis can be made.

## **Do Children Experience PTSD?**

Yes, but children can experience different symptoms than adults. Young children, for example, can begin to wet the bed again even though they have been using the toilet for months or years. They can forget how or be unable to talk. Young children with PTSD can be seen acting out the scary event during playtime and they often become unusually clingy to their parents or some other adult. They are literally clinging to a trusted loved one for emotional support after a traumatic event.

## **Teenagers Also Have PTSD Symptoms**

Teens tend to manifest symptoms that are more closely associated with adults. However, watch for teens that become belligerent, disruptive, disrespectful or they may manifest destructive behaviors after a car accident. You may think that I have described all teenagers in general, but these patterns are very specific to the time period directly after the traumatic event. It can be immediately but often will be a few weeks or even a few months following the car accident.

Teenagers may feel extreme guilt for not being able to prevent injury or death of others in the accident. They may develop thoughts of revenge and begin acting out in strange ways because they are not processing their feelings well. Avoid the natural thought of just attributing these behaviors as just part of being a difficult teenager if you notice them within the short period follow a car accident or any of the other traumatic events I listed before.

## **Some Get PTSD and Some Don't**

We have the U.S. Veterans Administration to thank for much of the research that has been done in the area of PTSD. It began taking PTSD seriously in the 1990s and the research in the early 2000s was plentiful. The V.A. has identified risk factors in an effort to predict which people will develop full-blown PTSD and which will not be affected by similar traumatic experiences.

## **Risk Factors for PTSD**

- Living through dangerous events and traumas
- Having a history of mental illness
- Getting physically hurt during the traumatic event
- Seeing other people hurt or killed
- Feeling horror, helplessness or extreme fear
- Having little or no social support after the event

- Dealing with extra stress after the event, such as the loss of a loved one, physical pain and injury, financial difficulties, or losing one's job or home

### **Resilience Factors That Reduce Risk of PTSD**

- Seeking out support from other people, friends or family
- Finding a support group after a traumatic event
- Feeling good about one's own actions in the face of danger
- Having a coping strategy or a way of getting through the bad event and learning from it
- Being able to act and respond effectively despite feeling fear

These are the factors that are believed to be important as of the writing of this course. Research is ongoing and it is hoped that more studies will be able to focus in and find which of these (or other) factors are either harmful or beneficial in overcoming traumas and healing from PTSD. There is currently a significant amount of overlap among the symptoms of PTSD and what are considered the traditional symptoms of brain concussion. We have studied concussions a long time and PTSD is a newer science. I believe the next twenty years of research will be able to further separate PTSD from concussion symptoms.

### **Treatments for PTSD**

I mentioned earlier my own positive experience with EMDR. Studies have shown it to be one of the most beneficial therapies for treating PTSD. There are other treatments that have good results and are widely accepted by the mental health community as beneficial. These include:

- Talk therapy
- Involving family & friends in your recovery and treatment process
- Cognitive Behavioral Therapy (CBT)

Talk therapy, also known as Psychotherapy, can be helpful for the most obvious reason which is that you are talking to someone about your traumatic experience and "getting it off your chest." A professional therapist can guide you through the process of dealing with these sub-conscious emotions and help you get them under control. I recommend you include your spouse and family in your talk therapy so that they understand what you are going through and they can take better care of you at home and even be more supportive. You will get better faster with support and encouragement from your loved ones.

Your professional therapist can teach you about trauma as well as how and why it is affecting you. You should learn relaxation and anger control techniques from your therapist. A good therapist will thoroughly assess you and provide advice for better sleep, diet and exercise habits that are known to improve body chemistry and relieve your PTSD symptoms.

As I mentioned before, some people experience guilt or shame surrounding the traumatic event and you should have professional help dealing with these emotions. Thoughts like, “I should have known better,” “If only I would have done something different this would not have happened,” are destructive thoughts and your therapist will help you get these thoughts out of your head. Part of PTSD is feeling completely out of control during and after these traumatic events. You need to learn to accept that this just happened to you and there is nothing you could have done to stop it.

