Equestrian Injuries

Recognition, Assessment, & Management
Overview

- Equestrian injury statistics
- Head/Spine/Extremity injuries
  - Types
  - Recognition/Assessment
  - Management/Treatment
- General first aid kit suggestions
• Horse riding is considered a higher risk sport than motorcycle riding, automobile racing, football, and skiing
  • 1 severe accident requiring hospital admission per 2000 hours of riding
• Typical rider profile:
  • 27 years riding experience, Western style, riding for recreation.
  • Own horses, saddled their own horse, and inspected their own tack.
• Injuries happened mostly on sunny, summer afternoons in dirt or on uncultivated land
• Most prevalent were head injuries
• Two-thirds believed their accident was preventable
• Spine injuries are comparatively less common, however, when they occur they typically result in at least partial quadriplegia
Mechanism of Injury

• How the accident happened
• Gives important insight into what type of injuries might be present
• Index of suspicion
Suspected Injuries

Neck
Head
Clavicle/shoulder
Ribs
Internal organs
**Mechanism**

**Suspected Injuries**

- Foot
- Unlikely head/neck
Head Injuries
General Types of Head Injuries

- Fractures
- Brain bleeds
- Brain injuries
Skull Fractures

• Types:
  • Linear
  • Basilar
  • Depressed
  • Open vault
Skull Fractures

• Structure problem
• Brain bleed can occur from broken bones
• Strong impact required to fracture the skull could be an indication that there is another brain injury
Brain Bleeds

- Common types: epidural/subdural
- Terms of location/rate
- In the simplest terms, both refer to bleeding inside your skull

usually FAST onset of symptoms

usually SLOW onset of symptoms
Why are Brain Bleeds Bad?

- Pressure problem
- Increased intra-cranial pressure
  - Pressure build-up precludes blood from getting up to supply the brain
  - Increased pressure forces the brain downward through the foramen magnum (hole at the base of the skull)
- This is called brain herniation (AKA death)
Outward symptoms of Increased Intra-Cranial Pressure

Notice the first signs could be as seemingly benign as restlessness or lethargy.
Brain Injuries

• General types: axonal injuries, contusions
• Coup - Contrecoup
• Problem of function

You don’t have to get knocked out to have a brain injury!
Brain Injuries

- Axonal Injuries
  - Connections between neurons are sheared/disrupted
    - the concept is similar to cutting the electric line between a light switch and a light
  - A concussion is a very mild type of axonal injury

- Contusions
- Bruised brain
How to Recognize Head Injuries

• High index of suspicion based on mechanism!
• May be no outwardly visible signs
• Skull fractures
  • Deformities, crepitus (bone movement), blood/clear fluid from ears
• Altered level of consciousness/mental status
# Grading Mental Status

- **Glasgow Coma Scale (GCS)**

<table>
<thead>
<tr>
<th>ASSESSMENT AREA</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye Opening (E)</td>
<td></td>
</tr>
<tr>
<td>Spontaneous</td>
<td>4</td>
</tr>
<tr>
<td>To speech</td>
<td>3</td>
</tr>
<tr>
<td>To pain</td>
<td>2</td>
</tr>
<tr>
<td>None</td>
<td>1</td>
</tr>
<tr>
<td>BEST Motor Response (M)</td>
<td></td>
</tr>
<tr>
<td>Obey commands</td>
<td>6</td>
</tr>
<tr>
<td>Localizes pain</td>
<td>5</td>
</tr>
<tr>
<td>Normal flexion (withdrawal)</td>
<td>4</td>
</tr>
<tr>
<td>Abnormal flexion (decorticate)</td>
<td>3</td>
</tr>
<tr>
<td>Extension (decerebrate)</td>
<td>2</td>
</tr>
<tr>
<td>None (flaccid)</td>
<td>1</td>
</tr>
<tr>
<td>Verbal Response (V)</td>
<td></td>
</tr>
<tr>
<td>Oriented</td>
<td>5</td>
</tr>
<tr>
<td>Confused conversation</td>
<td>4</td>
</tr>
<tr>
<td>Inappropriate words</td>
<td>3</td>
</tr>
<tr>
<td>Incomprehensible sounds</td>
<td>2</td>
</tr>
<tr>
<td>None</td>
<td>1</td>
</tr>
</tbody>
</table>

GCS Score = (E+M+V); Best possible score = 15; Worst possible score = 3.
Head Injury Assessment

• What to look for
  • Deformities, blood/fluid drainage, Battle’s sign, Raccoon eyes, unequal pupils, irregular respirations, seizures, unconsciousness

• What to be aware of
  • Confusion, retrograde/anterograde amnesia, severe headache, nausea, vomiting, photosensitivity/visual disturbances, ringing in ears

  • Basically ANYTHING that’s new since the accident

  • Maintain a high index of suspicion even if initially asymptomatic

  • Re-assess frequently
Battle’s Sign
Raccoon Eyes
Management for a Head Injury

• CALL 911 ASAP!
• C-spine stabilization & try to minimize movement
Spine Injuries

Equine Airbag!!

