



Abusive Head Trauma

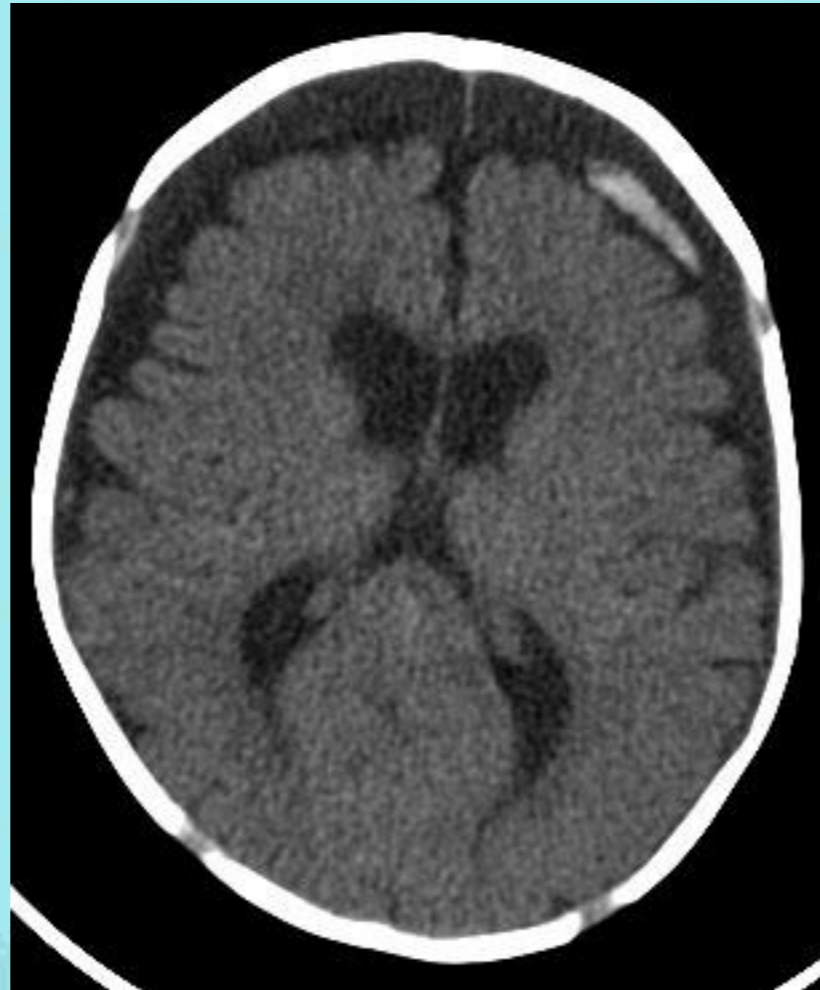
Morning Report: October 3, 2014
Vicky Elise Ruleman



Prep Question #1

- * A 2-month-old infant is brought to your office because of fussiness, increased sleeping, and poor feeding. According to her mother, she was doing well till 4 days ago when her formula intake decreased from 6 oz. every 4 hours to 2 oz. every 6 hours and she has to be awakened for her feedings. She has had no vomiting, diarrhea, or fever. On PE, she is difficult to console T 36.8, P 160/min., R 30/min. Her anterior fontanelle is full, pupils are 4 mm and equally reactive and there is no evidence of corneal abrasions. PE otherwise unremarkable. CBC, lytes, and UA are all normal. CT of the brain shows:

CT Scan Brain



Prep Question #1

- * The most likely cause of the CT findings is:
- * A. AV malformations
- * B. Galactosemia
- * C. Meningoencephalitis
- * D. Non-accidental Trauma
- * E. Von Willebrand Disease

