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PERSONAL HEALTH

Hard-Knock Lessons From the Concussion Files

By [JANE E. BRODY](#)

Midway through a delightful school outing on the local ice-skating rink, my daughter-in-law, a good skater, suddenly fell backward, hitting her head so hard she was knocked out. After she was wheeled into the first aid room, she asked: “Where am I? How did I get here?”

Though her sons, who are novice skaters, were wearing helmets, my daughter-in-law, like the other adults on the ice, was not. And she had suffered a concussion. The external bump on her head was of no consequence, but the internal “whiplash” of her brain had caused an intense headache, nausea and amnesia about the event.

An ambulance took her to a trauma center, where a CT scan and X-rays showed no fractures or internal bleeding. After a few hours of observation she was sent home under 24-hour surveillance and told to return immediately if she became disoriented, confused or extremely fatigued, if her headache worsened or if she started vomiting. She was also told that it was normal for the headache, nausea and neck pain to continue for several days. What she was not told, however, was how important it was to rest and minimize stress to give her brain a chance to heal. Taking a week or so off from work might have been a good idea.

Nor was she told that even a mild concussion may leave “invisible” but disturbing symptoms: fatigue, irritability, difficulty concentrating, memory problems and sometimes depression. These are indicators of a postconcussive syndrome that months later could result in impulsive behavior, easy frustration, impaired social judgment and unpleasant personality changes.

The syndrome typically occurs in its most severe form after a series of concussions that deprive the brain of a chance to heal before the next injury occurs. This is most likely what has disabled Ted Johnson, a middle linebacker who helped the New England Patriots win three Super Bowls before he retired in 2005.

At 34, Mr. Johnson, who sustained repeated concussions on the field, is showing signs of dementia and has become addicted to amphetamines, which he started taking to relieve the previously unrecognized and untreated symptoms of postconcussive syndrome. The damage to his brain is now thought to be permanent, his neurologist told The New York Times.

Mr. Johnson told his story after reading about Andre Waters, a hard-hitting defensive back for the Philadelphia Eagles who committed [suicide](#) at age 44. An autopsy revealed brain damage similar to that of an 85-year-old with beginning [Alzheimer’s](#) disease.

Moving Parts

Each year about 50 of every 100,000 people in the United States suffer a concussion, which is defined as an immediate and short-lived loss of consciousness accompanied by a brief period of amnesia after a blow to the head.

But you do not have to be knocked out to have a concussion. Dr. Allan H. Ropper and Dr. Kenneth C. Gorson, neurologists at St. Elizabeth's Medical Center in Boston, [reviewed](#) the clinical aspects of concussion in [The New England Journal of Medicine](#) last month and wrote that people who are dazed after a head injury but who do not lose consciousness may have sustained the mildest form of concussion.

In an interview, Dr. Ropper explained that a concussion typically happens when the head and body are moving and the head is suddenly propelled into a fixed object. The brain, which resides in a jacket of water inside the rigid skull, keeps moving, and rotates forward and backward on the fulcrum of the brain stem. This swirling motion of the brain disrupts an area of nerve cells that maintains alertness. A cascade of chemical reactions follows, all of which need time to recede to allow brain function to return to normal. Just as an injured muscle needs time and rest to heal, so does the injured brain.

Concussions occur most often in young children. Sports and bicycle accidents account for most cases that afflict those ages 5 to 14. Car crashes and falls are the most common causes among adults. In winter, when sidewalks and roadways are often icy, even an agile adult can end up with a concussion from a bad fall.

Parents of young soccer players often worry about the risks involved in heading the ball. But experts say this kind of impact is not usually enough to cause a brain injury. Ice hockey is another story, as [Eric Lindros](#) of the Dallas Stars has found. He has suffered at least eight concussions in his career with the National Hockey League, prompting doctors to suggest he retire.

The postconcussion syndrome is real. The Boston doctors described it this way: "A constellation of sometimes disabling symptoms, mainly headache, dizziness and trouble concentrating in the days and weeks following concussion. Once established for more than a few weeks, symptoms often persist for months and tend to resist treatment, although they eventually lessen." They added that some patients "have vertigo, or experience motion of the environment while walking or driving."

Gerald Tramontano, a neuropsychologist at the NeuroRehab Institute in Mount Arlington, N.J., who testifies in cases involving postconcussive symptoms, said he often saw patients years after the original trauma, when other treatments, including psychotherapy, had failed.

"These disorders can be very disabling, but since you can't see them like a broken bone or [tumor](#), they are easily missed," Dr. Tramontano said. He added that patients with the syndrome "may do great cognitively," but they can become more emotionally unstable and have impaired social judgment. They may say things out of context, for instance, become more impulsive or show personality changes.

The Boston doctors reported that when unresolved litigation is involved, the symptoms tend to persist, but in countries with infrequent lawsuits after accidents, the rates of postconcussive disability are "extremely low."

Treating the Symptoms

While there are no scientifically established treatments for postconcussion syndrome, reassurance and education about the effects of concussion have been shown to reduce the incidence of symptoms at six months.

Patients are advised to take a mild analgesic like acetaminophen, but not narcotics, for the headache. Those with dizziness may be prescribed a motion-sickness drug like meclizine and exercises that help with balance. But the evidence is limited for the effectiveness of antidepressants, often prescribed for patients with prolonged symptoms of worry, sleeplessness and poor concentration, the Boston doctors said.

Dr. Tramontano urges that young athletes who suffer a concussion not return for a month or more, and that their workload at school be reduced. When young people return to their sport or to driving too soon after a concussion, they are more susceptible to accidents and a repeat concussion. The more often that happens, the more likely they will have prolonged and perhaps permanent postconcussion symptoms.

Dr. Tramontano recommends that every concussion victim undergo neuropsychological testing to check for behavioral or social symptoms, which can often be treated in one or two sessions.

And prevention involves properly fitted helmets for sports like cycling, skateboarding, rollerblading, ice skating and skiing, as well as always wearing a seatbelt in a vehicle. A helmet may not always prevent a concussion, but it can greatly reduce the risk of a severe injury.

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