Interesting Trauma Cases: Anesthesia Implications

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Trauma Statistics

- Trauma remains the leading cause of death for individuals between the ages of 1 and 45.
- Traumatic brain injury (TBI) is a major cause of morbidity and mortality in the United States. Each year, approximately 50,000 deaths in the United States are associated with TBI, representing >33% of all injury-related deaths.
Statistics

• Traumatic Deaths: Each year, an estimated **10,000** persons are killed on the job. The major causes of these deaths are (1) highway motor-vehicle incidents, including to and from work and job-related travel (34%); (2) falls (13%); (3) nonhighway industrial-vehicle incidents (11%); (4) blows (other than by vehicles or equipment) (8%); and (5) electrocutions (7%). Industries with the highest estimated rates of fatal traumatic injury are (1) mining and quarrying, (2) agriculture (including forestry and fishing), and (3) construction
Trauma Statistics

• (7%) Industries with the highest estimated rates of fatal traumatic injury are (1) mining and quarrying, (2) agriculture (including forestry and fishing), and (3) construction

• CDC MMWR April 27, 1984 / 33(16);213-5
Enough Said…

- Recent analyses of potential life lost due to various causes indicate that "accidents and adverse effects" are the leading cause of the loss of potential years of life in this country. Occupational injuries occur at a rate twice that of injuries in the home or in public places, and severe traumatic injuries are an important component of all occupational injuries. Severe occupational trauma is second only to motor-vehicle incidents as a cause of unintentional death in the United States.
Trauma Resuscitation

• Open and Clear Communication
• We all know what to do-why is it so loud in here?
• Follow the leader or TAKE CHARGE
• Airway is not the most important thing…it is the only thing!
Resuscitation

- Regardless of type, severity or “coolness” of trauma, AIRWAY always takes priority
- At the WFSTC we…
  - Blah-Blah-Blah
  - Ginger!
Head Injury

- At least 1.4 million people sustain a TBI. Of these, about 50,000 die, 235,000 are hospitalized, and 1.1 million are treated and released from an ED.
Head Injury

• AIRWAY is key
  – Major determinants of (+) outcome in head injury are PaO₂ and MAP

• Initial focus should be on these 2 areas
• Rapid CT Scan
• Rapid Surgical Treatment if indicated
• ICU Management
Head Injury

- Effect of intracranial pressure monitoring and targeted intensive care on functional outcome after severe head injury
  

  Cremer, Van Dijk, et al

  Showed no improvement in outcome, prolonged mechanical ventilation
Head Injury

- Maintain BP at elevated levels
  - Use of aggressive fluid therapy vs. vasopressors
- Hypertonic Saline
  - No improvement in adults, some positive correlation in pediatric head injury
- ICP monitoring
- Decompressive Crani
- BIS Monitoring
Chest Injury
Penetrating Trauma

• Look at the tattoo closer
Penetrating Injury

- Always pretty Cool!
- ATLS and should be the focus, so not let the “object” throw you off!
- Alteration in assessment plan
  - Do not allow for the “routine” assessment
  - Can’t position supine
  - Airway Maneuver
  - Line Placement
Resuscitation and Treatment

• Planned surgical procedure
• Blood and fluid resuscitation
• Warming Technologies
• Surgical Plan
  – Can you change to a DLT?
Thoracotomy

- ED Thoracotomy with limited success better numbers with penetrating trauma
- Concomitant lung issues
- Ventilation
  - APRV
Thoracotomy

• Bleeding Problems
• Blood product replacement
• HBOCs
  – Hemoglobin based oxygen carriers
  – “Artificial Blood
• Factor VII
Abdominal Trauma

• Rapid Assessment
  – F.A.S.T.
  – One-minute abdominal CT Scan
    • No Contrast focused studies
• Watch and serial exams
• Damage Control Surgery
Damage Control Surgery
Damage Control Surgery

- Get in try and stop the bleeding
- NO major repairs pack it and get out
- Obtain hemodynamic stability
- Warm
- Blood products
- Correction of acidosis
- Wound Vac
Damage Control Surgery

• Abdominal Compartment Syndrome
  – Prevented by having open abdomen
  – No more bladder pressure monitoring
  – No additional bring back surgery for this problem

• Ventilatory status
  – APRV
  – No need for paralysis

• Factor VII
Technological Assistance

- Hot Line
- Ranger
- FMS 2000
- Level 1
Fluid Warming

- Prevention of Hypothermia in all but a few select classes of isolated trauma has been shown to improve outcome
Pharmacology

- Infusions and drips for pain and sedation
  - Propofol
  - Dexmetatomidine
  - Remifentanil
Future Research

• Reanimation
• Outcomes studies
• Wound Vacs
• Acute Head Injury Management
• HBOCs