## **Cognitive Behavioral Therapy**

There are three parts to Cognitive Behavioral Therapy (CBT) and your therapist may use some or all of them. This treatment includes:

- Exposure Therapy
- Cognitive Restructuring
- Stress Inoculation Training

Exposure therapy is a method of desensitizing you to the trauma. Think of it as facing your fears but doing it in a safe and nurturing environment with your therapist present to guide you safely through the experiences. You may be asked to imagine the trauma as you are guided through it and your brain processes it in a positive way in order to undo the negative way your brain processed it so suddenly after the accident. You may be asked to keep a diary and write down your feelings as a way of facing them and processing them. You may be asked to visit the place where the trauma occurred in order to process the fact that the place is really a safe place despite the events that occurred there only once during that fateful moment in time when you were traumatized.

Cognitive restructuring is a treatment method that focuses on helping you to make sense of seemingly random and senseless acts. You may have bad memories but they may be caused by your faulty recollection of how the event actually happened. I have interviewed thousands of people who have been in car accidents and, even when two or more people are in the same car during the same accident, no two people remember it the same. Your brain will remember certain parts of the traumatic event and remember absolutely nothing about other parts. The therapist will focus on reorganizing your thoughts to look at the traumatic event in a more realistic way to help you overcome feelings of grief, fault or shame which can all lead to anxiety and feelings of being out of control.

Stress inoculation training focuses on teaching you specific techniques of stress reduction. Think of it as, “Well, if you cannot prevent the stress, at least know how to deal with it when it happens to you.” You will learn various techniques that reduce heart rates and anxiety such as breathing, meditation, exercises and others so you have tools to deal with these feelings of out of control anxiety. These will help you get things back under control.

## **Medications**

There are a number of medications that can be prescribed to help PTSD. There are only two that have been officially approved by the Food and Drug Administration (FDA) to treat PTSD and those are Zoloft and Paxil. That doesn't mean there aren't many, many others and psychiatrists use other drugs "off label" which means to treat conditions that are not specifically approved by the FDA for that purpose but are, nevertheless, effective.

As a chiropractor, my approach to good health has always focused on getting well without drugs. However, after my 2012 car accident, I was experiencing PTSD and Post-Concussion Syndrome and feeling completely and utterly bizarre. For example, I went into the Apple Store about a week after the accident because my iPhone would not synchronize with the Bluetooth connection on my new car. The 20-year-old kid told me, "Don't worry sir. All we have to do is back up your phone to the cloud, wipe all the data off it and reinstall all your data. You probably won't lose any data." I burst into tears right there in front of him and was unable to speak because I was weeping uncontrollably. As I stood there, my mind raced. "Get control of yourself Steve. Tell him you've been in a car accident and you have a concussion. Tell him you're not crazy." It was probably at least a full forty-five seconds (seems like forever, though) before I could stop weeping enough to explain to him that I had been in a car accident and wasn't just some crazy old man.

The same thing happened to me in my bank a few weeks later. The teller processed my deposit and then said, "Would you like to open a new account today?" My first thought was to tell her that I was not making good decisions or thinking clearly because I had a concussion in a recent car accident. Unfortunately, the moment I opened my mouth to tell her that, I burst into tears again. Sobbing and weeping uncontrollably. I stood there trying to get control of myself and stop crying for at least thirty or forty-five seconds but simply could not stop crying. The teller finally said, "Well, I can tell that you have other things on your mind so we can just talk to you another time." I turned and walked out of the bank and I have never been back to that branch during the past two years. In fact, as I type up the story right now my eyes are welling up with tears just remembering it.

