



Chapter 66 – Child Maltreatment

Episode Overview:

- 1) List 5 high risk fractures for child abuse
- 2) What is your DDX for intentional injury?
- 3) List 6 DDX for physical abuse and 6 DDX for sexual abuse
- 4) What are some conditions that may mimic child abuse?
- 5) What cluster of injuries is seen in shaken baby syndrome?
- 6) List 6 diseases that may require prophylaxis in child sexual abuse and the drugs with dosage that you would use above and below 45kg

Thank you to Dr. Sampsel for her assistance with this episode!

Rosen's in Perspective

Child maltreatment is an often overlooked entity presenting to our emergency departments.

Multiple entities: Physical abuse, sexual abuse, emotional abuse, child neglect (physical, emotional, educational), and factitious disease by proxy / aka *Munchausen syndrome aka medical child abuse*

We have an ETHICAL and LEGAL obligation to investigate and report all potential child maltreatment to the authorities.

In British Columbia, this entity is Child Protection Services, and our legal legislation is the [Child, Family and Community Service Act](#), (24hr hotline: [1-800-663-9122](tel:1-800-663-9122))

Although we are mainly focused on determining intentional versus unintentional injury versus underlying medical pathophysiology, the hallmarks of intentional or non-accidental trauma in children are: cutaneous bruises, burns, skeletal fractures, internal hemorrhage, organ perforation, and brain injury (coup-contrecoup/SAH/SDH/DAI)

Remember, accidental bruising tends to be over bony prominences: think forehead, elbows, shins, bruises over the neck, medial thighs, behind the ears are all suspicious.

“Those kids who don’t cruise, don’t bruise”

Other injury patterns to look out for are bruising patterns (belts, cords, shoe imprints), bites (children have <2.5cm between canine incisors vs adults have >3cm) and burns (immersion, cigarette, iron, chemical). Note: Accidental burns are usually spill pattern: severe proximal to coffee pot etc, milder more distal and have spill pattern (drip appearance). Versus immersion burns (glove stocking distribution).



1) List 5 high risk fractures for child abuse

Table 66-3 Suspicious Fractures
Long bone fracture in a preambulatory infant
Metaphyseal fractures (classic metaphyseal lesions)
Rib fractures
Scapula fractures
Spinous process fractures
Skull
Multiple
Wide (>3 cm)
Growing
Involving more than one cranial bone
Occipital

Metaphyseal fractures:

- Due to pulling on an extremity
 - Heal without a bony callus
 - Usually in kids < 2 yrs old

Pearls:

- Kids don't usually get rib fractures during CPR
- long bone fractures in pre-ambulatory kids are suspicious
- Infants usually can't roll over until 3 months (at the earliest)

2) DDx for intentional injury?

- Unintentional injury!
 - Trauma from falls, primary medical conditions (leukemia, coagulopathy, osteogenesis imperfecta, etc.)

3) List 6 DDx for physical abuse and 6 DDx for sexual abuse

Physical:

- ALTE (now known as....BRUE)
- Seizure
- Intestinal injuries (eg bike handle)
- Pancreatitis (commonly drug induced when not intentional trauma)
- Liver / spleen injury
- Underlying coagulopathy familial - acquired or leukemia
 - Glutaric aciduria type I (causing ICH)
- Osteogenesis imperfecta

Sexual:

- Accidental trauma (straddle injury)
 - Hymen remains uninjured
- dermal melanocytosis (formerly called *mongolian spots*),
- lichen sclerosus atrophicus
 - Unknown cause - hypopigmentation with adjacent skin developing blood blisters and petechiae



- Hymen is unaffected
- May involve the anus or perihymenal areas
- Impetigo,
- Urethral prolapse
 - Usually african american girls aged 5-8 yrs
 - Should get urology consultation for ligation
- Anal fissures
- Infectious causes:
 - STI's
 - Shigella
 - Group A beta-hemolytic strep - causing perianal strep infection
 - Candida
 - Pinworm infestation
 - Chigger infestation
- Vaginal foreign bodies
- Priapism (due to sickle cell disease)

4) What are some conditions that may mimic child abuse?

