

Blunt Head Trauma



DALIANNYS MORALES MENDEZ



- 16 y/o male is brought to the ER by EMS after a motor vehicle accident. He was coming from a party, lost control of the car and hit a tree. He had a brief episode of loss of consciousness followed by a lucid interval. On his way to the ER, he starts vomiting, lapses into unconsciousness, and develops unstable vital signs. What is the best first step upon arrival to the ER?



- A. Complete neurologic exam
- B. Order head CT scan
- C. ABCDE
- D. Obtain a complete history and allergy profile of the patient



- A. Complete neurologic exam
- B. Order head CT scan
- C. **ABCDE**
- D. Obtain a complete history and allergy profile of the patient

Primary Survey



- The order of priority in the initial assessment and treatment in ATLS is called the "primary survey" and includes:
- A - Airway maintenance with cervical spine protection
- B - Breathing and ventilation
- C - Circulation with hemorrhage control
- D - Disability (evaluation of neurologic status)
- E - Exposure (complete visualization)/environmental control (prevention of hypothermia)

Evaluating Neurological Status



- **GLASGOW COMA SCALE**

- **Eye opening**
 - (4) spontaneous
 - (3) to command
 - (2) to pain
 - (1) none
- **Verbal Response**
 - (5) Oriented
 - (4) Confused, disoriented
 - (3) Inappropriate words
 - (2) Incomprehensive sounds
 - (1) none
- **Motor Response**
 - (6) Obeys commands
 - (5) Localizes pain
 - (4) Withdraws
 - (3) abnormal flexion
 - (2) abnormal extension
 - (1) none

- **PEDIATRIC GLASGOW COMA SCALE**
(for use in children 2 years of age and under)

- **Eye opening**
 - (4) spontaneous
 - (3) to speech
 - (2) to pain
 - (1) none
- **Verbal Response**
 - (5) coos, babbles
 - (4) irritable cry
 - (3) cries to pain
 - (2) moans to pain
 - (1) none
- **Motor Response**
 - (6) normal spontaneous movement
 - (5) withdraws to touch
 - (4) withdraws to pain
 - (3) abnormal flexion
 - (2) abnormal extension
 - (1) none

Secondary Survey



- The secondary survey is a systematic head-to-toe evaluation of the trauma patient which must be performed after the primary survey has been completed and resuscitation begun, as needed, with the stabilization of vital functions. This part of the evaluation includes the patient history, comprehensive physical examination, and additional studies and procedures. Alternatives A, B, D are part of the secondary survey.

References



- Minor head injury in infants and children. Sara Schutzman, MD. Up to date 17.3 ed
- Trauma management: Approach to the unstable child. Lois K Lee, MD, Gary R Fleisher, MD. Up to date 17.3 ed



- A 7 month old boy presents to the emergency room after reportedly falling from his high chair (approximate height 3 feet) 1 hour ago. The parents report no loss of consciousness and no other trauma or medical problems. On physical exam, the child is irritable and a few old bruises are found. A CT scan of the brain was ordered and revealed frontal subdural hematomas and 2 healing skull fractures 2 weeks old. What would be the next step in management?



- A. Observe for 6 hours in the ER
- B. Assess bleeding time and prothrombin time
- C. Order electroencephalogram and neurology consultation
- D. Admit the patient and order MRI



- A. Observe for 6 hours in the ER
- B. Assess bleeding time and prothrombin time
- C. Order electroencephalogram and neurology consultation
- D. **Admit the patient and order MRI**

Management of head injury in children



- The goal of the evaluation of children with apparently mild head trauma is to identify those with traumatic brain injury (TBI) who may require immediate intervention (as with an epidural hematoma or cerebral contusion) or close follow-up (as with a concussion), while limiting unnecessary neuroimaging procedures. In addition, children who may have sustained an inflicted injury must be identified.



- This child has evidence of old skull fractures with subdural hematomas. The best management at this point is to admit the patient and order an MRI which would help to determine the age of the hematomas. Also, at this point, if child abuse is being considered social work should be consulted.
- Bleeding studies are unlikely to be helpful. The child has no history of bleeding disorder, and a bleeding disorder would not explain the old fractures.

Indications for Neuroimaging



- Children <2 years
- Infants <2 years of age with high risk for intracranial injury or with suspected skull fracture should have head computed tomography
- High risk factors include:
Focal neurologic findings,
Acute skull fracture,
Depressed mental status,
Irritability, Bulging fontanel,
Persistent vomiting , Seizure ,
Definite loss of consciousness,
Suspicion of child abuse,
Underlying condition
predisposing to intracranial
injury
- Children >2 years with high risk factors:
 - Focal neurologic findings
 - Skull fracture, especially findings of basilar skull fracture
 - Seizures
 - Altered mental status (eg, agitation, lethargy, repetitive questioning, or slow response to verbal questioning)
 - Prolonged loss of consciousness

References



- Minor head injury in infants and children. Sara Schutzman, MD. Up to date 17.3 ed
- The Management of Minor closed Head Injury in Children. Committee on Quality Improvement of AAP. 2011
- The Effect of Observation on Cranial Computed Tomography Utilization for Children After Blunt Head Trauma. Nigrovic, L.E., et al. AAP. 2011