Supporting the Brain in Concussion
Memory Loss, and Early Dementia Patients

By Samuel Yanuck, DC, FACFN, FIAMA

Concussion and other head injuries, memory loss, and dementia share certain processes in common. These processes involve a shift of normal immune system function in the brain into a mode in which the immune system can drive inflammation and destruction of brain cells. When this shift occurs, brain cells can stop functioning optimally and can also be lost at a higher rate, with consequences that can be devastating in the long term.

BRAIN FOG, MENTAL FATIGUE, MEMORY LOSS

These symptoms can be caused by chronic inflammation in the brain. The brain can become inflamed as a result of trauma, but the same biochemical processes that drive inflammation in the brain when a person has a concussion can also occur in the brain when a person has a prolonged process of inflammation in the body. This can occur with chronic infection, chronic stress, immune responses to environmental and other allergens, autoimmune disease, obesity, or even excessive exercise.

When the brain becomes inflamed, brain cells function poorly, and can't keep working for long periods of time. When you try to do mental tasks, your brain cells become fatigued. When they get fatigued, you can get symptoms like memory loss, brain fog, and fatigue that occur when you try to do mental tasks like reading or driving.

ACCELERATED LOSS OF BRAIN CELLS

In the adult brain, 54,000 cells die every day. That's normal. The problem is that with injury, memory loss, or dementia, this process can accelerate. Once brain cells die, they're gone. And you don't make new ones.

The brain has two kinds of cells. The ones that do the thinking, by sending signals to each other, are called neurons. These are the ones you lose 54,000 of every day. The other ones, called microglia, are specialized white blood cells. There are actually more microglia by weight than neurons, making the brain your biggest immune system organ. The microglia keep tabs on the neurons. When neurons die, microglia gobble them up like Pac Man and get rid of them, so they don't make a mess of dead tissue in the brain. So there is always a process going on by which the immune system is keeping the brain cleaned up. OK so far, but…

How do the microglia decide which neurons are dead? It turns out that the neurons that are signaling their neighboring neurons are left alone, while neurons that are sitting there doing nothing are eaten up by microglia. Normally, that's fine, since the only neurons that are doing nothing are the dead ones. But, when the brain is injured or inflamed, live neurons may be functioning poorly enough that they are not doing enough signaling to be recognized by the microglia as being alive. If they aren't signaling their neighbors, they may get gobbled up by the microglia. This is a mechanism by which loss of neurons can become accelerated in the injured, ageing or inflamed brain.

RISK OF SECOND HEAD INJURY

When the brain becomes inflamed through a trauma or systemic inflammatory process, the initial consequences can be mild or severe. But in either case, another problem can occur, called Microglial Priming. Normally, microglia are in a resting state.

When the brain is injured or inflamed, the microglia shift into a state in which they swell and fill with inflammatory chemicals. The microglia might not release these chemicals into the surrounding brain tissue with the first injury. But if another injury occurs, or if a head injury occurs after microglia become primed by systemic inflammation, the microglia can release a major outpouring of these inflammatory chemicals, yielding a much more significant head injury. This is why a second concussion is often much worse than the first one.

For some people, microglial priming can occur because of brain inflammation driven by a chronic infection or other factor that made them inflamed. For these people, their first concussion is introduced into a brain that is already primed for a major outpouring of inflammatory chemicals, yielding the same kind of serious result.

In each of the above situations, steps can be taken to improve your outcome. While most approaches to these problems involve just waiting, or task-oriented exercises to stimulate function, other key factors can often be brought into play to accelerate progress and protect neurons from being lost.

A skilled focus on changing body chemistry to support brain function is often of crucial value in turning the tide in these cases. Such an approach must be detailed, research based, and individually tailored. The skilled application of neurological rehabilitation exercises can also be of value. As with changing body and brain chemistry, the success of neurological rehabilitation depends on the detail and individualization with which it is applied.

I have a special interest in these cases. I work with many of these patients at The Yanuck Center and also teach other doctors around the country about the proper management of patients with these problems. Success in these cases requires persistent focus and work by both doctor and patient. The results can be very rewarding. H&H

Samuel F. Yanuck, DC, FACFN, FIAMA treats patients from all over the U.S. He also teaches functional medicine principles to both doctors and medical students. Dr. Yanuck uses a broad range of clinical tools to help people in all stages of health and illness. His approach integrates neurology, immunology, body chemistry, nutrition, lab analysis, chiropractic, acupuncture, and other methods into a single working process. Dr. Yanuck is a Fellow of the American College of Functional Neurology, and a Fellow of the International Academy of Medical Acupuncture.

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LEARN TO RELAX

BY CHERYL YANUCK, MD

Research shows that physical exercise is not just good for your heart, muscles, and bones, but is great for your brain, too. Exercise actually improves your memory by increasing the size of your hippocampus (the part of the brain where memory occurs). If you want to avoid getting Alzheimer's disease someday, keep on exercising, or start now!

Relaxation techniques like meditation, guided imagery, and prayer also have been shown to improve brain function in lots of ways. Meditation helps us regulate our emotions and stay more relaxed, improves our interpersonal interactions, improves memory, lowers our heart rate and blood pressure, and diminishes pain, just to name a few effects.

Here is one example of a technique you can practice to stay mentally healthy: once a day, go for a 20-30 minute walk (or do some other form of physical exercise if you prefer). When you are done, sit down for 10-20 minutes in a comfortable place.

Focus your attention completely on your breath. Observe your breath without trying to control it. When, naturally, your mind wanders away, gently guide it back to watching your breath. Observe any thoughts, feelings, or sensations that pop up for a moment, and then allow them to drift away, like a leaf drifting downstream. Return to watching your breath. Continue to gently guide your attention back to the breath. Do not criticize yourself for getting distracted; we all have many tracks playing in our brains all the time! Our goal is to focus in on the breath track and turn down the volume of the others. Cultivate a non-judgmental, accepting attitude toward yourself.

Practice this as often as you can to get the most benefit. If you would like to use a recorded guided imagery exercise to lead your practice, I have put two relaxation exercises on our website. You can access them for free from any computer, or download them onto an MP3 player. They can be found at: www.yanuckcenter.com/node/52. Enjoy!

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