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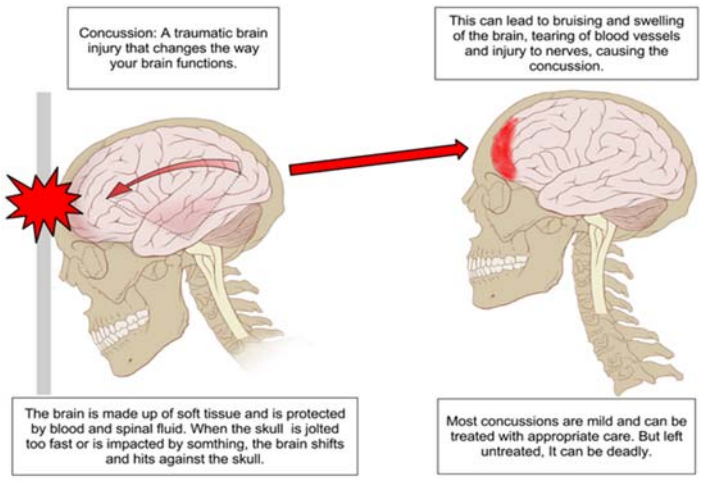
AAP BRS Podcast – Traumatic Brain Injury Part 1: Concussions

Mild TBI

- **Epidemiology:** 80-90% of TBI in the U.S. is considered mild
  - Most commonly affects 0-4 y.o., then 14-15 y.o. males, followed by females <65 y.o.
  - Cause: must be traumatic in nature
  - Must manifest with at least 1 of the following 4:
    - Any LOC
    - Post-traumatic amnesia (PTA) of events before or after the injury
    - Any AMS at time of accident
    - Focal neurologic deficits (transient or not)
  - Must not:
    - Exceed 30 minutes of LOC, PTA of 24 hours, or initial **GCS ≤ 13**
- **Workup:**
  - **Head CT-** indicated in patients with any LOC; or PTA, and 1 or more of the following:
  - Headache, vomiting, >60 y.o., intoxication, injury above the clavicles, post-traumatic seizure, GCS<15, focal neurologic deficit, coagulopathy
  - If no LOC/PTA, still consider head CT if headache is severe, dangerous MOI, or pt >65 y.o.
  - Beware red flag symptoms (e.g. abnormal posturing)→if present, obtain urgent CT head/neck
  - Uncomplicated TBI = unremarkable imaging
  - Complicated TBI = imaging findings ~20% cases
  - **Imaging not required for diagnosis of mild TBI!**
- **Signs and Symptoms:**
  - Most common: Headache, balance problems, dizziness, nausea, emotional lability, fatigue
- **Recovery:** Most recover within 7-10 days, almost all fully recover within 1-3 months

Post-Concussion Syndrome (PCS)

- Symptoms persist ≥ 1 month after head injury + LOC
  - Symptoms present in ≥ 3 categories
  - Social/vocational issues which are out of proportion to the severity of injury
- **Persistent PCS** - if symptoms persist for 3-6 months



Concussion Grading

- SCAT5 – gold-standard for use amongst athletes 13+ y.o.
  - Combines GCS, MBES
  - Immediate on-field exam, followed by an off-field exam
  - Baseline SCAT5 usually performed at beginning of patient's sports season
- ACE – for the general public
  - Completely subjective, used for first-time evaluations to guide treatment
- Concussions no longer classified by severity scales, and are now diagnosed by **4 domains of symptoms**
  - Somatic (headache, dizziness, visual disturbance, etc.)
  - Cognitive (confusion, LOC, memory problems, etc.)
  - Affective (emotional lability, irritability, etc.)
  - Sleep Changes

Return to Play

- **ABSOLUTELY NEVER** let patients with a concussion return to play on the same day of injury
  - Must follow a stepwise return plan
  - Note that while rest is important, don't "cocoon" or rest for long periods of time which could then prolong recovery
- **Earliest possible return to play** is **1 week**
- Physical and cognitive rest for 24-48 hours required
- Afterwards, each stage requires **24 hours**, before moving on to the next one
- If symptoms recur, return to the prior stage

Stage		Objective
1	No Activity	Recovery
2	Light Aerobic Exercise	↑ HR
3	Sport Specific Exercise	↑ HR + movement
4	Noncontact Drills	Exercise, ↑ cognitive load
5	Full Contact Practice	Assess functional skills
6	Return to Play	Normal play

Second Impact Syndrome

- 2nd concussion inflicted soon after the first concussive injury, further exacerbating injury
- RARE but potentially lethal (cerebral edema)
  - RAPID deterioration
  - Loss of motor eye movement
  - Respiratory failure
  - Semi-comatose state
- If your patient has sustained multiple concussions, discuss the risk/benefit of continuing their sport
  - Increased sym. duration? *Consider removal*
  - Decreased force required? *Consider removal*