As I sat in my car crying outside the bank I decided that I had to give up my ideals about not taking drugs because my symptoms were just too interruptive to my life. I found an exceptional psychiatrist who put me on an anti-depressant. He told me it takes about two weeks for it to get fully into my system and begin to work. I woke up on the tenth morning and quite miraculously I was about 60% to 70% better with the following symptoms that I had been suffering with since the accident:

- Wanting to be alone
- Difficulty concentrating
- Getting overwhelmed easily
- Mood swings
- Tearful episodes/Crying easily
- Confusion
- Difficulty focusing mentally
- Forgetting computer passwords
- Anxiety

- Irregular and fast heartbeats
- Angry outbursts
- Inability to make decisions
- Irritability
- Apathy, especially about important things
- Flashbacks to the accident
- Easily frustrated
- Difficulty planning & organizing my life

Keep in mind that 60% to 70% better is not the same as feeling normal again. It helped me to not be completely out of control and non-functional. My paralegal, Aria, even told me, “You’re starting to act more normal now.” I thought I had been fooling everybody and they were not noticing how strangely I was acting. That is a very common mistake made by people with concussions and PTSD. I asked Aria, “Have I been acting strangely?” She shook her head emphatically and replied, “Oh, yeah!”

Medication carefully prescribed and monitored by an exceptional psychiatrist helped me function in life during the years it is taking me to heal. Even as I write this chapter more than two years after my accident, I hate to admit that I still need medication to help me function reasonably well. I thought I could do without them but I suffered quite a bit emotionally and physically during the four months I tried going without the anti-depressant during the summer of 2014. It is difficult knowing that I need medicine to help me function emotionally but these concussion symptoms are not a figment of one’s imagination. They are real. They are frightening. They make you feel like a completely different person.

### **Ongoing Stress Makes PTSD Worse**

If you experience a one-time traumatic event in your life and then your life goes back to being completely normal, it is easier to get over PTSD. However, if you have ongoing stressors that prevent your life from going back to normal, you will have worse PTSD and it will take longer to recover, if at all.

For example, one traumatic beating of a child by a parent is one thing, but if the child is beaten repeatedly by that parent over several years then the trauma and emotional scars will be much worse. Similarly, if a person is in a car accident only one time but is not physically injured at all, their car is repaired immediately and without any hassle at all and they can go right back to work fifteen minutes after the accident and not ever have any financial worries as a result of the accident then that person is far less likely to develop PTSD.

Before 1990, car insurance companies used to settle claims in this fashion. They got your car repaired quickly and provided you a rental car until it your car was ready. They paid personal injury claims promptly and tried to help you get back to your normal life as quickly as possible.

The unquenchable greed of despicable people running insurance companies these days are factors that make your injuries worse. A study of Hurricane Katrina survivors found that the longer that life disruption went on, the more people developed PTSD.

This study proved that a patient's inability to return to their normal life because of "ongoing stress" from loss of jobs, trouble paying bills, and the inability to get quality health care all contributed to more cases of PTSD and longer times to recover from it.

### **Car Insurance Companies Make Your PTSD Worse**

My experience as a personal injury attorney has led me to deal with people that cannot get on with their lives *because* the car insurance companies delay, deny and defend cases now instead of settling them for a fair and reasonable amount. Insurance companies lowball claims and offer a pittance to settle cases even though they know it is far below what would be fair to the injured person.

Since the case cannot be settled, there is no money to compensate the injured victim for months or years beyond what would be a reasonable amount of time to settle a case. They lowball your claim and force you to hire a lawyer to sue the person that caused the accident. The lawsuit process drags on for one year, two years or more. The insurance adjuster cares not one small bit I assure you. The big shots at the insurance company who are profiting by all this greed care even less. The term "despicable human beings" is, in my opinion, too nice for these people.

You, the injured victim, keep trying to get on with your life but cannot because of the ongoing financial stress caused by insurance company greed. The insurance company earns interest and profits with the money they keep while they are not paying your claim. You, on the other hand, cannot buy groceries, pay your rent, put gas in the car to go to your doctor appointments, or many other financial hardships because the insurance company is so greedy and corporate profit is more important than you getting back to a normal life.

### **Reduce Your Stressors After A Car Accident**

If you've suffered a brain concussion after a car accident, your thinking is slowed down, it takes longer to make decisions and your productivity is about 25% of what it was before the accident. You had built your life on the idea that you could be a parent, be a spouse, hold a job, be a volunteer at the PTA, take some college classes and play tennis three nights a week. A concussion even makes it more difficult to organize and plan your life so this advice I am about to give you is going to be even more difficult for you.