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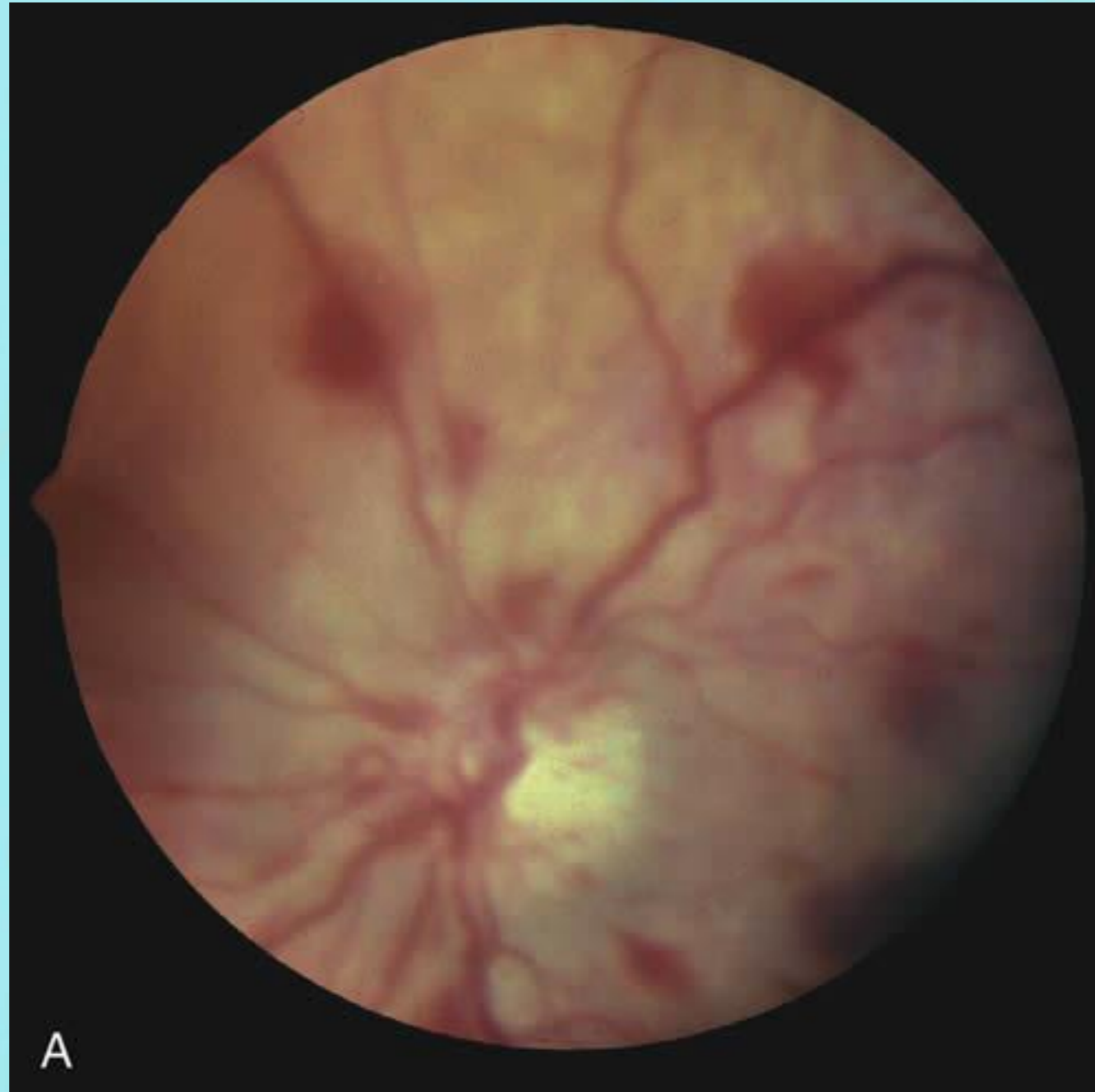
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Prep Question #2

- * A 9-month-old boy has a generalized tonic-clonic seizure. He has not had a fever and his parents report no trauma. The boy was born at 28 weeks estimated gestational age and spent 4 months in the NICU. He had intraventricular hemorrhages and now is blind. He has spastic quadriparetic cerebral palsy but has had no seizures until now. On physical exam, T 37.2, BP 92/66, HR 98 beats/min. and RR 24. He has conjugate roving eye movements. You attempt a fundoscopic examination and see glimpses of his retina as shown. His general exam results are normal and his neuro exam is notable for spastic quadriparesis. CT of the head without contrast reveals a subdural hematoma.

Fundoscopic Exam



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- * Of the following, the MOST likely cause of the subdural hematoma is:
- * A. Abusive head trauma
- * B. Arteriovenous malformation
- * C. Brain atrophy from prematurity
- * D. New-onset seizure

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Board Specs

- * Recognize the need for a skeletal survey in child with a subdural hematoma
- * Recognize abuse as the most common cause of intracranial injuries during the first year after birth
- * Recognize shaking as a possible cause of coma in the absence of signs of cutaneous trauma
- * Recognize the need for a retinal examination to identify retinal hemorrhage in suspected head trauma due to shaking

Definitions

- * Formerly known as “shaken baby syndrome,” the term abusive head trauma encompasses a serious form of child abuse, resulting from violent shaking or impact.
- * Shaking was the most commonly reported mechanism of injury described in a series of abusive head trauma in which perpetrators admitted abuse (68% of 81 cases).



Pathogenesis

- * The angular acceleration-deceleration forces lead to tearing of the bridging veins, which can cause subdural hematomas. Furthermore, cortical contusion and diffuse axonal injury can lead to neurological deterioration.



