CRANIOCEREBRAL INJURIES
Wider: all injuries of the head
Narrow: fractures, bleedings in the cavity, brain injuries
Division: - according to clinical picture: sy - concussion, contusion and compression
- according to mechanism: blow and acceleration/deceleration injuries
- according to time: primarily and secondary
Impact injuries: a) Soft tissue injuries
b) Fractures of the skull
c) Contusions of the brain
d) Epidural hemorrhages
e) Intracerebral hematomas
Acceleration/deceleration injuries: a) Subdural hematomas
b) Diffuse axonal injury

FRACTURES
Differences: - due to the mechanism (result of fall or blow) and
- characteristics (different structure of the bones)
Depends on: - the amount of hair
- the thickness of the scalp
- the configuration and thickness of the scull
- the elasticity of the bone at the point of impact
- characteristics of the object impacting or impacted by the head
- the velocity at which either the blow was delivered or the head strikes the object
Basilar - *mechanism*: most often as a result of fall
- *types*: longitudinal, transverse, ring, contra-coup
Cranial vault - *mechanism:* as a result of direct blow
- *types*: depressed, simple linear, circular, stellate; structure – 2 lamina
Possibility to establish the first impact
Characteristically defects

BLEEDINGS IN SCULL CAVITY
1. Out of dura matter (epidural hematomas; haemorrhagia extraduralis)
- primary impact injury, seen most commonly in falls and traffic accidents
- infrequent in the elderly and the very young
- caused by trauma to the skull and the meningeal vessels
- a fracture is virtually always present at the point of impact
- symptoms: 4-8 h after injury (compression of the brain)
2. Inside of dura matter (subdural hematomas, haemorrhagia intraduralis)
- caused by stretching and tearing of the parasagittal bridging veins
- occur after the head impacts a hard surface and the brain is accelerated; often not associated with the fracture
- acute (within 72 h of injury), subacute (3 d. To 2-3 w.), chronic (more than 3 w. After injury)
- etiology: micro traumas
3. Subarachnoid hemorrhage (haemorrhagia leptomeningeum)
- with brain contusion (on the place of impact, at the opposite site or independent; focal or

diffuse, minor or severe)
- in natural diseases: ruptured berry aneurysm
- small children = brain contusion

CEREBRAL CONCUSSION (Commotio cerebri)
Clinical term for sudden, short traumatic damage of cerebral functions
Paralyze of cerebral functions / no anatomic damages
Symptoms: loss of conscious, amnesia, bilateral vegetative breakdowns, nistagmus, decrease of pulls and pressure, liquor under the pressure
Post-concussion sy

BRAIN CONTUSIONS (Contusio cerebri)
Hematoma of brain tissue
Symptoms: as with brain concussion + focal symptoms, bloody liquor
Types: - coup – at the site of impact
- contrecoup – directly opposite to the point of impact
- fracture c., intermediary c., gliding c., herniation c. basic: head is fixated or not, speed of acceleration
2 types of speed rate: linear and rotational (upper cut)
Late, long or permanent consequences - encephalopathia posttraumatica (sy posttraumatic failure)

DIFFUSE AXONAL INJURY
Clinical -pathological entity without visible injuries of the axons associated with immediate unconsciousness and prolonged coma (longer than 6 h)
Pre-condition: sudden acceleration-deceleration of the head
Mild brain injury: functional dysfunction
Severe irreversible dysfunction, even death (microscopic pin-point hemorrhages, changes in axons)

BLUNT TRAUMA INJURIES OF THE TRUNK AND EXTREMITIES OF THE CHEST
Lungs: - primary (non-penetrating and penetrating injuries)
- secondary
Heart: concussion, contusion, laceration
Aorta, diaphragm, ribs
Abdominal viscera - liver, spleen (secondary lacerations), gastrointestinal and urinary tracts
Vertebra: - fight: fracture of processus
- indirect: flexion/extension, compression/rotation
Pelvis

CONSEQUENCES OF MECHANICAL INJURIES

VITAL REACTIONS
Every sings of life that could be detected before the clinical death
1. Common signs - hemorrhage, emboli, aspiration, aspiration, deglutition
2. Local signs - *primarily:* necrosis, coagulation, thrombosis
- *secondary*: inflammation, exudation, swelling
- *tertiar*: resorption, proliferation