SENTINEL INJURIES AND CHILD ABUSE

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A SENTINEL INJURY IS A POORLY EXPLAINED MINOR INJURY IN A NON-MOBILE INFANT



- They are medically minor, will heal on their own
- They are suspicious, therefore forensically significant

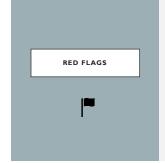
Pediatrics reported that one hospital's experience with nearly 200 abused children found that almost 1 in 3 had been seen previously by a medical provider with a sentinel injury SIGNIFICANCE

SIGNIFICANCE	Approx. 30% of cases of AHT are missed initially (mean time to dx is 7 days, mean number of visits about 3) Approx. 20% of abusive fractures are missed initially Many of these children subsequently present more severely injured or dead Jenny et al., 1999; Ravichandiran et al., 2010	
SIGNIFICANCE OF IDENTIFICATION	N Harper Journal of Pediatrics 2014 146 infants <6m presented w isolated bruising 73 out of the 146 had additional serious injury identified (50%) S5 found new injury in 34 (23%) Neuroimaging found new injury in 40 (27%) Abd injury found in 4 (3%) 103 had coagulation studies and no bleeding disorders identified	
TYPES OF SENTINE!	• Bruising 80% • Intra oral injury 11%	
TYPES OF SENTINEL INJURIES	• Fracture 7% • Sheets et al., 2013	

Bruise: bleeding beneath intact skin from blunt force trauma Ecchymosis: blood that has moved though tissue planes to become externally visible Petchiae: small flat red or purple spots cared by a profuse of coeffice blood.	SKIN	Epidermis; compact firm outer layer not easily damaged Dermis; capillaries and fibrous tissue resistant to damage Subcutaneous tissue; rich in capillaries and fat easily deformed most hemorrhage occurs here	
caused by a rupture of capitlary blood vessels	DEFINITIONS	blunt force trauma • Ecchymosis: blood that has moved though tissue planes to become externally visible • Petechiae: small flat red or purple spots caused by a rupture of capillary blood	
- Age - Development - Location - Object used? - Rate of force behind the object - Deeper bruises may take days to appear - Superficial bruises appear earlier - Cannot date a bruise - Healing time varies with location		Development Location Object used? Rate of force behind the object Deeper bruises may take days to appear Superficial bruises appear earlier Cannot date a bruise Healing time varies with location	



- Young children 0-2
- Children any age with disabilities
- (dependence on caregivers)
- IPV in home
- Substance abuse in home
- Unrelated male caregiver in the
- Prior history of physical abuse



- Any injury in a child that is inconsistent with the history
- Injury that is inconsistent with child's developmental level
- · Pattern injuries to skin

Screening tool for NAI

*Adapted from Pediatrics September 2012, VOLUME 130 / ISSUE 3 Effects of Systematic Screening and Detection of Child Abuse in Emergency Departments

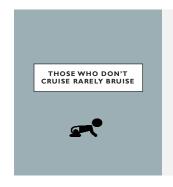
Is the history consistent both initially and then when repeated?	Yes	No
Was seeking medical help unnecessarily delayed?	Yes	No
Does the injury fit with the developmental level of the child?	Yes	No
4. Is the behavior of the child and his or her caretakers appropriate?	Yes	No
5. Is the head-to-toe exam consistent with the history provided?	Yes	No
6. Are there other signals that make you doubt the safety of the child or other family members?	*Yes	No
*Please explain if answer is yes to question 6		
If you answered any question in RED Contact CPS and the child abuse team	Hotline 1-800-635-1522	Hospital Child Abuse Team

PRACTICE NOTES	TEN-4 bruising This is bruising in Torso Ear Neck In children up to 4 or ANY bruise in an infant 4 months old or younger Sensitivity of 97% and specificity of 84% for predicting abuse Pierce, et al. 2010	
WHY TEN?	Torso: lots of cushion to absorb injury forces Ears: difficult to bruise not very vascular Neck: protected by shoulders	
ONE STEP FURTHER	• TEN 4 FACES • F renulum • A uricular area • C heek • E yelid • S sclera	

