THE ART OF UNCERTAINTY & THE LIMITS OF THE CHILD ABUSE DIAGNOSIS

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DISCLOSURES

I have no financial relationships with any commercial interests.

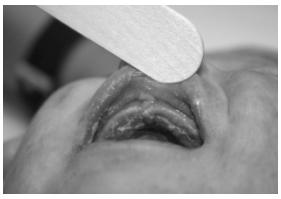
OBJECTIVES

- Discuss recognition of child abuse and needs for advocacy beyond reporting
- Analyze child abuse cases and discuss next steps in communication management, particularly when abuse is uncertain
- Review key points for written impact statements

CASE #1: ORAL INJURY

- A 4 week old is brought to the ED with complaint by parents of blood in his mouth
- "Randomly started bleeding," while dad holding him
- "Spontaneous"
- 911 called, "choking on blood"
- Long fingernails, per mom
- "Easy bruising," per mom

FURTHER EXAMINATION



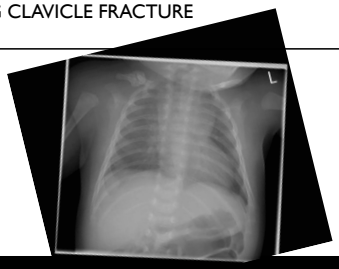
WHAT ELSE WOULD YOU LIKE TO KNOW?

- Other bruises/scratches?
- NAT work-up results?
- Photographs
- Sexual abuse work-up?

HOSPITAL STAY

- Day 2, nurse's note: Patient's mother feeding baby while supine in bed; patient's mother explained that patient burps self.
- Day 3, nurse's note: Mother asleep with baby on pullout couch, noted for third time, bottle propped as well. When asked if baby was burped, mom handed baby to nurse and said, "here, maybe he will like you more." Bruising noted around right eye, not noticed previously. Also, noted new bruise to occiput.
- Day 3: Healing clavicle fracture noted (not previously noted).
- Day 4: Discharged home with parents (and extended family on Mom's side).

HEALING CLAVICLE FRACTURE



SO....

- At 5 weeks, followed up with PMD
- At 6 weeks, he presented in follow-up to Peds Trauma Clinic
- Mom shared that there is a long history of CPS involvement with extended family
- Some bottle propping and parents state he continues to be colicky
- Baby sleeps on "side" and were told not to use pack and play until baby is older
- Being "followed" by CPS

SENTINEL INJURIES

- A visible minor injury in a pre-cruising infant that is poorly explained.

Thackeray, Jonathan. Frena tears and abusive head injury: A cautionary tale. *Pediatric Emergency Care*. 2007; 23(10):735-737. DOI: 10.1097/PEC.0b013e3181568039

INTRA-ORAL INJURIES

- Intra-oral injuries occur in a significant number of children who have been physically abused.
- A torn frenum in isolation cannot be described as pathognomonic of physical abuse.
- Midline abnormalities may be mistaken for abuse (midline diastema).

Maguire S, Hunter B, Hunter L, Sibert JR, Mann M, Kemp AM. Diagnosing abuse: a systematic review of torn frenum and other intra-oral injuries. *Arch Dis Child*. 2007; 92: 1113-1117.

EXAMPLE OF A SENTINEL INJURY

- A 2 month-old infant with unexplained cheek bruising, likely from abuse.

Sheets L K, et al. *Pediatrics*. 2013;131:701-707

YES, IT'S CHILD ABUSE AND IT HAS BEEN REPORTED

- Now what?

WHAT CAN YOU DO?

- Letter to authorities regarding impact – Impact Statement
- In-home services (voluntary); daycare services if available
- Close follow-up – really close with complete examinations
- Sibling check-ups
- Talk to CPS – preventive services
- Services for mom/dad
- Other?

WHAT IS AN IMPACT STATEMENT?

- Describe the situation and your relationship to the patient.
- Use layman's terms to describe medical issues.
- Clearly define your concerns in terms that are meaningful to the court and child protective services.
- Answer questions that CPS has asked.
- Identify your opinion if you have one, but refrain from outright advocacy if possible.
- Usually outline next steps for medical and/or legal needs.

