

Medical Manifestations of Child Abuse

Unless you're looking for it, you will miss it!

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Background

Demographics and Risk Factors for Non-Accidental Orthopedic Trauma

Clinical Pediatrics
2019, Vol. 58(6) 418-426
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DOI: 10.1177/0009922818829045
jcp.sagepub.com/home/cpe

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Abstract
Childhood non-accidental trauma (NAT) is the second most common cause of death in children. Despite its prevalence, NAT is frequently unreported due to provider misdiagnosis or unawareness. The purpose of this study was to determine current risk factors and injury patterns associated with NAT. A retrospective review of the Kids' Inpatient Database was performed for the years 2009 and 2012. Univariate and multivariate analyses were used to determine the statistically significant risk factors for NAT. In 2009 and 2012, 174 442 children were hospitalized for fractures. Of these, 2.07% (3614) were due to NAT. Lower extremity (femur, tibia/fibula, foot), hand/wrist, clavicle/pelvis, and spine fractures were more likely to result from NAT. Tibia/fibula fractures were most predictive of NAT. Children with anxiety, attention-deficit, conduct, developmental, and mood disorders were more likely to experience NAT. Those with cerebral palsy and autism were not at an increased risk for NAT.

Keywords
orthopedic, non-accidental trauma, risk factors, demographics, fractures

Background
Non-accidental trauma (NAT) is the second leading cause of pediatric morbidity and mortality in the United States, yet the etiology of childhood NAT remains poorly defined for the current pediatric population.¹ The incidence of NAT has been reported to range from 0.47 fractures now recommends a NAT evaluation in all patients below 36 months of age.² However, these recommendations are based on older patient data. While prior database studies investigating NAT have been performed, these utilized data as early as 1997, which may limit their relevance today.^{3,4} In addition, prior studies have described the demographics of

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Missed Opportunities for Identification

- High rate of missed identification by physicians and other providers
- We (the medical community) miss about 40% of sentinel signs
 - They are subtle
- Children frequently present to either Pediatrician or ED with sentinel signs of abuse prior to representation for severe injury/death

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What is a Sentinel Injury?

- A minor, often subtle, but visible injury
- **Bruises** are of the most common sentinel signs of abuse and yet the most overlooked
 - not viewed as requiring intervention

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TEN-4-FACES
Bruising Clinical Decision Rule for Children <4 Years of Age

When is bruising concerning for abuse in children <4 years of age?
If bruising in any of the three compartments (Regions, Infants, Patterns) is present without a reasonable explanation, strongly consider evaluating for child abuse and/or consulting with an expert in child abuse.

<p>TEN Torso Ears Neck</p> <p>FACES Frenulum Angle of Jaw Cheeks (fleshy part) Eyelids Subconjunctivae</p>	<p>4 months and younger</p> <p>Any bruise, anywhere</p>	<p>Patterned bruising</p> <p>Bruises in specific patterns like slap, grab or loop marks</p>
<p>REGIONS</p>	<p>INFANTS</p>	<p>PATTERNS</p>

See the signs: Unexplained bruises in these areas most often result from physical assault. TEN-4-FACES is not a diagnostic abuse tool but functions as a screening tool to improve the recognition of potentially abused children with bruising who require further evaluation.

TEN-4-FACES was developed and validated by Dr. Mary-Clare Finkel and colleagues. It is published and available for FREE download at www.luriechildrens.org/ten-4-faces

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Recognize Child Abuse

Using an evidence-based approach

- Intuition not reliable
- Perpetrators can be incredibly deceptive

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2018 Arizona Child Death Statistics

Maltreatment Deaths (Deaths due to Child Abuse and Neglect)

- Child fatalities due to maltreatment decreased 4% from 2016 (n=82) to 2017 (n=79) and accounted for 10% of all child deaths in Arizona.
- All maltreatment deaths were determined by the team to be preventable and these deaths made up 24% of all preventable deaths among children.
- Blunt force trauma deaths accounted for twenty-two percent (n=17) of maltreatment deaths.
- Seventy-one percent (n=56) of children who died due to maltreatment were less than 5 years old.
- Child neglect caused or contributed to 72% of the deaths (n=57).
- In 73% (n=58) of maltreatment deaths, the perpetrator was the child's mother or father.
- Substance use was a factor in 65% (n=52) of maltreatment deaths.
- African American and American Indian deaths were disproportionately higher than the population they comprise.

