Abusive Head Trauma
Differential Diagnosis

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Objectives

• Heighten awareness of conditions that mimic the intracranial features of AHT

• Emphasize the importance of constructing an ordered differential diagnosis
DDX of Conditions that Mimic Abusive Head Trauma

- Trauma
- CSF collections
- Infection
- Congenital/Genetic
Benign Enlargement of the Subarachnoid Spaces

- Idiopathic v. Familial
- Macrocephaly
- Normal development
- HC and SAS normal by 2 - 3 years

Alper G. J. of Child Neurology 1999;14(10): 678-682
Differential Diagnosis
Expanded Subarachnoid Space

- Expanded SAS due to partial obstruction of CSF absorption
  - Subarachnoid hemorrhage
  - Subdural hemorrhage
- Subdural collections mimicking SAS
  - Subdural hygroma
  - Chronic subdural hemorrhage
- Cerebral atrophy

2-month-old who “kicked” himself off the bed
6-month-old-male with macrocephaly and normal development

Aoki N. *J. of Neurosurgery* (1994); 81(1), 20-23
Is the infant or young child with benign enlargement of the subarachnoid spaces predisposed to subdural bleeding?
Enlarged Subarachnoid Spaces Risk for Developing SDH

- Vinchon M. *Child Nerv Syst* 2010; 26(9):1195-1205
- McNeely PD. *AJNR* 2006; 27:1725-1728
- Ravid S. *Pediatr Neurol* 2003; 28:139-141
Infants with expanded subarachnoid spaces and subdural hemorrhage should be carefully screened by the child protection team as many will be found to have suffered from some form of trauma.
Intracranial Infection
AHT Mimic?

• Subdural effusion or empyema
• Venous thrombosis
• Arterial spasm or occlusion
Congenital/Genetic

- Osteogenesis imperfecta
- Hereditary hemorrhagic telangiectasia
- Menkes’ disease
Juvenile Venous Varix
Cavernous Malformation

Post-traumatic pseudoaneurysm
Coagulation Disorders

- Vitamin K deficient bleeding
- Hemophilia
- DIC
- ITP
- ICVT
Home birth, breastfed, 6-week-old
Full Arrest

• Vitamin K deficient bleeding (VKDB)
• Vitamin K
  – Activates factors II, VII, IX, and X
  – Poor placental transfer
• Maternal drugs & VKDB
5-month-old with seizure and “SDH”
Iron Deficiency Anemia
Is intracranial venous thrombosis an underappreciated cause of acute subdural hemorrhage which may mimic the hemorrhage of abusive head injury?
Intracranial Venous Thrombosis Association with SDH?

- Observational
- 36 patients
- ICVT
- Ages 1 day-19yrs
- 0/36 had SDH

McLean L et al. AJNR, In Press
Oncologic Mimics of AHT

- Leukemia
- Leptomeningeal
  - PNET
  - Melanoma
- Neuroblastoma
- Hemophagocytic lymphohistiocytosis
Metastatic Neuroblastoma
Metabolic Disorders & SDH

- Hypernatremia
- Glutaric aciduria I
- Galactosemia
- Pyruvate carboxylase deficiency
Conclusion

• The majority of disorders that mimic the appearance of AHT can be excluded on the basis of:
  – Careful history and physical examination
  – Appropriate diagnostic testing
    • Medical Imaging
    • Laboratory
Thank you

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