You need to make a written list of all the activities that you do in any given week. It should look something like this:

- Work 40 hours a week
- Play tennis 3 hours a week (plus travel time)
- Attend PTA meetings on Wednesday nights
- Spend 2 hours a day helping children with their homework

- Spend 2 quality hours a day with my spouse
- Watch TV 2 hours a day
- 2 hours a day cooking
- 1 hour a day cleaning/washing dishes
- 3 hours a week washing clothes
- 8 hours a night sleeping

It will not be difficult, especially in your brain-concussed condition, to see that you have jammed your life full of activities that all take time and brain-power. You have crammed as much into twenty-four hours as possible if you are a typical American. Now you have a brain concussion and/or PTSD and are 75% *less* productive as before the accident. You will only be able to do a decent job on one out of four activities that you used to perform perfectly.

Your need for sleep does not decrease from its eight hours a night requirement. In fact, concussions and PTSD tend to make you need more sleep. I used to sleep ten to twelve hours a night for nearly a year after my accident. Since the sleep was not good quality sleep, I was still tired and drowsy during the day.

Do you really think you can keep doing all you were doing before the accident? From my own experience and those of my patients and clients over the years, you will be completely overwhelmed very quickly if you try to maintain all the same activities that you used to accomplish before the accident.

Take my advice and cut out every activity you possibly can from your normal routine. Resign from being a volunteer on the Board of Directors of any organization that is not paying you money. Resign from being on the PTA. Resign from being a volunteer teacher's aide at your children's school. Resign from any extra obligations that you have at work that do not directly impact your income.

Have a family meeting after your PTSD/concussion therapist has explained your condition to your family. Tell your teenagers that you will not be able to keep up your normal family duties and that you need them to step up and start mowing the lawn, doing the dishes, cooking dinner, doing their own laundry and cleaning the house. Make sure your spouse is on board and will enforce these delegations of your duties so that you will not "stress out" over them.

Talk to your little children and explain to them that you need their help so that you can get well from the car accident. Tell them, "Mommy needs four long hugs every day." You will benefit from these hugs as much as your children. Tell them you need to play with them more than ever. Sit down with them and color in the coloring book while they do. Play catch with them to recover your hand/eye coordination that you lost from the concussion.

Everything you own costs you time. You either have to clean it, move it, or earn money to pay others to clean it and move it for you. Take a serious look at your life and rid yourself of everything possible that you cannot possibly live without. People learn this

lesson after a natural disaster when their home and car and all earthly possessions have vanished in the winds of a tornado or hurricane. The only thing that cannot be replaced is family, friends and photographs. They learn they can live with a lot fewer “things” and that people, family and friends are really what is important. People on their death beds usually ask for their family to gather around them. I’ve never heard of anybody asking that their car and jewelry be brought to them as they are about to die.

You need to be able to function with as little stress as possible. Time demands are stressful so eliminate as many time demands as you can. You should delegate as many chores as possible to other people. Family members need to pick up the slack since you are not as productive as before. The Katrina Hurricane study showed that you will heal faster if you have fewer “ongoing stressors.”

Simplify your life. Reduce your financial burdens. My psychiatrist told me I would heal faster from the concussion by taking a year off work. If you can afford to do that and not create terrible financial stress on you and your family, you should take months or even years off work until you are physically and mentally ready to go back to work. I know this may sound impossible and may even be stressing you out thinking how you could possibly do this. Not everybody will be able to take months or years off of work to heal from a concussion or PTSD but everybody can simplify their lives a little and reduce the ongoing stressors that will prevent them from healing.

### **MTBI, PTSD & The Endocrine System**

I began to notice that my patients with brain concussions had a lot of symptoms that seemed to be connected to the endocrine (hormone) system of the human body. It is easy to explain the “thinking” problems associated with a brain concussion because that is where your thinking occurs. It puzzled me at first why patients were having sleeping problems, loss of libido, low energy, high blood pressure and problems with diabetes.

I remember studying all the hormone functions in Chiropractic College and I knew that the Pituitary Gland is located in the brain. I postulated that there might be some connection between the Pituitary (often called the “Master” gland), the concussion and all these seemingly unrelated but common symptoms of brain concussion.