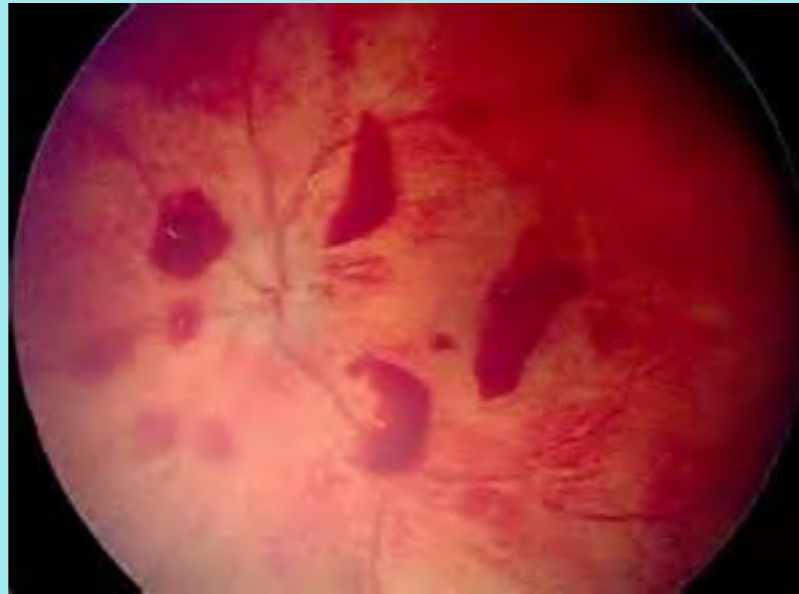
Classic Presentation

- * Subdural hematomas
- * Retinal hemorrhages
- * Absence of obvious external trauma
- * Altered Mental Status
- * Increased Head Circumference
- * Tense Fontanelle
- * Seizures possibly

Non-Specific Signs

- * Apnea
- * Irritability
- * Vomiting
- * Coma

Retinal Hemorrhages



- * The most common ocular manifestation of abuse
- * Rarely result in visual compromise

Retinal Hemorrhages

- * Consultation by an ophthalmologist
- * Indirect ophthalmoscopy with a dilated pupil, preferably
- * Preferably within the first 24 hours or 72 hours
- * Slit-lamp examination may be necessary to identify signs of trauma

Retinal Hemorrhages

- * Abusive head trauma is the leading cause of retinal hemorrhages in infants, with the exception of those occurring due to vaginal delivery.
- * Few intraretinal hemorrhages located in the posterior pole of the retina signifies less severe injury, which can be due to accidental head injury.
- * More numerous retinal hemorrhages extending to the edge of the retina signifies more extreme injury, including abusive head trauma and extreme accidental injury.

Social History

- * Crying is often cited as the initiating factor that leads to the shaking.
- * May be a delay in seeking care.
- * May be a history of domestic violence or substance abuse in the family.
- * Typical perpetrator is young, male (father, stepfather, boyfriend) and has limited coping resources.



Laboratory Studies

- * CBC, CMP
- * Coag Studies
- * Skull radiographs/CT Head/MRI
- * Skeletal survey
- * EEG

Who should you call?

- * Child Protective Services
- * Radiology
- * Ophthalmology
- * Neurology
- * Neurosurgery
- * Social Work
- * CARE Team!!!

Outcomes

- * Abusive head trauma may result in:
- * Death or permanent neurologic disability
- * Intellectual disabilities and learning disabilities
- * Cerebral Palsy
- * Cortical Blindness
- * Seizure Disorders

Important Points

- * Children with abusive head trauma may present with non-specific signs such as vomiting, irritability, and lethargy.
- * Abusive head trauma is more likely to be missed in very young white children whose parents are together.
- * The younger the age of the child, the more likely abusive head trauma is missed. (Average age of missed cases of trauma was 180 days.)

Important Points



- * Pediatricians should have an index of suspicion for bruising in infants, especially when they cannot yet pull to stand.

Prevention

- * Some states have mandated shaken baby syndrome education for parents of all newborn infants.
- * Pediatricians should provide anticipatory guidance regarding methods for dealing with the frustration of a crying infant.
- * Pediatricians should instruct parents to only leave their children in the care of adults whom the parents trust.

Resources

- * Cindy, Christian; Block, Robert; and the Committee on Child Abuse and Neglect. "Abusive Head Trauma in Infants and Children." Pediatrics Vol. 123. May 2009.
- * "Index of Suspicion." Pediatrics in Review. Vol. 24. 2003.
- * Jenny, Carole; Hymel, Kent; Ritzen, Alene; Reinert, Steven; Hay, Thomas. "Analysis of Missed Cases of Abusive Head Trauma." JAMA. Vol. 282. February 1999.
- * Levin, Alex; Christian, Cindy; and the Committee on Child Abuse and Neglect. "Clinical Report--The Eye Examination in the Evaluation of Child Abuse." American Academy of Pediatrics 2010.