Infantile Subdural Hemorrhage and Cortical Vein Thrombosis

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INTRODUCTION

Infants who are found to have acute subdural hematomas without evidence of trauma are often assumed to be victims of abusive head trauma.

When infants who have acute subdural hematomas are found to have acute limb and rib fractures as well as signs of external and internal trauma, the diagnosis of abuse is usually straightforward.

When these other signs of abuse are absent pediatricians are still likely to conclude that the most likely cause of the acute subdural hematoma is abusive head trauma.

OBJECTIVES

A consensus statement on abusive head trauma in infants written by radiologists and pediatricians and published in 2018 stated the following:

There is no reliable medical evidence that cerebral sinovenous thrombosis is causative in the constellation of injuries of AHT:

The term constellation is purposefully vague, and can refer to bruises, broken bones, neck injury, internal organ injury, and the like

We wondered about the role of venous thrombosis when a constellation of injuries was not present.

In other words, in infants who have acute subdural hematoma and no other evidence of trauma, is it possible that the presence of cortical venous thrombosis causes or contributes to the hematoma?

MATERIALS AND METHODS

Our office serves as a national center for attorneys or families seeking a second opinion when a parent or caregiver has been accused of inflicting a head injury on an infant.

In many of these cases the assumption of child abuse is stated while the child is still in the emergency room. Typically, an abuse specialist is consulted within hours of the child arriving to the hospital.

When the head CT reveals an acute subdural hematoma, a child neurologist is typically consulted. In most cases referred to us the child neurologist accepts the diagnosis of the pediatrician and focuses on the treatment of the neurologic complications.

We reviewed cases referred to our office which had the following features:

- No external injury
- No internal organ injury
- No neck injury
- No limb or rib fractures
- No skull fx/scalp swelling
- Acute subdural hemorrhage
- Cortical vein thrombosis

All had been diagnosed as victims of abusive head trauma

All had undergone head CT/MR and EEG testing

All had cervical MR scans

All had undergone neurologic consultations

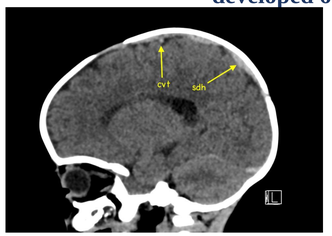
No alternative diagnoses were considered

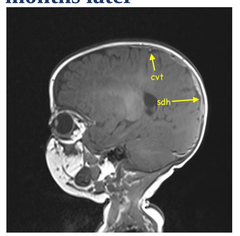
None underwent thrombophilia testing

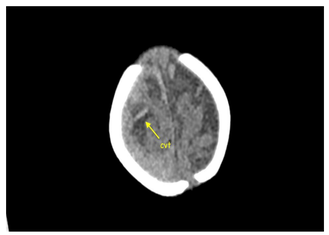
FINDINGS

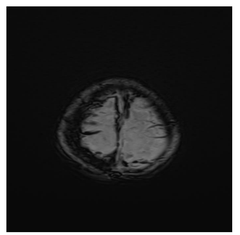
Ten infants met the study criteria

Findings	Mean Age 3 months (1-6 months)
	5 males 5 females
	10/10 had retinal hemorrhages
	-5/10 intraretinal
	-4/10 multilayer
	-2/10 unilateral
	6/10 were macrocephalic
	5/10 vomiting the 1st symptom
	7/10 came to the ER for seizures
	0/10 had thrombophilia testing
Imaging	3/10 had subdural hygromas
	2/10 also had SAH
	1/10 intraparenchymal heme
	1/10 restricted diffusion
Outcome	All children were normally developed 6 months later









1. Infants who are found to have an acute subdural hematoma but no other evidence of trauma are assumed to be abuse victims, even by neurologists. This is likely due to the associated presence of retinal heme.
2. Some infants with acute subdural hematoma without evidence of trauma are found to have cortical venous thrombosis.
3. These children come to the hospital for seizures, and they tend to be macrocephalic.
4. These children tend to have normal developmental follow up
5. Pediatricians who diagnose cortical venous thrombosis in infants who have acute subdural hemorrhages assume that the latter finding is responsible for the former. Neurologists should consider the idea that acute subdural hemorrhages in infants can be be caused by cortical venous thrombosis.

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