Physical Abuse and Sentinel Injuries

Suzanne Haney, MD
## Presenter Disclosures

<table>
<thead>
<tr>
<th>Category</th>
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<tbody>
<tr>
<td>Consultant/ Speakers bureaus</td>
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Objectives

1. Describe common presentations of physical abuse.
2. Define sentinel injuries.
3. Discuss recommended medical care for children who have experienced abuse.
Physical abuse

- Bruising (sentinel injuries)
- Broken bones
- Abusive head trauma
- Abdominal trauma
- Burns
Bruising

- Rare
- Sentinel injuries
- Not the result of minor trauma
- TEN-4-FACES
  - Torso, Ear or Neck in child <4 years
  - Any bruising on infant < or equal to 4 months
  - Frenulum, Angle of the jaw, Cheek, Eyelid or Sclera
Facial Bruising
Frenular Injury
Scleral (subconjunctival) hemorrhage
Fractures

- Very common accidental injuries
- More concerning
  - Non-ambulatory child
  - History does not match the injury
## Fracture Specificity

<table>
<thead>
<tr>
<th>High</th>
<th>Moderate</th>
<th>Low</th>
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<tbody>
<tr>
<td>Common metaphyseal lesions</td>
<td>Multiple fractures</td>
<td>Subperiosteal new bone formation</td>
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<td>Rib fractures</td>
<td>Fractures of different ages</td>
<td>Clavicular fractures</td>
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<td>Scapular fractures</td>
<td>Epiphyseal separations</td>
<td>Long bone shaft fractures</td>
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<td>Spinous Process Fractures</td>
<td>Vertebral body fractures</td>
<td>Linear skull fractures</td>
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<td>Sternal fractures</td>
<td>Digital fractures</td>
<td>Complex skull fractures</td>
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Medical Conditions

• RARE
• Osteogenesis imperfecta
  – Brittle bone disease
  – Temporary brittle bone disease (NOT)
• Osteopenia of prematurity
  – Must be premature AND significantly ill
• Rickets
  – Vitamin D deficiency
  – Classic presentation
• THESE CASES STILL NEED A COMPLETE INVESTIGATION!!!!
Abusive Head Trauma

- Shaken baby syndrome
  - Including impact
- Universal language
Statistics

• Approximately 15-20/100,000 children annually
  – More than cancer
  – More than type I diabetes

• Median age is 2-6 months
  – Case reports of older children
• Head injury
  – Vomiting, decreased level of consciousness, seizures (53%)
  – Death (6%)
• History that is not consistent with the injury
  – No history
  – Short fall
    • Chadwick, death from a short fall is less than 1 in one million…
• Large head, no history
  – Much more difficult to determine (22% of cases)
• May be an element of crying/frustration
  – Diapering, feeding, video games
  – Crying curve -- Barr et al.

• Other stressors
  – Unrelated male caregiver
  – Recent job loss, mother returning to work
Findings

• Intracranial hemorrhage
  – Subdural
  – Subarachnoid
  – Cerebral contusion
• Brain injury
• Retinal hemorrhage
• Other abusive injuries
  – Bruises, fractures, spine injuries
Tentorial/Cerebellar
Retinal Hemorrhages
Abdominal Trauma

- Rare, but has a high fatality rate
  - Commonly missed amongst other injuries
  - Delay in care
- Injuries to hollow organs more than solid
  - Intestines (duodenum, jejunum, ileum)
  - Liver, spleen, kidneys
- Blunt force trauma
Burns

- 5-10% of children admitted for burns are diagnosed with abuse
- Younger
- More severe (abuse is an independent predictor of mortality)
Burns - risk factors

• Pattern injury
• History inconsistent with injury or child’s developmental ability/multiple explanations
• Sibling or pet involved
• Toileting/diapering accident
Questions?