There are five major hormones that come from and/or are controlled by the Pituitary gland: (1) TSH; (2) ACTH; (3) LH; (4) FSH; and (5) ADH. The function of these five hormones that have their origin and/or control inside the human brain and they appear to link together these seemingly unrelated concussion symptoms.

#### **(1) Thyroid Stimulating Hormone (TSH)**

TSH (aka thyrotropin) is a peptide hormone synthesized and secreted by thyrotrope cells in the anterior pituitary gland. As the name suggests, this hormone “stimulates” the Thyroid Gland to produce Thyroid Hormone. When the thyroid gland is producing too much thyroid hormone the disease is called Hyperthyroidism. Too little thyroid hormone results in Hypothyroidism. Hyper = too much. Hypo = too little (literally translated as “under”.)

## Hypothyroidism

Too little thyroid hormone causes slowing of body functions, **weight gain**, dry skin, **constipation**, cold intolerance, puffy skin, hair loss, menstrual irregularity in women and, you guessed it, **fatigue**. Since excessive fatigue and drowsiness during the day are very common symptoms of brain concussion, there seems to be a connection between the whiplash and fatigue coming from the Pituitary gland to the Thyroid gland.

Severe cases of hypothyroidism in infants are known to cause mental retardation. In children, too little thyroid hormone can stunt growth and delay sexual development. In adults severe hypothyroidism can lead to heart failure, **seizures** and even coma.

## Hyperthyroidism

Too much thyroid causes acceleration of body functions including rapid heart rate, **anxiety**, **weight loss**, **difficulty sleeping**, tremors in the hands, **weakness**, diarrhea, **sensitivity to light** and **visual disturbances**.

I highlighted in bold the thyroid symptoms that are also commonly known brain concussion symptoms.

## (2) AdrenoCorticoTrophic Hormone (ACTH)

ACTH (aka corticotropin) is a hormone produced and secreted by the anterior pituitary gland. It is often produced by the body in response to biological stress. Its primary effects are to increase production and release of natural corticosteroids as well as cortisol from the adrenal glands.

Corticosteroid chemicals are important in controlling **inflammation** in your body, helping you handle **stress**, and controlling your **behavior**.

Cortisol is produced by your adrenal glands (where adrenalin comes from.) When it is secreted, it increases your blood sugar level, suppresses your immune system and helps your body metabolize carbohydrates, fat and protein that you eat. Is it any wonder that brain concussions can cause **diabetes** to get out of control? In some patients it causes **weight loss** and in other patients it can cause **weight gain**?

## (3) Luteinizing Hormone (LH)

Another one of the hormones produced in the anterior pituitary gland, LH, affects the production of testosterone produced by the Leydig cells in your body. One common symptom of brain concussion is loss of libido. The pituitary gland in the brain ultimately controls the amount of testosterone in your body. Testosterone is the primary factor affecting libido. I believe this explains how brain concussions affect your libido.

Testosterone is also critically important for the repair and regeneration of tissue. 80% of patients with concussions and PTSD after a car accident will have low testosterone within 12 months. Is it any wonder these patients do not heal as fast as the patients without concussions and PTSD?

#### **(4) Follicle Stimulating Hormone (FSH)**

You might be starting to think that the anterior pituitary gland is important. If you are, here is one more major hormone produced and secreted by the anterior pituitary gland in your brain. But is it connected to brain concussion symptoms?

FSH regulates the development, growth and reproductive processes of the body. It is a companion to LH in your reproductive system. It also causes the secretion of Inhibin which, together with Activin, affects your body's ability to **repair wounds**. Brain concussion patients are known to perceive pain differently than similarly injured patients who do not also have a brain concussion. Is it any wonder that chronic pain develops in *some* whiplash patients but not others? I believe that many chronic pain syndromes (including fibromyalgia) have their origin in a brain concussion (perhaps undiagnosed at the time.)