Rashes:

- **Phytophotodermatitis**
 - Due to a phototoxic reaction that develops on sun-exposed areas that have been in contact with fruit juices
 - Appearance: erythema, blistering then becoming brown skin rashes
- **Dermal melanocytosis** (formerly called *mongolian spots*)
- **Bullous impetigo**
 - Confused with second degree burns

Trauma:

- **Unintentional burns**
- **Accidental fractures** (eg clavicle or humerus at birth, Toddlers # (aka. CAST fracture))
- **Osteogenesis imperfecta**
 - 1:20000 incidence; multiple types of it
 - Look for blue sclerae
 - Brownish teeth

Deficiencies:

- Rickets of prematurity
- Scurvy

Infections:

- Congenital syphilis / rubella
- Encephalitis / Meningitis / Post hypoxic edema

5) What cluster of injuries is seen in shaken baby syndrome?

- Head trauma
 - Traumatic axonal injury → cerebral edema
 - With retinal hemorrhages (85% of cases have this)
 - “Due to vitreo-retinal traction due to centrifugal forces”
 - Seen as dot, blot, shear and flame hemorrhages
- Skeletal injuries
- Abdominal injuries: *there may be no visible external signs of trauma*
 - Pancreatitis
 - Liver and spleen lacerations
 - Duodenal hematomas / viscus perforations

****Can have no scalp hematoma or skull fractures****



Figure 66-6. Complex skull fracture associated with child maltreatment. (Courtesy Sara T. Stewart, MD, MPH.)



Figure 66-7. Metaphyseal fracture, “bucket handle type,” associated with child physical abuse. (Courtesy Sara T. Stewart, MD, MPH.)



Figure 66-8. Posterior rib fractures caused by compression of the ribs from child physical abuse. (Courtesy Sara T. Stewart, MD, MPH.)



Figure 66-9. Retinal hemorrhages in an infant with shaken infant syndrome. (Courtesy Carol Berkowitz, MD.)



6) List 6 diseases that may require prophylaxis in child sexual abuse and the drugs with dosage that you would use above and below 45kg?

- **In cases of acute assault** Rosen's mentions that the pubertal patient should be prophylactically treated for gonorrhea, chlamydia, and trichomoniasis
 - Pre-pubertal children are at much lower risk of contracting an STI; so they can be followed clinically

Sexually Transmitted Infection Prophylaxis or Treatment after Sexual Abuse/Assault	
DISEASE	TREATMENT
Child, or Weight below 45 kg	
Gonorrhea	Ceftriaxone 125 mg IM (one dose) Cefixime 8 mg/kg (one dose; maximum dose 400 mg)
Chlamydia	Erythromycin base 50 mg/kg/day divided qid × 14 days
<i>Trichomoniasis</i>	Metronidazole 15 mg/kg/day PO divided tid × 7 days
Syphilis	Benzathine penicillin 50,000 units/kg IM (one dose; maximum dose 2.4 million units)
HSV infection (first clinical episode)	Acyclovir 80 mg/kg/day divided tid × 7-10 days
Hepatitis B*	HBIG 0.06 mL/kg IM, vaccine series
HIV infection	Contact local infectious disease specialist
Adolescent, or Weight above 45 kg	
Gonorrhea	Ceftriaxone 250 mg IM (one dose) or cefixime 400 mg PO (one dose)
Chlamydia	Older than 8 years: azithromycin 1 g PO (one dose), or doxycycline 100 mg PO bid × 7 days
Bacterial vaginosis	Metronidazole 500 mg PO bid × 7 days, or metronidazole gel 0.75% 5 g intravaginally daily × 5 days, or clindamycin cream 2% 5 g intravaginally qhs × 7 days
<i>Trichomoniasis</i>	Metronidazole 2 g PO (one dose)
Syphilis	Benzathine penicillin 2.4 million units IM (one dose)
HSV (first clinical episode)	Acyclovir 400 mg PO tid × 7-10 days, or valacyclovir 1 g PO bid × 7-10 days
Hepatitis B*	HBIG 0.06 mL/kg IM, vaccine series
HIV	Contact local infectious disease specialist

Adapted from Workowski KA, Berman SM: Sexually transmitted diseases treatment guidelines, 2010. MMWR 59:1, 2010; and 2009 Red Book: Report of the Committee on Infectious Diseases, 28th ed. Elk Grove, Ill, American Academy of Pediatrics, 2009. HBIG, hepatitis B immunoglobulin; HIV, human immunodeficiency virus; HSV, herpes simplex virus; IM, intramuscularly; PO, orally.

*Unimmunized child and perpetrator with acute hepatitis B infection.