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- History of Present Illness
- Physical Exam
- Social Risk Factors

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Red Flags in The Story

- Injury discordant with mechanism provided
- No history (esp. abusive head trauma and abusive burns)

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Red Flags in The Story

- Changing details
- Different family members/witnesses provide different accounts
- Downplaying injuries
- Disengaged caregiver

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➤ Check Point

- Most perpetrators still seem very appropriate!
Never "rule out" abuse because the parent/caregiver is "acting appropriately"

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➤ Check Point

- Children often hide anxiety and fear remarkably well
 - fear of punishment for "telling"
 - loyalty to abuser
- Children often act affectionate to parent/caregiver if they are abusive
- Kids want to have fun no matter what

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Red Flags in the Story

- Unexplained or unreasonable delay in seeking medical care for a significant injury
 - Usually 8 h delay vs 1.5 h, usually private vehicle vs calling 911
- If a child states that someone hurt them or touched them inappropriately, even if they change or retract their story
- Blaming siblings, self, or pets for a *significant* injury

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Physical Exam Red Flags

- Bruises
 - Of the most important sentinel signs yet the most overlooked

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But kids get bruised all the time!

- You're right! But usually in certain places like...
 - Bony prominences in the front of the body, knees, shins, forehead, etc.,
 - ...**IF** they are cruising or ambulatory

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Physical Exam Red Flags

- **ANY** injury to a nonambulatory infant is very concerning for abuse (including bruises, mouth injuries, fractures, intracranial injury, abdominal injury)
 - A bruise may be the only obvious sign of abuse
 - In infants <1 year of age evaluated for isolated bruising → ~60% had additional traumatic injury found (fracture, brain injury, and/or abdominal injury)

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Accidental Bruises

- Of 559 child injury incidents, 693 bruises:
 - 85% are from falls in ambulatory children
 - Single bruise in 81.7%
 - Stair falls resulted in **≥3 bruises** only with falls involving **≥10 steps**
 - Bruising was rarely observed on the **buttocks, upper arm, back of legs or feet**
 - **No bruises were seen on ears, neck or genitalia**
 - **Petechial bruising** was only noted in 0.003% unintentional incidents¹⁵
 - Seeing in high velocity impact or strangulation

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“one and done”

- Usually, one bruise from a single mechanism

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Subconjunctival Hemorrhage



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Signs or Report of Strangulation in any age

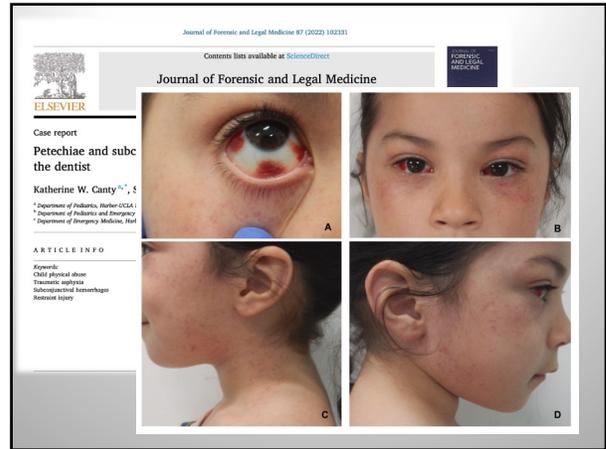


If there is ever a report from a child of being strangled or “choked”, even if these signs aren’t present, please take to pediatric forensic interview

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Any Patterned Injury/Bruising in **any age**

- Or appearance similar to an object

- **Linear** bruising is patterned bruising

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Patterned Injuries

- Linear
- Appearance similar to an object
- Bruising that resembles defensive wounds often found on hands and forearms

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➤ Check Point

➤ While bruises are concerning, inflicted trauma does not always have associated bruising

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Physical Exam Red Flags

- Injuries to multiple organ systems
- Multiple injuries in different stages of healing
- Underweight, malnourished

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Pediatric Abusive Head Trauma

- A short fall of <3-5 feet was the most commonly given false trauma history accompanying abusive head injury^{11, 32}
- No history of trauma was the most common presentation of AHT¹¹
- “The Killer Couch”²⁷

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Pediatric Abusive Head Trauma

- Avon Study surveyed 14,009 parents of infants at 6 months of age asking about household injuries
 - 3,357 (24%) of them reported falls
 - 33% couch, 20% sofa
 - Of those falls 13% (3% of total cohort) sustained an injury
 - 21 infants (<1%) serious, contusion
 - 3 (0.008%) sustained skull fractures
 - No deaths

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Pediatric Abusive Head Trauma

- Study over 20 yrs of ~100,000 falls out of windows only 20 cases fatal and 50,000 of those were out of 2nd story windows!³¹
 - 0.0002% chance of death