#### **(5) Anti-Diuretic Hormone (ADH)**

ADH (aka Vasopressin, aka AVP) is produced in the hypothalamus of your brain and stored in the posterior pituitary gland. This hormone affects how much water is reabsorbed by your kidneys so it has an important effect on the regulation of water, glucose and salts in your blood.

Blood pressure is a measurement of how much pressure there is on the inside of your arteries. The amount of water in your blood is controlled by ADH. The more water in your arteries, the more pressure and vice-versa. Patients in car accidents who have concussions and PTSD can develop diabetes, pre-diabetes or their diabetes can get worse. Imbalances of ADH may affect both diabetes and blood pressure because it helps regulate water, glucose and salts in your blood.

I have briefly covered five of the hormones controlled by your pituitary gland in your brain. Since this is not a medical textbook I tried to keep it as simple as possible. However, hormone functions are very complicated and there are medical specialists (Endocrinologists) that handle only these very specific chemical balances in your body.

I suggest you see an endocrinologist if you are diagnosed with a brain concussion. Be sure to tell your endocrinologist that you have been in a car accident, that your other doctors have diagnosed you with a brain concussion and that you have read that the concussion might be related to hormone imbalances. This is cutting edge thinking so your endocrinologist may not be able to put these connections together.

Nevertheless, you may need temporary help controlling these hormone levels in your body after a brain concussion. Endocrinologists are used to putting patients on hormones

*forever* so it is important for them to understand you may need help only temporarily while your brain concussion is healing.

## **How Humans React To MTBI and PTSD**

A normally stressful or slightly traumatic event causes activation of the fight or flight mechanism in your body. However, a highly stressful traumatic event can cause an overreaction of the fight or flight mechanism of your body. This causes extreme amounts of adrenalin to be secreted and this can create a deep memory in the nerve pathways of your brain. It is this neurological pathway and memory that makes you hypersensitive to future stimulation. Your adrenal glands get out of control and go stark-raving mad so that every time you have future mild stress, the adrenalin just flows again in large quantities.

Large quantities of adrenalin and other stress hormones cause a part of your brain, the hypothalamus, to lower its activity. Think of the hypothalamus area of your brain as the middle man between your nervous system and your endocrine system. The pituitary gland is the link between your nervous system and your glandular secretions. Your hypothalamus is about the size of an almond and your pituitary gland is about the size of a pea. It is astonishing that they can have such a dramatic effect on your entire body after a car accident.

The hypothalamus controls your body temperature, hunger, thirst, fatigue and circadian rhythm. It also controls certain parenting functions and how we form and maintain relationships and attachments to other humans. It is a major player in either stimulating or inhibiting the secretion of hormones by the pituitary so when the hypothalamus is damaged, you end up with a hormone rollercoaster.

One of its most important functions is to control stress by the way it regulates hormone secretion both directly and indirectly through the pituitary and other glands in the body. With this brain area functioning poorly, patients with PTSD show a low secretion of cortisol and a high secretion of catecholamines in urine. This makes your norepinephrine/cortisol ratio higher compared with people without PTSD. In the normal fight or flight reaction, both catecholamine and cortisol are elevated after exposure to a traumatic event.

PTSD patients have high brain catecholamine levels as well as high concentrations of corticotropin-releasing factor (CRF.) There is a name for these findings. Doctors call this an abnormality in the hypothalamic-pituitary-adrenal axis. We call it the HPA axis for short and it is the delicate balance of the HPA axis that is responsible for coordinating the hormonal response to stress in your body.

The hormone balancing act gets far more complicated from here. There is a strong cortisol suppression to dexamethasone in PTSD so it is believed that cortisol imbalances are caused by an increased sensitivity to glucocorticoid receptors. All of this leads to some kind of pathway damage to fear response and the HPA axis becomes hypersensitive, hyperreactive and hyperresponsive. In other words, just a little fear acts

like a lot of fear in your body. A little bit of normal stress releases the same amount of fear hormones as would occur if you were being chased by a grizzly bear.

Everybody has a little stress every day and it is impossible to avoid all stress. With a concussion and/or PTSD, you may feel the same amount of adrenalin rush all day long that you would feel if you were constantly being chased by a bear. The hormones in your body are out of control because your hypothalamus got damaged by the car accident. Since the muscles in between your ribs are the most sensitive muscles in your entire body to these hormones, your chest can feel tight all the time.

