



Emergency Medical Training Services

Emergency Medical Technician – Basic Program Outlines

Outline Topic: HEAD TRAUMA

Revised: 11/2013

DEFINITIONS

- LOC – level of consciousness.
- MVC – Motor vehicle collision.
- CSF – Cerebrospinal Fluid bathes and cushions the brain and spinal cord.

ANATOMY OF HEAD

- Scalp – outermost part of head. Bleeds a great deal because of the increased number of vessels to keep the brain at a constant temperature. Helps to cushion blows to the head.
- Bones – Sutures are the interlocking joints. They close around age 3. Foramen Magnum is the pass between opening for brainstem and spinal cord.
- Meninges – Dura mater, arachnoid membrane, pia mater. The meninges line the outer brain and spinal cord for protection. The area between the skull and dura mater is the epidural space. The subdural space is between the dura and the skull.

BLEEDING OF THE BRAIN

- Epidural Bleeds – bleeding between the dura and skull are fast onset because the vessel is more likely to be an artery.

- Subdural Bleeds – bleeding between the dura and the brain are slower onset because the vessel is more likely a vein.
- Intracranial Bleeds – is like a hemorrhagic stroke. Bleeding in the brain directly.
- As a rule if the vessel is big the pressure build-up is massive and a bleed is a bleed.

INCREASED INTRACRANIAL PRESSURE (ICP)

- Anytime pressure builds onto the brain (infection, bleed, swelling, cancer) to interrupt its function.

CUSHING'S TRIAD

- Signs and symptoms for ICP
- Increased BP, Lower Pulse, Widening Pulse Pressure, Projectile Vomiting, and Irregular Respirations.
- These signs result from swelling and pressure on the brain stem which controls vital signs.

CARE FOR ICP

- Limit glucose unless needed. Glucose makes vessels in brain dilate.
- Elevate head if BP is elevated to alleviate some pressure.
- If critical, hyperventilate to blow off CO₂ to shrink vessels to reduce blood flow to the brain. THIS IS STILL DONE TODAY EVEN THOUGH SOME THINK IT IS NOT ADVISED. IT IS UP TO YOUR MEDICAL DIRECTOR AND TWO OF YOUR EXAM QUESTIONS ARE BASED ON DOING THIS.

CSF LEAK (CerebroSpinal Fluid)

- Blood coming from the nose or ears after head trauma has to be treated as coming from the brain. Do not stop the flow of blood. Place a dry sterile napkin/dressing to collect the blood and keep contaminants out.
- Do a TARGET TEST (HALO TEST) to see if CSF is present. Take a drop of blood on a 4x4. Let it sit and look for the CSF to go to the outside and be clear. THIS IS HARD TO DO AND NOT THAT ACCURATE, but need to know.

SKULL FRACTURE

- Bilateral Periorbital Ecchymosis (raccoon's eyes) and Battle's Signs (discoloration of the mastoid).
- If depressed skull fracture do not place pressure over the fracture.

GLASGOW COMA SCALE

- Used to assess neurological function not LOC.
- Three categories and even if dead the person gets a 3 total. 1 per category.
- Less than 8 intubate. Most likely not good if less than 8, will not recognize kids again. Life support most likely.
- Categories are eye, verbal, and motor skills.

RESPIRATIONS OF HEAD TRAUMA PATIENT

- Cheyne-Stokes Breathing – fast, slow, stop, deep, shallow, none.
- Neurogenic hyperventilation – fast and shallow.
- Result from ICP and Cushing's.

POSTURING

- Posturing indicates a high brain stem injury.
- Decorticate posturing is arms flexed.
- Decerebrate posturing arms extended.
- The key to tell the difference is the elbow. Is it flexed or extended.
- Some say decerebrate is worse. In the total picture dead is dead. Both indicate a high brain stem injury.

Hello. If someone tries to tell you otherwise they don't know what they are talking about. They are only going off of what they have been told in the past.

BRAIN CONTUSION

- Vessel rupture in the brain usually caused by shaking.
- Due to bleeding structural changes in the brain take place.

- Most common is football player. After so many hard hits (concussion) the brain has been loosened and the vessels become more vulnerable to tear and bleed. The bleeding (contusion) pools in the brain just like a body bruise.
- Signs after are like concussion but has long term memory loss. Cannot tell concussion versus contusion without CT and MRI testing. Treat them the same.

CONCUSSIONS

- "Shaking of the brain" with a loss of brief consciousness.
- Fully reversible.
- Brain is shaken and as safety procedure shuts down.
- Signs after are vision problems, headache, event memory loss but usually not long term memory loss.

COUP AND CONTRECOUP

- Pronounced "kontra koo".
- Occurred on the opposite side. Injury to the brain opposite the site of impact.

The 12 Cranial Nerves

- PNS nerves of the head.

Olfactory

Optic

Oculomotor

Trochlear

Trigeminal

Abducens

Facial

Vestibulocochlea

Glossopharyngeal

Vagus

Accessory Spinal

Hypoglossal

- The acronym - Oh, Oh, Oh, To touch and feel a girl's _____ soft, ah, heaven.
- The acronym - Oh, Oh, Oh, to touch and feel _____ girls _____ and _____.
- The acronym's are not meant to offend anyone. These are acronym's taught in medical school to remember the 12 cranial nerves.