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BRUE

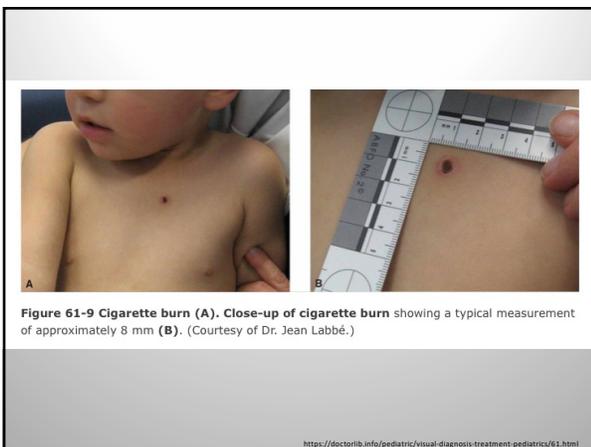
- >30% of infants presenting with AHT might appear well on presentation with no external signs of abuse
- ~50% go unrecognized and are discharged to home
- When infants presenting as BRUE (formerly known as ALTE) were worked up, 11% were found to be victims of child abuse

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Physical Exam Red Flags Intentional Burns

- Usually patterned, clear demarcation, often deep
- Scald burns: likely to be abusive when they are posterior
- Peak age for abusive burning is 3 to 4 years old, frequently r/t punishment for toilet-training mishaps

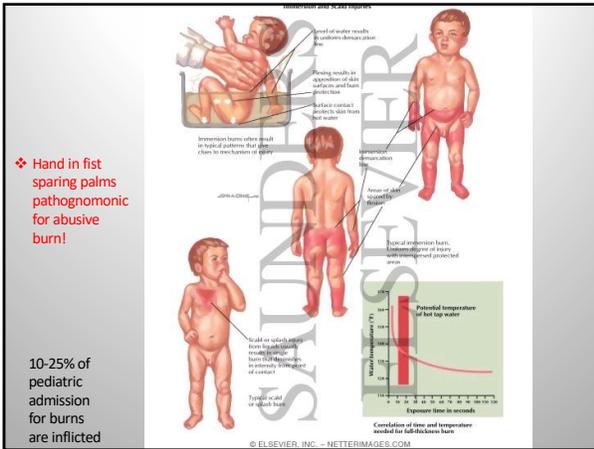
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Social Risk Factors

- Prior DCS reports
- Domestic violence (~30% risk for child abuse)
- Nonbiologically related adult male in the home

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Only ask children the 4 W's

- What?
- Who?
- When?
- Where?

• What parents say in the 1st 5 minutes is the most important –document!

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Check Point

- It is not uncommon to have a single abused child amongst siblings so do not disregard the possibility of abuse due to comparison of care given to siblings

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Intrafamilial Child Torture (ICT)

Child Abuse & Neglect 151 (2024) 106750

Contents lists available at ScienceDirect

Child Abuse & Neglect

journal homepage: www.elsevier.com/locate/childabuse

Child torture victimization: Review of criminal statutes and medico-legal issues

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ARTICLE INFO

Keywords: Child abuse, Child neglect, Medical child abuse, Child abuse victims, Child abuse prevention

ABSTRACT

A reviewed group of pediatricians and an attorney with expertise in child abuse matters prepared a medical definition of **intrafamilial child torture** prepared by a reviewer in a landmark 2014 publication in the health services literature. Empowering one of the most widely cited applications on **non-pediatrically informed child torture to date**, this **medical definition preempts** **physical abuse, psychological abuse, deprivation, and neglect** characterizing child torture. It has been broadly recognized and accepted for multidisciplinary professionals across medical, child welfare, and criminal justice sectors. While the medical community's efforts aimed to correct legislative changes, including adoption of explicit tort-specific statutes that would enable criminal justice systems' rigorous reflection of abuse severity, subsequent legal analyses have revealed tremendous variability in criminal investigations, prosecution, sentencing, and case outcomes. In the discussion given, medico-legal issues related to intrafamilial child torture case prosecution are reviewed. The impact of the **difficult-to-define** **medical definition** on professional legal approaches and unique case challenges related to longitudinal nature of abuse, frequent psychiatric injury, and court preparation demands are explored in depth. Utilizing available legal research platforms, investigative information, health science literature, and prosecutor self-report, writing child torture statutes and case outcomes were compared with focus on perpetrator, victim, socio-environmental, and community influence on legal outcomes. Prosecutorial challenges facing jurisdictions facing child torture practice are discussed with emphasis placed on the critical role played by the medical community to support diagnosis of physical and emotional injuries to the child. Finally, the process by which states can establish a jurisdictional torture statute are suggested.

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Key Points

- Know the red flags, there are usually more than one
- Babies don't get bruises
- Children don't usually lie about abuse
 - pediatric forensic interviewer if ever a disclosure of abuse, even if the child's story changes
- Beware if infant is in serious condition reported from a fall
- Varying opinions in healthcare professionals (stemming from a lack of knowledge)
 - Know who the experts are

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