FURTHER INFORMATION REGARDING IMPACT STATEMENTS

- http://champprogram.com/question/24.shtml
- https://www.champprogram.com/pdf/How-to-Write-an-Impact-Statement-Dec-17-2015.pdf

CASE #2: WHOA BESS(Y)

- 2 month-old transferred by Mercy Flight after being found unresponsive for one minute, then inconsolable and irritable; seizure activity (treated with Keppra and fentanyl by flight crew)
- Patient was home with father, mother recently returned to work
- CT (outside facility) shows bilateral SDH — "small bilateral mixed density SDH"
- PICU admission; respiratory failure
- 16 month-old sibling
- No external evidence of injury

LABS/CONSULTS

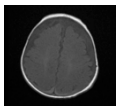
- Day 1: Low Hgb/HCT (8/23.1)
- Day 2: 7.3/20.1
- Transfused
- Video EEG abnormal
- Day 2: Ophthalmology exam: normal
- Day 3: Urine organic acids, overnight carnitine
- Day 5: Genetics consult
- Day 7: Extubated
- Day 9: Transferred to floor

NOTES FROM DAY 1

- "MRI of brain shows prominent bilateral subdural hygromas and bilateral subacute subdural hematomas with fluid level layering posteriorly. EEG shows focal epileptiform discharges on the left or right parietal/occipital regions. The etiology of bilateral subdural hygromas is not clear. The differentials are congenital (incidental findings), residual finding from previous hemorrhage, or underlying (sic) metabolic disease…"
- "MRI (brain) showed subacute, subdural hematomas with no evidence of acute infarct. These subdural bleeds look older. However, there is also a posterior subacute bleed in the occiput that looks to be new but we cannot say for certain when it occurred."
- "Subdural hematoma likely secondary to non-accidental injury."
- MRI of C-Spine "normal."

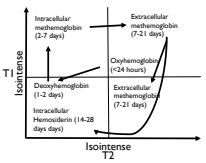
MRI RESULTS

- C-Spine (Day 1): Bilateral pleural thin line of T2 hyper-intensity concerning for a small effusion.
- Brain: There are bilateral mixed signal layering subdural hematoma surrounding the bilateral cerebral convexities and the bilateral cerebellar hemispheres.



DATING IS BASED ON HEMOGLOBIN STATUS

- Oxyhemoglobin (<24 hours)
- Deoxyhemoglobin (1-2 days)
- Intracellular methemoglobin (2-7 days)
- Extracellular methemoglobin (7-21 days)
- Hemosiderin (14-28 days)

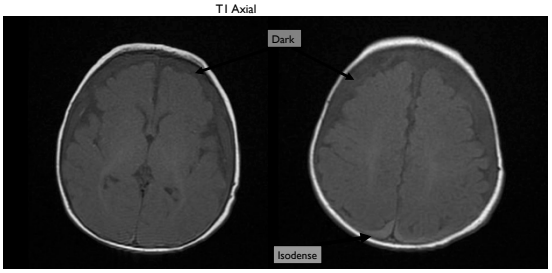


Netherlands Forensic Institute: T. Sieswerda-Hoodendoorn et al.

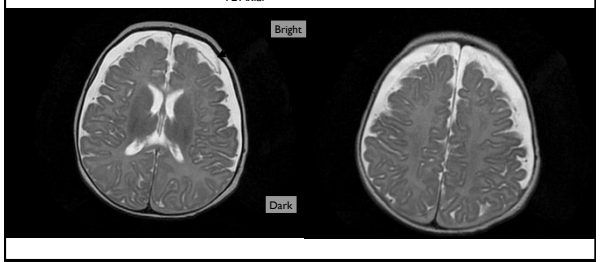
IDBDBBDD—READING "BLOOD" ON MRI

Time frame	T1	T2
0-8 hours	Isodense	Bright
8-72 hours	Isodense	Dark
3 days to 1 week	Bright	Dark
1 week to months	Bright	Bright
Months to years	Dark	Dark

T1 Axial



T2 Axial



IDBDBBDD—READING BLOOD ON MRI

Time frame	T1	T2
0-8 hours	Isodense (cerebellar)	Bright (frontal)
8-72 hours	Isodense (cerebellar)	Dark (cerebellar)
3 days to 1 week	Bright	Dark (cerebellar)
1 week to months	Bright	Bright (frontal)
Months to years	Dark (frontal)	Dark (cerebellar)

CAN MINOR HEAD TRAUMA CAUSE SIGNIFICANT INJURY/BLEEDING IF THERE ARE "HYGROMAS?"

- What is a hygroma? A collection of subdural fluid without blood.
  - Clinical macrocephaly
  - Benign External Hydrocephalus (BEH)
  - BESS (Benign Enlargement of Subarachnoid Spaces), BEAF (Benign Extra-Axial Fluid)
  - SAS (enlargement of the SubArachnoid Spaces)

THEORY

- Acute SDH happens on top of BEH, causing chronic SDH (idea that bridging veins are stretched and predisposes to injury).
- Is there an underlying condition, or is there injury?
- Is BEH protective of bleeding (cushioning due to fluid)?

LATEST STUDY

- Increased extra-axial space size was not associated with subdural hematomas (was associated with other intracranial hemorrhage).

Fingarson AK[1], Ryan ME[2], McLone SG[3], Bregman C[2], Flaherty EG[1]. Enlarged subarachnoid spaces and intracranial hemorrhage in children with accidental head trauma.J *Neurosurg Pediatr.* 2017 Feb;19(2):254-258. doi: 10.3171/2016.8.PEDS16146. Epub 2016 Nov 25.