Some studies have shown that low cortisol levels may predispose people to PTSD since it is responsible for calming you down after the fight or flight experience. Other studies have shown that people with PTSD have chronically low levels of serotonin in their brains. Serotonin is responsible for your feelings of well-being and happiness. Low serotonin from a concussion and/or PTSD can make you sad.

Since there is still controversy among doctors, this is a good time to explain that there is no clear and definite connection between low cortisol and PTSD, at least none that has been established. However, there is reasonable agreement that MTBI/concussion causes lower cortisol. The question inevitably must be asked, "Which of these symptoms are caused by MTBI and which are caused by PTSD?"

I wrote earlier that there is a considerable amount of cross-over between the symptoms of PTSD and MTBI. So which do you have? The answer is that current medical science has not yet figured out exactly how the brain works. The more we learn, the more complicated it has become. Brain function is the least understood of all human physiology because the brain is very complicated. I suggest we not worry as much about what we do not yet understand and, rather, focus on helping people recover from car accidents until we fully understand all of these neuro-hormonal interactions.

Take serotonin for example. People with PTSD have low serotonin but low serotonin is also common in people with obsessive-compulsive disorder, depression and anxiety. An Italian study found that people who have recently fallen in love have lower serotonin levels and postulated that it may be the reason for the obsessive-like feelings associated with a new love interest. Alcohol consumption causes serotonin levels to drop which is why your concussion doctor will ask about your alcohol use. Serotonin is known to affect the clotting of blood. Low serotonin levels can slow down the clotting process and even slow down healing time in general.

Serotonin is known to regulate aging, learning and memory. We know that serotonin levels do not drop (they actually increase) in early stages of aging. They only drop in late stages of aging. It is no wonder I feel like an old man since my accident. I have already written about how concussions affect your learning, damage your short term memory and slow down your thinking process. These are believed to be associated with your serotonin and other hormone abnormalities after a car accident or other trauma. Irritability, aggression and impulsive behaviors are commonly associated with low serotonin levels. I have simplified this more than you can possibly imagine and yet it is still fairly complicated.

Dopamine is another hormone that, when low, can contribute to your poor attention span, apathy and even poor muscle function. On the other hand, when your dopamine levels are too high, you may feel the symptoms of agitation and restlessness. All of these symptoms are known to exist in patients with brain concussions. The simple rule is to understand that your brain function can cause some hormones to go up or the same hormones to go down depending on how your brain was injured and how it is reacting, processing and coping with your injuries.

There is one MTBI/PTSD relationship for which we have scientific data. When a concussion patient is also diagnosed with PTSD, that patient has a very high risk of having persistent (long term) postconcussion symptoms.

### **Anterior Hypopituitarism After MTBI**

A study published in in 2005 reported that about 33% to 50% of brain injury patients had anterior pituitary hormone deficiencies in a screening study three months after the brain injury. It stated, “It is crucial that anterior pituitary hormonal function be assessed.”

### **Early Predictors of Post-Concussion Syndrome**

A concussion lasts for up to three months after which it is considered “post-concussion syndrome” by doctors. A 2009 study found that the greatest correlation between post-concussion syndrome lasting a long time and any of the early signs of concussion were anxiety, noise sensitivity (NS) and trouble thinking. They looked at many other physical symptoms and found them to be even more common in the beginning but all other physical symptoms were “poor predictors” of long term post-concussion syndrome. These three are the most reliable predictors of which patients are likely to have post-concussion syndrome that lasts months or years.

### **Neuroendocrine Dysfunctions Are Common**

This study from 2004 was on fifty moderate to severe TBI patients. It found that 18% of the brain injury patients had deficiency of growth hormone, 16% had cortisol deficiencies and an incredible 80% had testosterone deficiency. It concluded that these hormone deficiencies make recovery more difficult for brain injured patients.

