Follow your protocols!

Objectives

- Briefly describe “roadside assessment” of closed head injury in the field
- Briefly describe “roadside assessment” of spinal injury in the field
- Some scholarly work
- Quick review of spinal immobilization
- Review of paramedic protocols
- Presentation of the data
- Conclusions
Classifications: Closed Head Injury

- Concussions (Traumatic Brain Injuries) are generally classified as mild (grade 1), moderate (grade 2), or severe (grade 3).
- Grade 1: Symptoms last less than 15 minutes, no loss of consciousness
- Grade 2: Symptoms last longer than 15 minutes, no loss of consciousness
- Grade 3: Loss of consciousness

Roadside Assessment

- Ask: “Do you have...”
- Headache
- Nausea
- Dizziness
- Visual Disturbances
- Hx of previous concussion

Assess for:

- Orientation (A & O) x4 and awareness
- Memory (retrograde/anterograde)
- Cognition/Concentration (months of year in reverse)
- Coordination (touch finger to nose, Romberg test)
Observe for:

- Vacant stare
- Delayed motor or verbal response
- Slurred or incoherent speech
- Inappropriate emotional response
- If athlete is known to you, deviation from personality baseline
- Repetitive speech or perseveration

Positive Findings?

- If yes, athlete should be removed from competition with duration TBD
- Return to activity guidelines will vary
- Will involve physical and cognitive rest until asymptomatic, gradual return to activity without recurrence of symptoms, full clearance, SCAT
- Duration will vary from one day to months
- Second Impact Syndrome

Changes

- EMS/Field Treatment has evolved
  - Some things that seemed GREAT at the time might not have been
- Medicine has evolved
  - "Evidence based practices"
EMS is slower to evolve

- Most medical text books are out-of-date the moment they are printed
  - Updating EMT/paramedic curricula is even more arduous

What are we worried about?

- Cervical spine or spinal cord injury can be bad
  - Or catastrophic
- Misplaced emphasis?
  - In NEXUS, 34,069 patients at risk for c-spine injuries were evaluated, 818 had a cervical spine injury on x-ray
  - The NEXUS criteria correctly identified all but 8 patients
  - That's 99.6% sensitivity

There is a price

- Millions of dollars in needless X-Rays
- Tying up radiology and ER beds
- Number one cause of EMS injuries (and leaving the field) is back injuries
- System effects

Complications

- Respiratory complications
- Increased risk of aspiration
- Head and back pain
- How do EDs evaluate someone’s pain if the board hurts them?
- Barney found 20% of patients in one study had NO pain after being taken out of spinals

How long is this patient going to be spinaled?

Do we over-spinal?

- No reports in the literature of an unstable, occult c-spine injury (even in other countries)
  - NO instances of someone completely asymptomatic who suddenly developed an unstable c-spine injury

Should we spinal at all?

- Hauswald found a group of patients that were presented to a hospital that were at risk for spinal injury that had no treatment
  - One might opine that this should result in greater disability in the patient population
- Compared 12,700 U. of N.M. patients placed is spinals were compared against 16,600 Malaysians
Should we spinal at all?

- 21% disability in U.N.M patients
- 11% disability in Malaysian patients

Hauswald Concludes

- The entire concept of c-spine immobilization is faulty
  - The high-energy transfer does the damage
  - The low-energy normal range-of-motion does not affect stable or unstable injuries

Domeier Concurs

- In a position paper published by the National EMS Physicians Standards and Practices Committee,
  - “In addition, there have been no reported cases of spinal cord injury developing during appropriate normal patient handling of trauma patients who did not have a cord injury incurred at the time of the trauma.”

Domeier Concurs

- "Although early emergency medical literature identified mishandling of patients as a common cause of iatrogenic injury, these instances have not been identified anywhere in the peer-reviewed literature and probably represent anecdote rather than science."

An anecdote

- Steve Moore
  - Knocked to the ice
  - Unstable C2 – C3 fracture
  - 250 lb Todd Bertuzzi came down on top of him
  - At least three other 250 lb plus hockey players also jumped on
  - No neuro deficits

Colorado Rockies rookie pitcher Juan Nicasio, 8/9/11
Are We Contributing to Injury?

Two different studies look at penetrating trauma


Cochrane Review

- In 2006 published in Annals of Emergency Medicine
  - No scientific data supports spinal immobilization
  - Lots of data indicate it can be harmful

- 2011 PHTLS Recommendations
  - No data to support routine spinal immobilization in patients with penetrating trauma to neck, torso, or cranium
  - Spinal immobilization should never be initiated at the expense of physical exam or correction of life threats in penetrating trauma
  - May be performed with focal neurologic deficit although little evidence of benefit
What do they do at the hospital?

- The Hurley experience
  - There is an attempt to get the patient off the backboard as soon as possible.

  Trauma surgeons, emergency medicine, neurosurgery, orthopedics, and nursing were involved in the development of the guideline. The orthopedic surgeons were especially vocal about the need to remove trauma patients from the backboard promptly in the emergency department and pushed the trauma service to enact this guideline. Nursing...

In place since 2009

- To address inconsistency between field care for patients with suspected c-spine injury and those with diagnosed c-spine injury being transferred.
  - If patient does meet criteria for spinals, the procedure may be completed with a c-collar only.
  - Also added shortly thereafter, "spinal clearance" protocol.

Selective Criteria Based on NEXUS

- No mid-line, c-spine tenderness or deformity.
- Reliable physical exam where:
  - No distracting injury or situation
  - No Language barrier
  - No affected by drugs or ETOH
  - Not elderly (>65)*
  - No distal paresis, paresthesia, neurologic deficit, or Hx of same that has resolved.
Quality Assurance Project

- Are patients who are diagnosed with significant spinal column or spinal cord injury in spinals from the field?
- Is there a change in the severity of injury?
- Has any significant disability appeared in the hospital that was not present in the field?

Conclusions

- Are patients who are diagnosed with significant spinal column or spinal cord injury in spinals from the field?
  - YES! 100% of the time!
- Is there any change in the numbers of significantly injured patients?
  - 4.62% versus 4.76%

Conclusions

- Is there a change in the severity of injury?
  - ISS of 17.66 versus 17.00, not significantly significant
- Has any significant disability appeared in the hospital that was not present in the field?
  - No!
Conclusions

- Current selective spinal and spinal clearance protocols: Validated
- Current methods of spinals:
  - There was no difference in the number of patients with significant injury, injury severity or disposition from VVMC
- Moving forward:
  - Spinals still part of our care, deemphasize the backboard / scoop as a therapy and emphasize as an extrication device

Backboard / scoop

- Not necessary as a therapeutic device
- May be used for
  - Extrication
  - Unconscious patient
  - Facilitating patient handling

Summary

- Be conservative when evaluating athletes for closed head injury
- Any positive findings indicative of closed head injury warrant removing athlete from competition
- There is no evidence supporting any type or style of spinals
- Selective spinal protocols are effective
- We should closely review this entire concept and consider a collar-only approach