Management of Athletic Head Injuries on the Field

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Introduction

Head injuries are prevalent in collision sports. Concussions represent the relatively benign end of the spectrum of injuries. Severe closed head injuries include epidural hematomas, acute subdural hematomas, intracerebral hematomas, intraventricular hematomas, subarachnoid hemorrhages, and diffuse axonal injuries.

Second impact syndrome represents a severe cerebral auto regulatory dysfunction that can lead to death in an athlete who sustains a second (often minor) closed head trauma while still symptomatic from a previous head injury. Generally, athletes who have suffered a severe closed head injury should not return to play. Exceptions include athletes asymptomatic for 1 year who return to a noncontact sport and those who recover completely from an epidural hematoma without underlying brain injury. Several guidelines for returning athletes to play have been proposed and are commonly used. The team physician has the responsibility of on-the-field evaluation and management of athletes with head injuries, as well as of advising them when it is safe to return to play. The biggest danger with concussion and head injuries is mis-management. This table indicates common mis-management and its danger.

Mis-management	Risk
Moving an injured athlete lying on the ground without ruling out neck injury	Paralysis if athlete is moved with a neck injury
Not noticing any loss of consciousness	Brain injury/damage
Not observant to complaints of headache, dizziness and nausea and allowing athlete to continue activity	Brain injury/damage

The key to managing a head injury is speed. The faster you get to the injured athlete, the better the management and information gathered. A team approach is essential. Upon seeing an athlete sustaining a head injury, either through a clash of head or landing on the back of their head and lying on the ground, the following steps should be taken immediately upon reaching the athlete:

1. Stabilize the head and neck, in whatever position the athlete is in. Feel for any tenderness in the neck under your fingers. DO NOT attempt to turn or move the injured athlete.
2. Check for ABC (**A**irway, **B**reathing, and **C**irculation) and **c**onsciousness. Commence CPR immediately if ABC absent.
3. Call the athlete's name and observe for response. Note the time to respond, loudness of voice, quality of voice. If no response, keep calling the athlete's name until there's a response to your calling by the athlete and CALL for ambulance.
4. If blood is present, try to look for the source of bleeding and attempt to stop the bleeding.
5. Check whether the athlete is able to wriggle his/her toes and fingers, and followed by asking them to move their arm and legs. If athlete is unable to move, DO NOT MOVE them. CALL for ambulance. Stay with them until further medical assistance arrives.
6. If the athlete is able to move his/her fingers and toes and there's an absence of tenderness over the neck, move them out of the field on a stretcher. While transferring the athlete onto the stretcher, ensure that the head is immobilized with a head collar.

If the athlete wasn't lying on the ground and was able to walk around after the collision, take them off the field. When out of the field, check the following:

1. Ask them whether they remembered what happened. If they're unable to recollect what happened, they SHOULD NOT be allowed to continue play.
2. Observe for any nystagmus of their eyes (i.e. quick shifting of their eye balls left to right) when you ask them to track your index finger as you move it left to right and up and down. Also note for any inability to track. If unable to carry out this action, they should NOT continue.
3. Check for any blurred vision, loss of hearing, nausea or pain over any other part of head other than the place of impact. Presence of any of these would require close monitoring and the athlete should leave the game.
4. Check for balance and ability to carry out footwork or skills required for sport.

The injured athlete should ONLY be allowed back into the game after all the above has been checked and they are normal.

If any of the above signs are present, you'll need to repeat these tests at regular intervals of 5mins. These athletes should not leave your sight and you should monitor them very closely. Generally, the athlete should regain all normal functions in about 20-30mins. Nevertheless, refer them to the A&E Department if you're in doubt. Also, it's better to inform a family member or a teammate to observe for any vomiting or increase in headache or confusion for up to 72hours post injury. If noted, the athlete should be rushed to the hospital IMMEDIATELY.

Once found to have a concussion, the athlete should not be involved in any form of contact sports for a duration of about 3 weeks before returning back to sports. The return to sport should also be gradual and they should be not allowed to go back to a high level of competition immediately.

Grade I

No loss of consciousness; symptoms and mental status abnormalities resolve in <15 min

On-the-Field Treatment : Remove athlete from competition and evaluate.

First Concussion : May return to play the same day if sideline assessment is normal

Multiple Concussions: May return to play if asymptomatic for 1 wk at rest and with exertion

Grade II

No loss of consciousness; symptoms or mental status abnormalities last >15 min

On-the-Field Treatment : Remove athlete from competition

First Concussion : Return to play if asymptomatic for 1 wk at rest and with exertion

Multiple Concussions : Return to play if asymptomatic for 2 wk at rest and with exertion

Grade III

Any loss of consciousness, either brief (seconds) or prolonged (minutes)

On-the-Field Treatment : Brief: Remove athlete from competition; if persistent or worsening mental status abnormalities, transport to a hospital for emergency evaluation by a neurosurgeon and for diagnostic neuro imaging

Prolonged: Transport to a hospital for emergency evaluation by a neurosurgeon and for diagnostic neuro imaging

First Concussion : Brief: Return to play if asymptomatic for 1 wk at rest and with exertion Prolonged: Return to play if asymptomatic for 2 wk at rest and with exertion

Multiple Concussions : Return to play if asymptomatic for 1 mo at rest and with exertion

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