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Brain Edema XIII

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Summary

Introduction The most common head injury in sports is concussion, and repeated concussions occurring within a short period occasionally can be fatal. Acute subdural hematoma is the most common severe head injury and can be associated with severe neurologic disability and death in sports. We investigated severe brain damage resulting from repetitive head injury in sports, and evaluated the pathophysiology of sports-related repetitive injury.

Methods We reviewed the literature containing detailed descriptions of repetitive severe sports-related head injury. In total, 18 cases were analyzed with regard to age, gender, type of sports, symptoms before second injury, and pathology of brain CT scans.

Results The majority of cases involved young males aged 16 to 23 years old, who sustained a second head injury before symptoms from the first head injury had resolved. Ten of 15 cases did not suffer loss of consciousness at insult. Eight cases were confirmed on brain CT scans after the second injury, and all 8 cases revealed brain swelling associated with a thin subdural hematoma.

Conclusions Second impact syndrome is thought to occur because of loss of autoregulation of cerebral blood flow, leading to vascular engorgement, increased intracranial pressure, and eventual herniation. Our investigation suggests that the existence of subdural hematoma is a major cause of brain swelling following sports-related, repetitive head injury.

Keywords Hemispheric swelling - thin subdural hematoma - repetitive head injury - sports