

Recognition and Treatment of Head Injuries in Athletics

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We are at an exciting point in chiropractic sports medicine. Over the past few years, the chiropractic physician has become a more popular and recognized figure at athletic events. This has created a high demand for qualified chiropractic sports physicians in the athletic arena. This year the ACA Council on Sports Injuries and Physical Fitness Network program will provide sports chiropractors for more than 3,000 athletic events. Along with this much deserved increase in recognition and notoriety comes the increased need for responsibility. Frequently the chiropractic physician is the only health care provider at an event, and must function as the primary health care provider.

Each year approximately 6,000 children and adults die as a direct result of sports-related traumatic injuries. The mechanism of injury is a primary consideration in head injury. Statistics document the sports at greatest risk of fatal acute brain injury are vehicle racing (auto, motorcycle, and bicycle), football, rugby, wrestling, martial arts, boxing, horseback riding, skydiving, mountaineering, and gymnastics. Chiropractors are working with athletes in all of these sports.

Injuries to the brain that occur as a result of sports may be either focal (contusion) or diffuse (concussion) lesions.

The most common athletic brain injury is concussion. There are over 250,000 reported concussions annually from high school football alone. Clinically, concussions are graded I, II, and III. Generally speaking, the degree and duration of amnesia and the length of time the athlete has lost consciousness correlate with the severity of the concussion. In Grade I there is no loss of consciousness and posttraumatic amnesia (PTA) is less than 30 minutes. In Grade II there is a loss of consciousness up to four minutes, with a PTA greater than 30 minutes. In Grade III there is a loss of consciousness greater than five minutes, with a PTA greater than 24 hours. Current protocol indicates any athlete who has suffered loss of consciousness for more than one minute or who has persistent headaches with confusion or any disorientation that persists longer than one hour following trauma, or who has more than one episode of unconsciousness during one playing season, should be referred for neurological examination and a CAT scan or MRI evaluation.

The leading cause of death from athletic head injury is intracranial hemorrhage. There are four types of hemorrhage the doctor must be aware of and look for. It is important that accurate initial assessment be made as well as continued follow-up after any head injury.

1. An epidural hematoma is usually the most rapidly progressing intracranial hematoma. It is usually associated with a fracture of the temporal bone, and results from a tear in one of the arteries supplying the dura of the brain. It may progress rapidly and reach fatal size in 30 to 60 minutes.
2. A subdural hematoma occurs between the brain surface and the dura. It often results from a torn vein running from the surface of the brain to the dura. The subdural hematoma may be

acute or chronic. The chronic subdural hematoma is from a pinhole size bleeder and may slowly develop over a period of days to weeks. It is often associated with persistent headache and may initially present with a very mild mental, motor, or sensory signs and symptoms.

3. An intracerebral hematoma is bleeding of the brain substance itself, usually from a torn artery. Autopsy often reveals a congenital vascular lesion such as an aneurysm or arteriovenous malformation.

4. A subarachnoid hematoma is confined to the surface of the brain and is analogous to a bruise.

All types of intracranial hemorrhage usually cause headaches, associated neurologic deficit, disorientation, and irrational combative behavior. Changing level of consciousness is the best indicator of the head injury. Additionally, a widening pulse pressure is diagnostic. These signs indicate that treatment must be immediate and well-planned.

The athlete who receives a blow to the head or a sudden jolt to the body that results in a sudden acceleration/deceleration force to the head should be carefully examined. Initial on-the-field examination should include evaluation of the athlete's airway; facial expressions; orientation of time, person, place, and purpose; posttraumatic amnesia; retrograde amnesia; and gait.

If the athlete is unconscious, you must assume there is trauma to the cervical spine. Additionally, in the unconscious athlete the airway must be assessed and maintained. Jaw thrust is utilized to open the airway, and an oropharyngeal or nasopharyngeal airway is used to maintain patency. If necessary, initiate mouth-to-mouth or preferably mouth-to-pocket mask ventilation with oxygen enrichment at 15 liters per minute.

Whenever possible, a protective helmet worn by the athlete should be left in place. Removal of the helmet may precipitate quadriplegia if an unstable cervical fracture is present. If breathing is obstructed, the face mask should be removed to gain access to the airway. The most common explanation I've heard for removing an athlete's helmet is "so he can breathe." Remember, the athlete was performing and breathing while wearing the helmet prior to the injury.

Managing the unconscious or spine-injured athlete is a process that should not be done hastily or haphazardly. Being prepared to handle the situation, having a "game plan" and practicing it, is the best way to prevent actions that could convert a repairable injury into a catastrophe.

Having the proper equipment is imperative. A spine board is essential. It is like a full body splint. Rigid cervical collars are standard protocol; never use a soft cervical collar. Further stabilization should be provided by rolled towels or foam blocks placed along each side of the head and attached to the board and the athlete.

In the event a spine board is not readily available to immobilize and transport the athlete from the site of injury, you should wait for the ambulance to arrive with the proper equipment. Do not allow yourself to be pressured into moving the athlete from the field of play by coaches, officials, parents, or anyone else. You must keep in mind the Hippocratic prohibition; "First, do no harm."

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