44 - 12. Traumatic brain injury

12. Traumatic brain injury

© SPMM Course Spinal accessory nerve - CN XI Spinal root supplies trapezius and sternocleidomastoid. Hypoglossal nerve - CN XII It provides motor innervation for all the extrinsic and intrinsic muscles of the tongue. To test the hypoglossal nerve, have the patient protrude the tongue; when paralyzed on 1 side, the tongue deviates to the side of paralysis on protrusion. 12. Traumatic brain injury Traumatic brain injury is the result of mechanical forces applied to the skull and transmitted to the brain. This may lead to focal and/or diffuse brain damage. Focal lesions often result from a direct blow to the head and include brain laceration, contusion, intracerebral hemorrhage, subarachnoid or subdural hemorrhage, and ischemic infarct. Concussion causes transient coma for hours followed by apparent complete clinical recovery. Brain contusion leads to prolonged coma, focal signs and lasting brain damage. Pathological support for the distinction between concussion vs. contusion is poor. Contusion occurs directly beneath (coup injury) or contralateral (contrecoup injury) to the site of impact. Contre-coup is most common in the orbital–frontal area and the temporal tips, where acceleration/deceleration forces cause the brain to impact on the bony protuberances of the skull. A frontal behavioural dyscontrol syndrome occurs in cases of bilateral orbitofrontal injury. Mechanisms of TBI include axonal and neuronal damage from direct trauma, shearing and rotational stresses on decelerating brain, brain oedema and raised intracranial pressure, brain hypoxia and ischaemia. The differential motion of the brain within the skull can cause shearing and stretching of the axons resulting in diffuse axonal injury (DAI). DAI related damage occurs over a more widespread area with extensive lesions in white matter tracts than in focal brain injury. DAI is more often associated with persistent vegetative state and coma. Two types of amnesia can occur after head injury: Post-traumatic amnesia (PTA) includes anterograde amnesia for the period of injury and the period following injury until normal memory resumes. Retrograde amnesia includes dense amnesia for the period between the last clearly recalled memory prior to the injury and the injury itself. The duration of PTA is mostly in minutes, and with increasing time after the injury, the duration of PTA reduces gradually. GCS (Glasgow coma scale) at 24 hours after injury is widely used to assess severity. Apart from GCS other indices of TBI severity include the length of coma (LOC), duration of post-traumatic amnesia (PTA), and the Abbreviated Injury Scale (AIS) scores. LOC and PTA have been used exclusively to predict the functional outcome, but the AIS has been used to predict survival. Most investigations have found LOC or PTA to be more predictive of functional status than GCS. Poor prognostic factors with respect to psychiatric morbidity following head injury includes long

duration of loss of consciousness, long PTA, elderly, chronic alcohol use, diffuse brain damage, new onset seizures and focal damage to dominant lobe.

© SPMM Course Duration of PTA Classification Functional outcome PTA less than 60 minutes Mild injury May return to work in <1 month PTA between 1-24 hours Moderate injury May return to work in 2 months PTA between 1-7 days Severe injury May return to work in 4months PTA greater than 7 days Very severe injury May require > 1 year for return to work Late sequelae o Cognitive impairment is common especially after closed head injuries with PTA lasting >24 hours. o Personality changes are most likely after a head injury to the orbitofrontal lobe or anterior temporal lobe. o Depression (most common sequelae) and anxiety occur in roughly 1/4 of head injury survivors. Suicide risk is also higher post head injury. o Post-concussional syndrome is characterized by headache; dizziness; insomnia; irritability; emotional lability; increased sensitivity to noise, light, etc.; fatigue; poor concentration; anxiety; and depression. o A schizophrenia-like psychosis with prominent paranoia is associated with left temporal injury while affective psychoses (esp. mania in 9% patients) are associated with right temporal or orbitofrontal injury. There is also an increased prevalence of schizophrenia post head injury (-2.5% develop the disorder). o Post-traumatic epilepsy is seen in 5% closed and 30% open head injuries (usually during the first year) and worsens the prognosis. o Less psychopathology in children after head injury due to increased brain plasticity.

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