

Adult Nursing II

Head Injury

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Head Injury: Classification

- Scalp trauma
- Skull Fracture:
 - Linear: simple fracture
 - Comminuted: fragmented bone
 - Depressed: dislocated piece of bone pressing into brain tissue
 - Basilar (basal/base of skull): the paranasal sinus of frontal bone or the temporal bone (allows drainage of blood/ CSF)

Brain Trauma: Classification

- Coup/ contre-coup: force causes trauma to proximal and distal area of brain
- Concussion: temporary loss of consciousness but no structural damage
- Contusion: bruising of brain tissue. May have surface brain haemorrhage, oedema (Prolonged LOC, shock, slow recovery)
- Diffuse axonal injury: widespread damage to neurons/ cerebral oedema (Coma)

Brain Haemorrhage: Classification

- Epidural
- Sub-dural
- Intra-cerebral
- Sub-arachnoid

Epidural Haemorrhage

- Arterial
- Between the skull bone and dura mater, usually under temporal bone
- Emergency as quickly \uparrow pressure on brain
- Typically LOC, then lucid period (compensation to control ICP) until rapid increase in ICP and deterioration
- Requires urgent evacuation via burrhole/craniotomy: drain left in situ initially

Physiological Compensation for Raised ICP

- The body attempts to control a rise in intracranial pressure through:
- Rapid reabsorption of cerebro-spinal fluid
- Reduced secretion of CSF
- Cerebral vasoconstriction to reduce intravascular volume of cerebral vessels
- → reduced pressure of space-occupation in cranium (and ↓ damage to brain tissue)

Subdural Haematoma

- Usually venous: collection of blood between dura mater and brain tissue (arachnoid)
- Related to coagulopathies, ruptured aneurysm as well as head injury
- Acute, sub-acute: related to a major head injury (contusion or laceration)
- Chronic: minor head injury, mostly in the elderly, gradually thick fluid → ossification

Subdural Haematoma: Clinical Manifestations

- LOC
- Pupil changes
- Hemiparesis
- → Coma, with ↑ BP and pulse pressure, bradycardia, slow respirations
- Chronic subdural: slow development: fluctuating headache, paralysis, focal seizures, mental deterioration, personality changes (symptoms appear over time)

Subdural Haematoma: Treatment

- Surgical evacuation through burrholes or craniotomy if too large

Intra-cerebral Haematoma

- Bleeding into the brain tissue
- Occurs with force over a small area: bullet or missile injury or stab wound
- May be inaccessible and difficult to evacuate
- Management involves maintaining ICP and stabilising BP: support and maintenance until absorbed

Sub-arachnoid Haemorrhage

- Haemorrhage, not a haematoma
- This is a bleed into the CSF (may be ruptured aneurysm or vascular anomaly as well as trauma)
- Blood in CSF blocks flow → hydrocephalus and ↑ ICP
- Compression of brain tissue or brain ischaemia and infarct from vasospasm

Sub-arachnoid Haemorrhage: Clinical Manifestations

- Sudden, severe headache
- Loss of consciousness (LOC)
- Neck rigidity and pain (meningeal irritation)
- Visual loss, diplopia, ptosis
- Tinnitus, dizziness, hemiparesis
- If slight may seal itself
- Coma and death if severe
- 50% mortality rate

Sub-arachnoid Haemorrhage: Treatment

- Early repair of damaged vessel (ablation therapy to seal) if possible
- Support and maintenance otherwise:
- Prevention of complication of vasospasm by calcium channel blocker
- Prevention of seizures (Epanutin)
- Early dissolving of clot (tPA) to reduce risk of secondary haem: IV volume expanders
- Ventriculostomy/ VP shunt if hydrocephalus

Head Injury: Nursing Considerations

- ICU: ↑ head of bed
- Monitor and maintain ICP
- Glasgow Coma Scale: level of consciousness
- Monitor and maintain vital signs, fluid balance
- Care of the unconscious patient
- Maintain sterility of dressings and drains
- Medications as ordered