

Non-Accidental Trauma 1



Introduction

Physical child abuse is **difficult to recognize, and commonly missed** on initial presentations:



It is **most common** in **pre-verbal children**, especially those <6 months



Physical examination is limited, as a proper MSK and neuro exam can't be performed in children



Abuse is **often missed** in white and high-SES families, and **over-reported** in African and low-SES families

Child abuse can occur in all families. Physicians have an ethical and legal responsibility to report suspected cases

History



Does the injury match the mechanism?

Serious injury with a history of only minor trauma is concerning

- Serious intracranial and intra-abdominal injuries **rarely result from household falls** or **falls down the stairs**

Is there an unexplained delay in seeking medical care?

Even a minor delay in presenting should raise suspicion of abuse

- Delayed presentation** for **minor injuries** can sometimes occur **without child abuse**

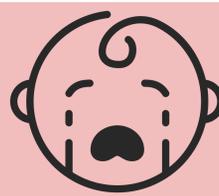
Use **open-ended** questions. **NEVER** directly ask the child if they have been abused



Closed head injury is the **leading cause of death** in NAT. Consider in children with **irritability, somnolence, seizure** or **prolonged vomiting**



Consider a **fracture** in a young child with **fussiness, local tenderness, decreased limb use, or refusal to weight bear**



Injuries such as fracture, abdominal trauma, and mild TBI's may **only have mild symptoms** like **irritability or decreased appetite/activity**

Physical Exam



Bruises

- Can take the **shape of causing object**, in either an **outline** or **negative outline**
- Linear, symmetrical, or bruises over non-bony prominences** are worrisome
- TEN-4 Rule** is 97% sensitive for abuse. Bruising on the **torso, ear, neck, or anywhere in infants <4 months**
- Remember that **"Those who don't bruise don't bruise"**



Mouth

- Oropharyngeal injuries** are found in abuse without history of mouth/neck trauma
- Watch for **frenula tears**, and unexplained injuries to the **lips, teeth or soft palate**



Burns

- Immersion burns** are common in anogenital region and extremities
- Intentional cigarette burns** are often 8-10mm, circular, and blistered/ulcerated
- Accidental scald injuries** have a drip appearance, and the burn is more severe proximally



Suspected Fractures

- Long bone** and **posterior rib** fractures in a child **under 12 months** are concerning for abuse
- Classic metaphyseal lesions** seen on imaging are **very specific for abuse**



Abdominal Injuries

- Occurs from kicks/blows to abdomen, **"falls" very unlikely to cause organ injury**
- Small bowel perforations** and **pancreatic injury** are **most specific for abuse**



Head Injuries

- Traumatic brain injury** in children **under 3 years** is concerning for abuse
- Subdural hematomas, complex skull fractures** and **multifocal injuries** are **most specific for abuse**



Differential Diagnosis

Bruises

- Congenital Dermal Melanocytosis** - blue discolourations on posterior side
- Phytophotodermatitis** - erythema/brown discolouration from sun or citrus juice contact
- Blood dyscrasias** - leukemia can produce thrombocytopenia and multiple ecchymoses
- Coagulation disorders** - hemophilia, Von Willebrand Disease, etc
- Port-wine stains** - can be associated with Sturge Weber Syndrome
- Purpura** - meningococemia, Henoch Scholein Purpura, ITP
- Cultural practices** - cupping, coining, moxibustion, etc

Burns

- Phytophotodermatitis** - erythema/brown discolouration from sun or citrus juice contact
- Bullous impetigo** - blisters caused by S.aureus that can resemble burns
- Staph scalded skin syndrome** - Positive Nikolsky's sign
- Contact dermatitis** - poison oak, poison ivy, etc

Fractures

- Birth trauma** - clavicle and humerus fractures, may initially go unnoticed
- Toddler's fracture** - tibial non-displaced spiral fracture, often presents with a limp
- Osteopenia of prematurity** - can resemble metaphyseal fractures
- Osteogenesis imperfecta** - associated with blue sclera and pathologic fractures
- Rickets** - vitamin D deficiency causing lone bone deformities and pathologic fractures
- Hyper IgE Syndrome** - long bone fractures can occur with minor trauma
- Caffey Disease** - fever, irritability, bone hyperplasia, and soft tissue swelling

CNS Bleed

- AV malformation** - more common to present in older children (age 10+)
- Coagulation disorders** - hemophilia, Von Willebrand Disease, etc
- Glutaric aciduria type 1** - metabolic disorder that can cause subdural hemorrhages
- Birth trauma** - retinal hemorrhage and subdural hematomas may go unnoticed initially



REFERENCES:
Rosen's Emergency Medicine: Concepts and Clinical Practice - 9th ed. 2017: Chapter 177 Child Abuse

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