ABUSIVE HEAD TRAUMA - STATEMENT

- https://tinyurl.com/AHTstatement
- "There is no substantiation, at a time remote from birth, that an asymptomatic birth-related subdural hemorrhage can result in rebleeding and sudden collapse."
- "A diagnosis of AHT is a medical conclusion, not a legal determination of the intent of the perpetrator or, in the false hyperbole of the courtroom and sensationalistic media,' a diagnosis of murder.'"
- "Overall subdural collections are uncommonly seen in the setting of BESS."

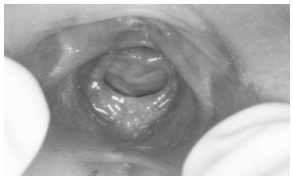
SO, YOU THINK IT'S ABUSE, BUT YOU HAVE NOT "RULED OUT" METABOLIC/CONGENITAL CAUSES

- Re-read the consensus statement (!)
- Remember to do the follow-up skeletal survey
- Examine the sibling(s) and do a skeletal survey if <2 years
- Work-up for metabolic diseases; they will eventually show themselves

CASE #3: CHARLIE "DOES IT"

- An almost 3 year old presents due to suspicion of sexual abuse.
- Her mom takes her to daycare, and one evening the patient was sitting on the couch, legs spread, playing with herself. Her mother asked her what she was doing and she said, "this needs to be pulled apart."
- She tells her mom that Charlie told her this. When her mom tells her to stop, she says, "Charlie does it."
- Rest of the history is negative.

EXAM



NOW WHAT?

- Was this child abused?
- How much of a work-up should you do?
- How do you help this family?
- What is your role in protecting other children at the daycare?
- What does the child need?

- Uncertain
- Depends on parent concerns, your knowledge of the other child
- Refer for counseling
- Report
- No police involvement, no CPS, may be too young for counseling

THREE CASES OF UNCERTAINTY

- Case #1: Appears to be abuse, but family unit is preserved, and you are uncertain the child is safe.
- Case #2: SDH with a concern for underlying medical condition – *mostly likely abusive head trauma.*
- Case #3: Child disclosure. Normal exam. Child is very young and may not understand.

REMEMBER TODAY'S OBJECTIVES?

- Discuss recognition of child abuse and needs for advocacy beyond reporting
  - Recognition is easy ⟶ report
  - Advocacy can take the form of
    - Case 1: Impact statement
    - Case 2: Search for other etiologies and sibling abuse
    - Case 3: Reassurance to parent, determine potential risks to others

TODAY'S OBJECTIVES

- Analyze child abuse cases and discuss next steps in communication management, particularly when abuse is uncertain.
  - Case 1: Needs one clear message to CPS
  - Case 2: Needs one clear message to CPS
  - Case 3: Needs the door to be left open for the parent if more information becomes available

TODAY'S OBJECTIVES

- Review key points for written impact statements
  - See previous slide
  - May need to write this before a patient is discharged from the hospital
  - Key language: Imminent danger; risk of further harm; significant morbidity and risk of death
  - Short with minimized medical jargon
  - Don't underestimate the value of your statement, or overestimate it!

LIVING WITH UNCERTAINTY

- Clinician responses to uncertainty affect burnout, the patients themselves, and health systems. Some responses to uncertainty:
  - Ordering more tests (genetics consults, for example)
  - Premature closure (making a diagnosis too soon to "close the case")
  - Lower resilience (associated with lower tolerance of uncertainty)
  - Stress/anxiety reactions
  - Acknowledging ambiguity, adjusting to "certainty for now," creating an impression of certainty

Alam R, Cheraghi-Sohi S, Panagioti M, Esmail A, Campbell S, Panagopoulou E. Managing diagnostic uncertainty in primary care: a systematic critical review. *BMC Fam Pract.* 2017 Aug 7;18(1):79. doi: 10.1186/s12875-017-0650-0.

SUMMARY: STRATEGIES FOR THE AMBIGUITY OF THE CHILD ABUSE DIAGNOSIS

- Focus on certainty for now. (What can you control?)
- Provide a coherent account of the medical evidence for the risks and benefits.
- Acknowledge (to yourself) inherent uncertainty of medical evidence and negotiate a provisional decision.

Griffiths F, Green E, Tsouroufli M. The nature of medical evidence and its inherent uncertainty for the clinical consultation: qualitative study. *BMJ.* 2005 Mar 5;330(7490):511. Epub 2005 Jan 31.

STRATEGIES FOR UNCERTAINTY IN CHILD ABUSE CASES

- Advocacy (focusing on "now") with impact statements.
- Determine what you know to be true and the likelihood of abuse.
- Communicate a clear message (even if uncertain about the abuse); determine the *message*.