

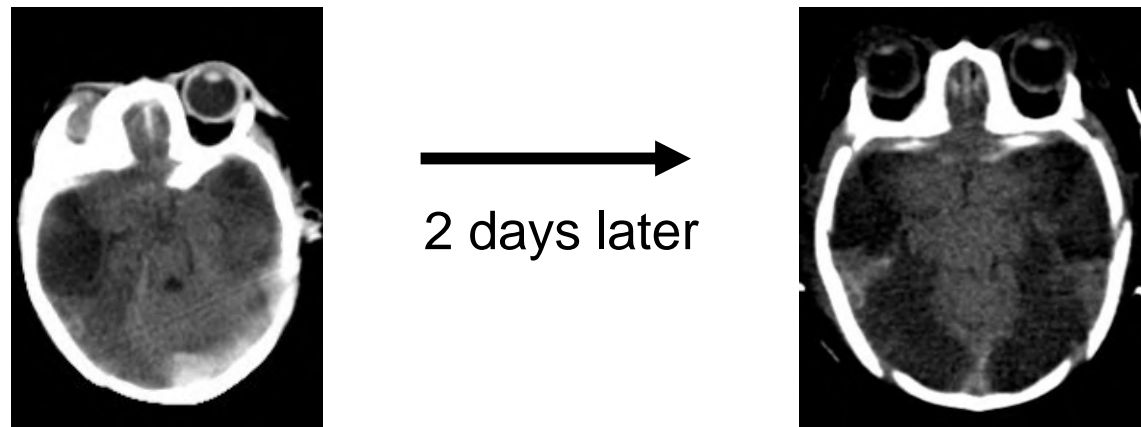
High Social Vulnerability Affects Survival of Pediatric Patients with Abusive Head Trauma: Comparison During COVID-19

Texas Children's Hospital, Department of Surgery and Division of Neurosurgery, Baylor College of Medicine

Donoho DA
Singer T
Cain C
Risen S
Weiner HL

INSPIRATION

One night in the ICU...



In addition to intraparenchymal hemorrhage and midline shift, there is early evidence of profound grey matter injury with loss of normal grey-white differentiation, diffuse edema, effacement of csf spaces. Two days later, the patient's scan looked like this, here more easily seeing marked progression of hypoxic ischemic injury as well as the bilateral skull fractures involving the parietal bones, right sphenoid wing.

This was the worst case of **abusive head trauma (AHT)** that I'd ever seen.

BACKGROUND

AHT is a syndrome of life-threatening intracranial injuries.

Also consider the **Social Vulnerability Index (SVI)**

- Socioeconomic status (below poverty, unemployed, income, no high school diploma)
- Household composition & disability (aged 65 or older, aged 17 or younger, older than age 5 with a disability, single-parent households)
- Minority status & language (minority, speak English "less than well")
- Housing type & transportation (multi-unit structures, mobile homes, crowding, no vehicle, group quarters)"

QUESTION TO INVESTIGATE



METHODS

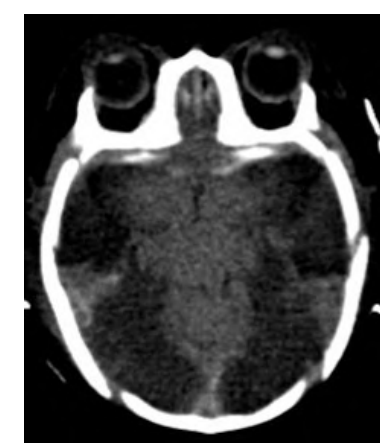
A **retrospective single-institution database**

Of all admissions of children with a confirmed diagnosis of AHT from **2018-2021** was queried for:

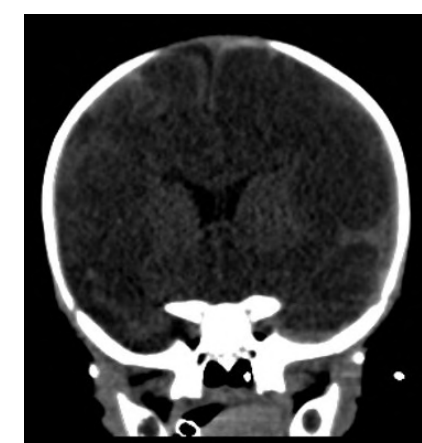
- Clinical information
- Radiographs
- Clinic follow-up data

Social vulnerability index (SVI) was calculated based on published methods (atsdr.cdc.gov)

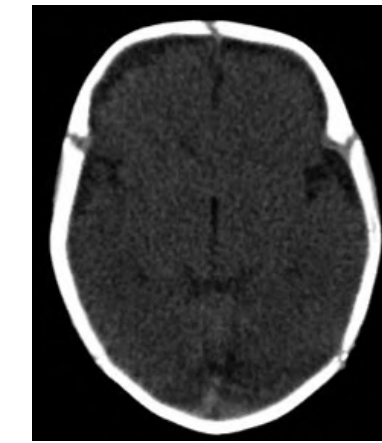
Univariate and multivariate analyses were performed



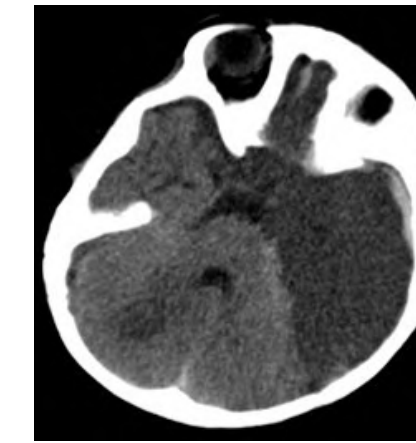
Prior CPS, father lost job 2 weeks before