SENTINEL INJURIES ARE AS CLOSE TO A CRYSTAL BALL AS WE CAN GET	 We have to improve identification When you identify one, then what? 	
WORK UP AND REPORT	Even if admission not indicated, safety plan CPS involvement and PMD follow up could significantly change outcome	
WORK UP	Non-mobile infants Children under 2 Siblings of abused children	

WORK UP	May require Skeletal survey (0-2 yrs all) >2-5 yrs at provider discretion >5 focused on affected areas Neuro imaging Child 0-2 with TEN-4 bruising or rib/skull K Child with altered mental status or abnormal neuro exam Infants under 6 months with a witnessed shaking event	
WORK UP	May require Labs Abdominal injury suspected LFTs amylase lipase All children 0-2 years with abdominal bruising, distention, discomfort, or suspicious injury Any age child with abdominal bruising, discomfort	
IMAGING AND LABS	Sentinel injury or if injury does not match history Head CT if < 1 yr Skeletal survey (repeat in 2 weeks) If > 2 yrs targeted x-rays as indicated Potential SS up to 4 yrs	
<u>\$</u>	Fam hx Bleeding d/o suspected CBC PT PTT Consider factor 8 9 and Von Willebrand Lamb, 2015	

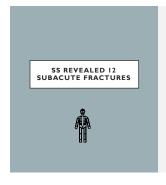
FOLLOW UP	Follow up skeletal survey (FUSS) 2 weeks from original might show us injuries that were not detectable in acute phase Follow up appointments with ortho/neuro/CAC are important and must be attended	
SIBLINGS	* Twins * SS if sibling < 2 yrs of age * Consider head CT if < lyr	
PRACTICE NOTES	Full skin examination essential Consider injuries in relation to child mobility Complete the medical work up for suspicious bruising or if injury does not match history Utilize TEN 4 rule REPORT I 800 635 I 522	



Those who **do** cruise and walk usually have bruises on shin, knee, forehead, upper leg

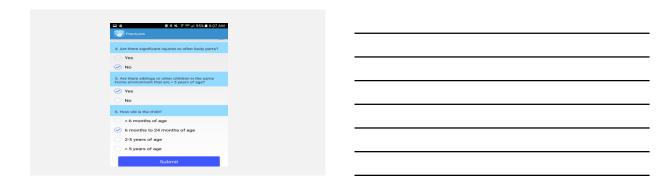


- 4 mo female presented to ER with "black eye" from being forcefully pulled from her infant carrier.
- · Common pitfalls:
- She was "happy eating and sleeping normally"
- Transferred to OCH





QUESTION FOR THE GROUP	What is the indicated medical work up for a 4 month old healthy infant with a bruise on his abdomen? I. Skeletal survey 2. Head CT 3. LTF a mylase lipase 4. All of the above	
WHICH OF THE FOLLOWING IS CONCERNING FOR ABUSE?	I.Chest bruise in a 3 year old active boy? 2.Anterior shin bruise in a 3 month old boy? 3.Ear bruise in a 2 year old girl 4.2 and 3 5.All of the above	
	RCY.ORG/CHILDPROTECTOR	



THANK YOU FOR EVERYTHING YOU DO!



REFERENCES

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Session Evaluation can been completed at https://www.surveymonkey.com/r/PedsSeminarEval Session3	
REMAINING PEDIATRIC SEMINAR WEBINARS https://www.eventbrite.com/e/2020wrhepc-pediatricemergency-preparedness-seminar-webinar-series-registration- 108753597224	
Pediatric Emergency Airway Management October 27, 2020 @ 9:00am−10:00am	
Pediatric Shock: How to Tell If it is Sepsis or Trauma November 10, 2020 @ 9:00am-10:00am	
Pediatric Mock Code and Mock Trauma November 24, 2020 @ 9:00am- 10:00am	
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