[IMAGE]

Brain Impact: Concussion Facts

Concussions are getting the attention of the athletic world

By Robert George, DC, CCSP, CSCS

On Oct. 23, 2011, San Diego Chargers offensive guard Kris Dielman suffered a concussion during a football game against the New York Jets with 12:31 left to play. He landed hard on the ground after a wicked collision with a Jets linebacker, then got up, wobbled and went back to playing the rest of the game, taking several more hits to the head. Neither the Chargers training staff nor the NFL referees recognized how serious his head injury was as he "waved off" his sideline training staff to return to the huddle. On the flight home to San Diego after the game, Dielman suffered a "grand mal" seizure and will most likely not play for the rest of the season.

Magnitude of the Problem

Concussions are getting much-needed attention in the press, especially given the short- and long-term cognitive loss, early-onset dementia, physical disability and even death resulting from traumatic brain injury (TBI). Chronic traumatic encephalopathy is a chronic, degenerative neurologic disease linked to repetitive head trauma and is known as an invisible killer that can make a 35-year-old brain look more like 80 years old.

There are 250,000 concussions annually in football alone. The prevalence in high-school and college athletics is a major concern, especially considering how big, fast and strong high-school and college athletes have become, and how their play emulates the professionals. This "evolution" is exacting a terrible toll regarding TBI in not only football, but also soccer, hockey, wrestling, water polo and cheerleading.

brain mri - Copyright â Stock Photo / Register Mark Three Purdue University professors tracked 21 football players from Lafayette Jefferson High School in Indiana. For two years they kept a record of every hit in practice and during games. They found that half of the players had neurophysiologic changes from contact. They also discovered that the repetitive hits the players were receiving had a cumulative effect on the brain and resulted in brain wave changes that mimicked concussion, even when the contact did not result in a concussion!

Concussion Basics

What is a concussion? It can be defined as "a complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces" or "an immediate and transient loss of neuronal function secondary to trauma." Signs and symptoms include but are not limited to thinking deficits, lack of sustained attention; amnesia; confused mental status; dazed look / vacant stare; slurred or incoherent speech; vomiting; nausea; emotional liability; slow motor or verbal response; memory deficits; poor coordination; dizziness; headache; restlessness; nervous weakness; exhaustion; and irritability.

For many chiropractic doctors, it is more likely to see an athlete in your office after injury occurs. Recognizing post-concussion signs and symptoms that can occur days or weeks after initial injury is crucial. These signs and symptoms include but are not limited to persistent low-grade headache; lightheadedness; poor attention and concentration; memory dysfunction; unusual fatigue; irritability and low frustration tolerance; intolerance of bright lights and difficulty focusing vision; intolerance of loud noises; tinnitus; anxiety and or depressed mood; and sleep disturbances.

The brain heals slowly; the first thing to recognize is that there is no "minor" head trauma. The million-dollar question is, "Have you ever hurt your head before? Second-impact syndrome is defined as even a minor head injury to an athlete recovering from a previous concussion, mild to severe, and can lead to brain swelling or even death. Jake Snakenberg, a Denver-based freshman high-school football player, died in 2004 because of second-impact syndrome from a hit he took just one week before the second hit that killed him.

Severity Guidelines

One of the most common ways to categorize concussion is the ACSM/Cantu Guidelines developed by neurologist Robert Cantu. These guidelines have three grades as follows:

Grade 1 or mild concussion includes no loss of consciousness combined with post-traumatic amnesia (PTA) lasting less than 30 minutes. Identifying PTA includes digit recall, simple arithmetic, reverse numbering, and word pairs asked immediately and at 1, 3 and 5 minutes. Orientation to time including who the president is, who their principal is and today’s date are useful questions for evaluation.

Grade 2 or moderate concussion includes loss of consciousness for less than 1 minute or PTA that lasts for more than 30 minutes and less than 24 hours. Post-concussion signs and symptoms that last for more than 24 hours, but less than six days, are also considered to be Grade 2.

Grade 3 or severe concussion occurs with loss of consciousness exceeding 1 minute, PTA for more than 24 hours or post-concussion signs and symptoms (PCSS) for more than seven days. Depending on the number of concussions and grade severity, referral for neurologic evaluation and brain imaging will be required. If you are a doctor on the field of play, remember, "When in doubt, keep them out!" Nothing is worth chancing the devastating consequences of head injury.

Other Considerations

Treatment of concussion includes cognitive and physical rest until symptoms resolve, followed by a graded program of exertion prior to medical clearance and return to play. Special consideration to treating each person with concussion as an individual is necessary. The recovery and outcome of concussion depends on a variety of factors that may require a sophisticated treatment and management strategy that includes a step-by-step progression.

Guidelines are used as a standardized reference, but observation, clinical skill and common sense are always better than a standardized guideline. Evaluations and recommendations need to be individualized for the individual, keeping in mind that the effect of concussion on children can be much more damaging than adults since neurophysiologic maturity is not reached until the mid-20s.

An athlete who doesn’t exhibit many of the same symptoms of PCSS like dizziness, vomiting or memory loss can still have the same changes in brain activity as one with a diagnosed concussion. Even one of the standard neurologic tests used to measure concussive blows, the ImPACT (Immediate Post-Concussion Assessment and Cognitive Testing), doesn’t always measure an athlete’s readiness to return to play because the test can be cheated on.

Protective Legislation

Legislation has been introduced in many states to protect student athletes from the damaging and often-devastating effects of head injury. Special concern is being placed on return-to-play guidelines that are designed to avoid second-impact syndrome and its potentially deadly consequences.

In 2009, Washington introduced the Zachary Lystedt Law, requiring any athlete under 18 years of age suspected of having a concussion injury to receive written medical authorization from a licensed physician before returning to play. Other states are following suit; for example, beginning in January 2012, California requires written authorization for return to play for children under 18 years old. Doctors of chiropractic are included in this law as qualified health care providers.

Talk to Your Chiropractor

The use of doctors of chiropractic in high-school, college, amateur, and professional athletics is growing rapidly. Whether your doctor of chiropractic is a team chiropractor for the Olympics, a professional football team or your child's soccer or Pop Warner team, or has patients who play contact sports, knowledge of sports injuries and especially evaluation of concussion is a vital part of their role as a health care provider. Talk to your DC about the dangers of concussions and make sure you know what to do if you or someone you love suffers a head injury.

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