H/o child abuse of older sibling, prior CPS

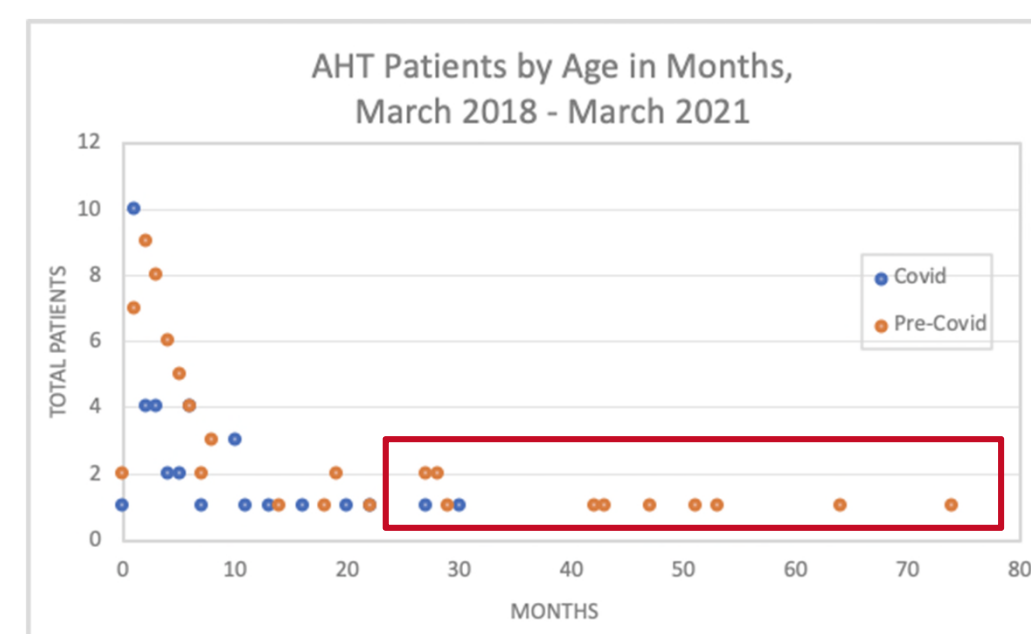


Recent death of other close family members

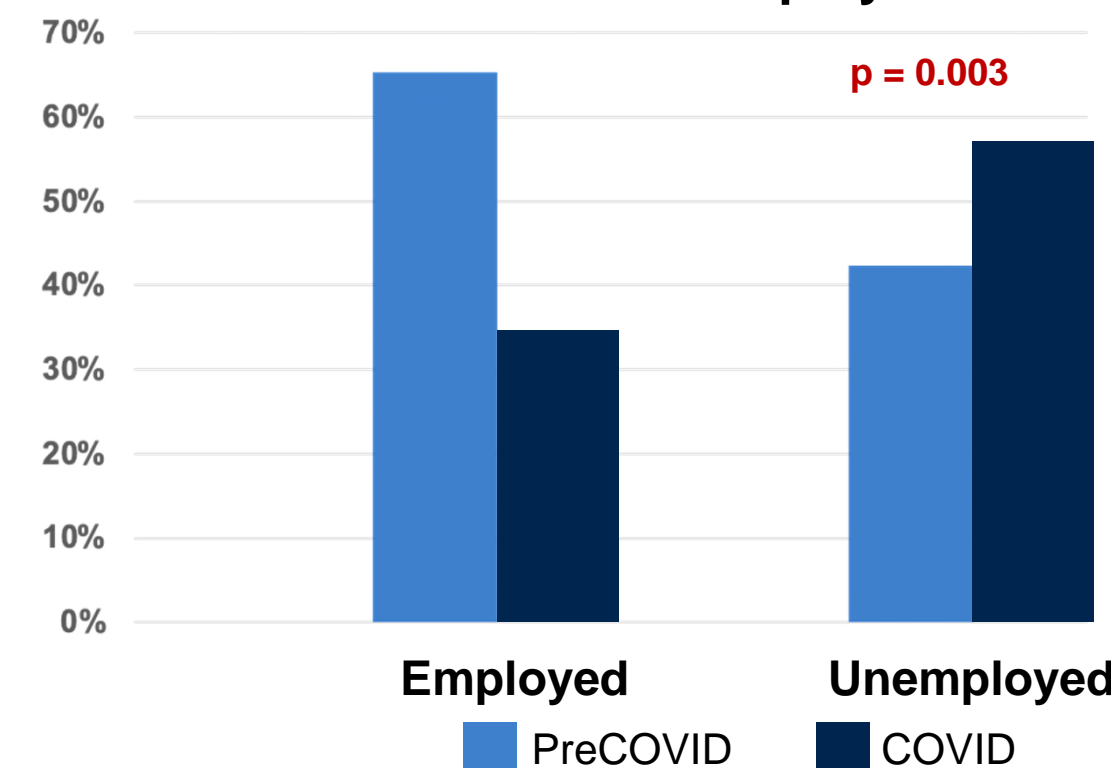


Boyfriend watches child while single mother works, prior CPS, h/o maternal substance abuse

Children Suffering AHT During COVID-19 were Younger



Percent Maternal Unemployment



RESULTS

- 103 cases of AHT were reviewed
- Median age at presentation was 4 months (IQR 2-10) in the overall cohort
- More males than female patients (76 males, 27 females)
- 18 patients died (17.5%), higher than previously reported rates (10.8% in Nuno, et al 2015 JNS Ped)
- Non-survivors had higher mean social vulnerability index scores (.867 vs .719, $p=0.004$)
- 71% had high social vulnerability compared to 39% of survivors
- No differences were observed in patient sex, birth history, past medical history, or race
- **There was no difference in fatality rate before (19%) or during (15%) COVID-19**

CONCLUSION

The COVID-19 cohort experienced

- Higher socioeconomic vulnerability
- Maternal unemployment
- Smaller living spaces

Mortality from AHT in our series was **higher than previously reported in national studies**

- Notably, more than **1 out of 6 children in our series did not survive**
- Although non-survivors were more likely to live in highly vulnerable social settings, **COVID-19 did not change survival rate**

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