Another study from the Journal of Endocrinology that same year stated that their results showed that mild TBI patients are just as likely to have these neuroendocrine dysfunctions and hypopituitarism as moderate to severe TBI patients. It described “vascular damage to the pituitary” as the causal mechanism of these early and frequent neuroendocrine abnormalities in MTBI patients. It described one patient who was not diagnosed with hypopituitarism until two years after the concussion but whose cognitive functions improved “significantly” with replacement of these important hormones. Despite that success story, the study emphasized that early evaluation by an endocrinologist is important for all concussion patients.

One may wonder, how does growth hormone affect memory and cognitive function? It seems that growth hormone attaches itself in many areas of the brain and facilitates

numerous brain and hormonal activities. For example, growth hormone receptors in the hypothalamus are likely to be involved in hormone regulation and secretion of those hormones. The choroid plexus helps growth hormone cross over the blood-brain barrier. In this case, the hippocampus has growth hormone receptor sites that may be involved in helping memory and cognition.

## **Long Term Consequences of Concussion**

There are primary and secondary symptoms of concussion. These mechanisms of brain damage and hormonal abnormality have significant long term consequences. A thirty year study of concussion patients found that almost half of them would later be diagnosed with a neuropsychiatric disorder. Major depression was most common (27%) but others included PTSD (14%), obsessive compulsive disorder (6.5%), alcoholism (12%), panic disorder (8%), some specific phobia (8%) and even psychotic disorders (7%).

The most important fact to come out of this long term study was that the diagnosis of a psychosis (i.e. bipolar disorder, paranoia, visual hallucinations) has a latency period of four or five years after the concussion. This means that the personal injury case was settled *long* before the patient's doctors can figure out that he or she will have one of these major debilitating and lifelong mental problems. The diagnosis of psychosis secondary to head injury (PSTHI) occurs in 4% to 8.9% of concussion patients. As if that were not bad news, a 2003 study described the onset of gradual psychosis as being associated with the risk factor of patients with temporal and frontal lobe injuries.

With such devastating sequelae, I recommend again that concussion patients avail themselves of all available treatments early after a car accident. We do not yet have any studies showing whether early intervention with hyperbaric oxygen, biofeedback, medications, or hormone replacement by an endocrinologist will have any effect on these long term problems but I didn't take any chances. I did everything possible to get well and hope it helps me to not be one of these psychiatric cases.

One of the most interesting facts to come out of the thirty year study was that full-blown PTSD did not occur in patients who were unconscious or even those who had no memory of the head injury event. They may have had avoidance or hyperarousal symptoms but it did not progress into full PTSD.

Finally, this thirty year study found one extremely important finding. The development of psychiatric disorders had no direct relationship to the severity of the brain trauma. This means mild concussion is just as likely as moderate and severe brain injuries to cause long term psychiatric problems.

It is important for the post-concussion syndrome patient to realize that the need for professional psychological counseling is extremely important for themselves as well as their families in order to maintain reasonable psychosocial quality of life. In fact, a 2001 study found the need for ongoing mental health professional assistance "even more than a decade post-injury."

Another study from 1999 found that concussion patients were more likely to be diagnosed with depression one year after the concussion (13.9%) than the control group after one year (2.1%). Panic disorders were far more common among post-concussion syndrome patients (9.0%) than the general population (0.8%) This study also noted, “Compensation claims, however, were not associated with the rate of psychiatric illness.” This seems to indicate that patients are *not* faking these injuries to get money as many claim adjusters are brainwashed to believe.

When it comes to dealing with this constellation of symptoms following a car accident you need to have both a neuropsychologist and endocrinologist on your team to help you sort out these complicated, frightening and life-changing symptoms. Psychiatrists can also be very helpful with medications to help you control these hormones if you cannot find a good endocrinologist near you.

I urge you to take MTBI and PTSD very seriously. I know you might be in denial and just hoping you will heal “with time” but studies show a frightening connection to very long-term disabling psychiatric conditions in concussion patients. Not only that, the development of a psychosis four or five years after your car accident is statistically between about 1 in 25 to as high as 1 in 11 patients. Do everything you can to heal your brain *now* as completely as possible.

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