Accident or Abuse?

ANN S. BOTASH, MD

Two month old with a fall

History

- A two month old infant is brought to the ED after falling from a bed to the floor.
- The mother was sleeping when this occurred and the father was working that night.
- When the father returned home, he found that the baby had a bruise on the face.

* Note that the history was changed for educational purposes and to protect confidentiality.
Accident or Abuse

Which of the following is most likely?
- Accident
- Abuse

Areas where bruising is uncommon

- Sugar and colleagues recorded bruising in less than 2% of children, at any developmental stage on the back, buttocks, forearm, face, abdomen or hip, upper arm, posterior leg, or foot. Confirmed in other studies.
- Wedgwood noted bruising to the lower back in the very mobile child, but he saw none in early walkers, cruisers, or pre-cruisers. Forearm bruising was not seen in the cruising and pre-cruising group.
- There was no bruising to the hands in children less than 4 years old recorded in any study. Dunstan and colleagues found no bruising to the ears.


Acute Head Trauma

- Bruises in 434 well children studied.
- Bruises on the back, forearm, or face were noted in less than 2% of the walking children, but were extremely rare in precursors and cruisers.

Work up for Physical Abuse

Diagnostic Tests to Consider:
- CBC with platelets, LFTs, amylase/lipase, PT/PTT
- UA and stool guaiac
- UDS/Toxicology
- Skeletal Survey with oblique views of ribs
- Brain imaging (CT acutely; MRI for follow-up)
- Forensic Evidence Kit per SANE consult

Labs
- PT/PTT normal
- SGPT slightly elevated at 60
- CBC normal, with normal platelets
- Urine Drug Screen not performed
Rib Fractures

- posterior
- lateral

transverse process of adjacent vertebrae is the fulcrum

Posterior Rib Fractures

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Rib Fractures

Rib Fractures in Child Abuse

- The most common type of rib fracture resulting from child abuse is posterior rib fracture, where the rib heads articulate with the vertebral body.
- Rib fractures are commonly asymptomatic with no signs of external trauma, and therefore, may be missed if there is not an index of suspicion or other reason to obtain chest x-rays.
- Rib fractures generally are not displaced or fragmented, and therefore, may be occulted on plain film until callus formation occurs at 7-10 days after injury.
- Birth injury rarely, if ever, causes rib fractures.
- Rib fractures in young infants are very nearly diagnostic of child abuse.


Clinical Bottom Line:

- In children with rib fractures, the likelihood of non-accidental injury decreases with increasing age.
- Rib fractures in children less than 3 years of age are highly predictive of non-accidental injury.
- The absence of a rib fracture on a chest radiograph in a child does not rule out non-accidental injury.


Accident or Abuse

Which of the following is most likely?
- Accident
- Abuse
Acute Head Trauma


- 54/173 infants seen by their physicians and diagnosis missed
- Mean time to correct dx was 7 days