Types of Brain Injury

Shepherd Center

Traumatic Brain Injury

Defined as an alteration in brain function or other evidence of brain pathology, caused by an external force.

Closed head injury- trauma caused by a blow to the head leading to the brain knocking against the skull. Nothing penetrates the brain.

- Coup/ Contracoup

Open head injury- also called penetrating brain injury. Results when an object penetrates the skull and enters the brain causing focal damage to that tissue.

- Skull fracture, gun shot, knives.

Types of head injury:

Diffuse Axonal Injury (DAI)- the result of widespread shearing trauma of the axons, parts of the nerve cells that allow neurons to send messages, are disrupted. This force is caused when the head rapidly accelerates or decelerates causing the brain to shift forward, backward or rotationally within the skull.

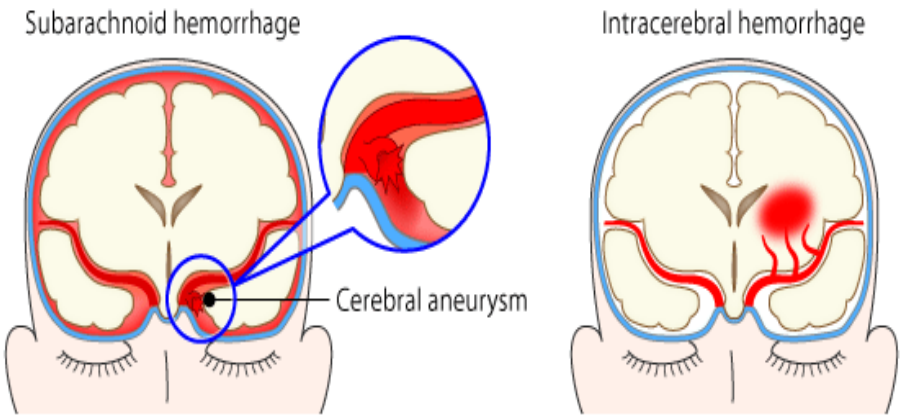
Concussion- the immediate, temporary loss of consciousness from an external strike or force to the brain.

Contusion- bruising to the brain tissue.

Hemorrhagic- a type of stroke caused by an artery in the brain bursting and causing localized bleeding. Head trauma is the most common cause of hemorrhage.

Intracerebral hemorrhage- occurs when a blood vessel in the brain bursts, allowing the blood to leak and causes pressure on the brain which can cause damage.

Subarachnoid hemorrhage- refers to blood leaking within the subarachnoid space between the brain and the tissue that covers the brain.



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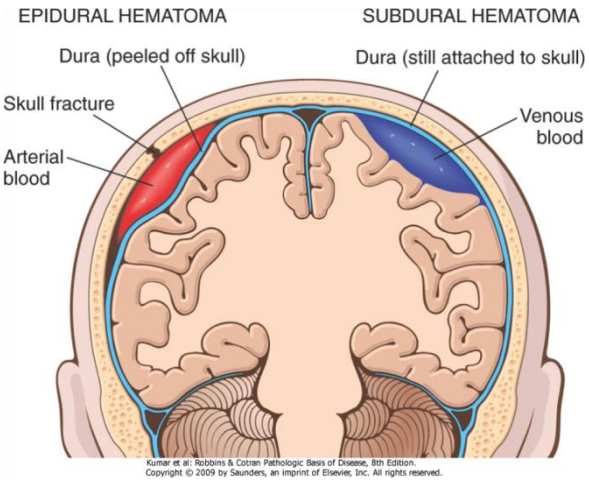
Hematoma- an abnormal collection of blood outside a blood vessel.

Subdural hematoma- occurs because of trauma usually to the veins in the brain, and causes a slow leak of blood which enters the subdural space below the dura. The blood accumulates over time and may stop in time, or if large enough can cause brain swelling. (Pictured in **blue**)

Epidural hematoma- occurs because of trauma often to the temple. Bleeding accumulates in the Epidural space between the Dura (lining of the brain) and the skull. Hemtomas cause significant pressure and further brain injury. (Pictured in **red**)



Non-traumatic Brain Injury

Refers to damage to the brain at the cellular level in the brain which is not hereditary, congenital, degenerative, or induced by birth trauma.

Cerebral Vascular Accident (CVA)- occurs when a blood vessel that carries oxygen and nutrients to the brain is either blocked by a clot or bursts. The brain cannot get the blood and oxygen it needs, and therefore the cells die. CVA can be either ischemic (lack of blood flow) or hemorrhagic (bleeding in the brain).

Hypoxic Anoxic Injury (HAI)- when the brain is not getting enough oxygen caused by choking, drowning, suffocating or cardiac arrest. Hypoxic means a partial lack of oxygen and the term Anoxic means complete lack of oxygen.

Tumor- an abnormal mass of tissue which may be solid or fluid filled. Damage can be caused by the pressure of swelling or by the abnormal tissue destroying brain cells.

Infections- bacteria or viruses that infect that cause inflammation to a particular location.

- Meningitis- inflammation of the meninges and the fluid around the brain & spinal cord.
- Encephalitis- inflammation of the brain itself.
- Myelitis- inflammation of the spinal cord itself.
- Abscess-accumulation of infectious material and offending microorganisms with the central nervous system.