Hit-Air

Before

After Deployment

Back View
Spinal Column Anatomy

A Regions of the spine

B Enlargement of the cervical spine
Regions of the Body Innervated by Each Spinal Nerve

- Cervical (C1-C8)
- Thoracic (T1-T12)
- Lumbar (L1-L5)
- Sacral (S1-S5)
Spine Injuries

- General types: vertebrae fractures, cord injuries
- Remember: It’s possible to have a cord injury without any fracture present
- Fracture
  - Problem of structure
- Cord Injury
  - Problem of function
Recognition & Assessment of Spinal Injuries

• Maintain a high index of suspicion based upon the mechanism!
• May be no outwardly visible signs
• What to pay attention to:
  • Neck/back pain, numbness/altered sensation/motor control in extremities, incontinence
Suspected spine injury from mechanism

Normal mental status, answers all questions promptly and appropriately, GCS = 15

No neck/back pain (either complaint or upon palpation)

No deformities upon palpation

No neurological deficits

No distracting injuries (open fractures, etc.)

No spine injury (probably)

No pain with range of motion or axial loading (pressing down on head)

Spinal Injury Rule-out Flow Chart
Spinal Injury Assessment

- Use the rule-out criteria (previous slide)
- IMPORTANT: Just because they meet the rule-out criteria does not mean they do not have a neck/spine injury
- Re-Assess!
- Maintain a high index of suspicion
What to do if a Spine Injury is Suspected

- Maintain c-spine stabilization
- Try to minimize movement
- CALL 911!
Extremity Injuries

- General types: Fractures, dislocations, lacerations
Key Points with Fractures/Dislocations

- Bones are VERY vascular
- A structural problem can very quickly lead to a fluid loss problem
- Fractures/Dislocations often damage nearby blood vessels and/or nerves
Assessment of Extremities

• First priority with any suspected extremity injury:
  • Assess circulation, motor function, and sensation (CMS) beyond the point of injury
  • Pulse/capillary refill, equality of strength, equality of sensation/abnormal sensation

• Assess the good side and compare

• That’s why you have two!
TREATMENT OF FRACTURES/DISLOCATIONS

- Splint (and sling if upper extremity)
- General splinting principles:
  - Immobilize joints immediately above and below injury
  - Assess CMS before and after applying splint

If CMS is compromised: CALL 911!

Just because you have two doesn't mean one is a back-up!
Types of Splints

- No splint?
- Be creative
- A splint can be ANYTHING that will stabilize and provide structure
- Ex: stick, smashed water bottle, pt.’s own body

![SAM splint](image1)
![air splint](image2)
![improvised splint](image3)
Bleeding Control

1. Direct pressure
2. Pressure dressing
3. Tourniquet

- Tourniquets are OK to stop severe bleeding (the military told me so)
- Make sure you write down the time of application
Bleeding Control Key Points

• Clean the site

• Debris in the wound will make clot formation more difficult

• Once a dressing is in place do not remove it

• You’ll disrupt the forming clot and be starting from scratch
Baseline First Aid Kit Suggestions

- Wet-ones
  - General cleaning

- Gauze 4x4
  - Good to have something sterile as the first thing next to a wound

- Super glue
  - Good for sealing minor cuts
  - Please don’t use this to try to glue on an appendage

- Triple anti-biotic
  - Will help slow/stop minor bleeds as well as keep infection at bay

- Athletic tape
  - Tape on dressings, splints, and whatever else your heart desires

- Triangle bandage
  - Great sling/swathe that packs very small

- Benadryl (pill and ointment)
  - Allergic reactions

- Advil/Aspirin
  - Pain is a drag
  - Aspirin for potential heart problems

- Sharpie
  - Write down the time an injury happened
  - Write down details that you may need to convey to a 911 dispatcher
  - Write down the time of tourniquet application
  - Draw a mustache on your riding partner while they’re unconscious
Sources


