Post Traumatic Stress Disorder in Children

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The Face of PTSD

Hard to Imagine

Acute Stress Disorder

Anxiety and behavioral disturbances that develop within a month of exposure to trauma

Acute Stress Disorder

- 80% between 5-17 year
- Symptoms are:
  - Generalized anxiety
  - Dissociation
  - Hyper-arousal state
  - Avoidance behavior
  - Persistent recollection of the event

Post Traumatic Stress Disorder

Symptoms and behavioral disturbances that persist for more than a month

Relationship between ASD and PTSD

- 25 – 30% of those with ASD have PTSD at six months
- Age and race had no relationship
- Gender has an interesting relationship
- Strongest predictor is the child's perception of pain and the likelihood of dying

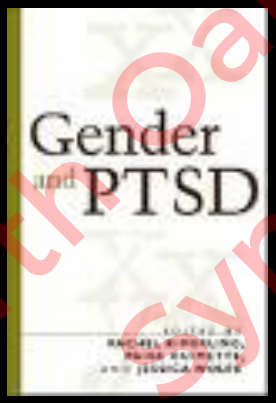
PTSD in Children

- 15 – 30% for children hospitalized more than an month.

- Long term
  - Physical health problems
    - Hypertension
  - Psychiatric problems
    - Depression, anxiety disorder, poor socialization.
  - Decreased QOL

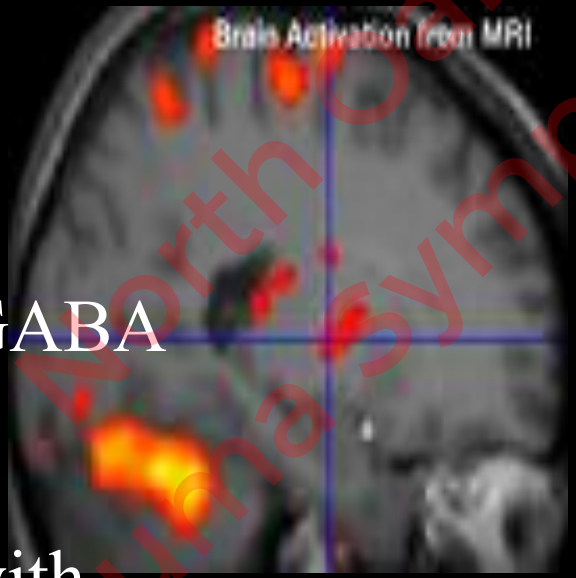
So, what are you going to do about it?

Recognized in Child Psychiatry



Help is on the way

Abnormal CRF
Alterations in GABA



Positive results with
Atypical ant-psychotics

We need to talk

Algorithm for Surgeons

Screen for ASD prior
to patient discharge or
in first office follow-up and
discuss with the family signs and symptoms

(-)

(+)

Note screening in the follow-up letter to the PCP

Notify the PCP of the positive ASD and educate

no

Plan to follow the patient for more than a month past the onset of symptoms

yes

Screen for PTSD and refer for persistent symptoms

Key Points

- ASD is common
- Understand the risk factors, signs and symptoms
- Screen or see that screening is done for PTSD
- Be willing to talk to families about the warning signs and risks
- Reassure families that help is possible


North Oaks
Trauma Symposium

The Relationship Between Injury Mechanism and ADHD Among Pediatric Trauma Patients

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Background & Hypothesis

- Background
  - Children with ADHD are known to be at higher risk for unintentional injury
  - Injuries seen are in children with the diagnosis are often classified as “impulsive” or relating to “disordered vigilance”

    Pediatrics. 1995 Feb;95(2):219-24.
  - Many present after injury - undiagnosed
- Hypothesis
  - Admissions for impulse injuries or injuries relating to disordered vigilance can be used as a marker for undiagnosed or under-treated ADHD

Study Design

- Inclusion
  - Children ages 6-12 admitted to a Level I Pediatric Trauma Center facility with:
    - an impulsivity-related injury (motor-pedestrian collision (MPC), bicycle, fall related (daredevil) injuries
    - or for the treatment of appendicitis (comparison group)
- Exclusion
  - We excluded participants who could not communicate in either English or Spanish, children with known developmental delay, uncorrectable hearing or visual impairments, or musculoskeletal or neurological disease

Study Design

- 133 patients with impulsivity-related injuries
- 157 patients with appendicitis were identified

- Each study participant was given a brief verbal interview to gather information on demographics, medical history, school history, ADHD history and parental knowledge of ADHD

- One parent or caregiver of each participant was given the NICHQ Vanderbilt Attention Deficit/ Hyperactivity Disorder Parent Rating Scale (VADPRS) - overseen by Pediatric Psychiatry Service

Results

Characteristics of Study Subjects According to Reason for Hospital Admission

Characteristics	Impulsivity Injury	Appendicitis	P-value
Patients, No	133	157	
Mean Age (y)	9.02 ± 2.31	9.49 ± 2.22	0.08
Male (%)	88 (66.2)	105 (66.9)	0.90
Race (%)			< 0.001
African American	20 (15.0)	10 (6.4)	
White	60 (45.1)	35 (22.3)	
Hispanic	50 (37.6)	104 (66.2)	
Other	3 (2.3)	8 (5.1)	
School Performance (%)			0.56
Excellent	82 (61.7)	102 (65.0)	
Not Excellent	51 (38.3)	55 (35.0)	
Parent Education Level (%)			0.05
One parent > High School	57 (42.9)	49 (31.6)	
No parent > High School	76 (57.1)	106 (68.4)	
Vision Problems (%)	26 (19.5)	43 (27.4)	0.10
Hearing Problems (%)	3 (2.3)	3 (1.9)	0.29
Past ER Visits for Injury (%)	47 (35.3)	28 (17.8)	0.001
Currently on ADHD Med. (%)	7 (5.26)	7 (4.46)	0.75
Parents Never Heard of ADHD (%)	41 (30.8)	65 (41.4)	0.11

Results

Characteristics of Study Subjects According to ADHD Diagnosis

Characteristics	ADHD Positive	ADHD Negative	P-value
Patients, No	58	232	
Mean Age (y)	9.43 ± 2.40	9.24 ± 2.24	0.58
Male (%)	46 (79.3)	147 (63.4)	0.02
Race (%) African American White Hispanic Other	 7 (12.1) 24 (41.4) 26 (44.8) 1 (1.7)	 23 (9.9) 71 (30.6) 128 (55.2) 10 (4.3)	0.31
School Performance (%) Excellent Not Excellent	 29 (50.0) 29 (50.0)	 155 (66.8) 77 (33.2)	< 0.02
Parent Education Level (%) One parent > High School No parent > High School	 20 (35.1) 37 (64.9)	 86 (37.2) 145 (62.8)	0.76
Vision Problems (%) Hearing Problems (%)	13 (22.4) 1 (1.7)	56 (24.1) 5 (2.2)	0.74 0.62
Past ER Visits for Injury (%)	22 (37.9)	53 (22.8)	< 0.02
Currently on ADHD Med. (%) Parents Never Heard of ADHD (%)	12 (**20.7**) 18 (**31.0**)	2 (0.86) 88 (37.9)	<0.0001 0.54

Results

Odds Ratios (OR) and 95% confidence intervals (CI) for being screened positive for ADHD according to reason for hospital visit (injury versus appendicitis)

Characteristics	Impulsivity Injury	Appendicitis	P-value
Patients, No	133	157	
ADHD Assessment (%) Positive Negative	 38 (28.6) 95 (71.4)	 20 (12.7) 137 (87.3)	 0.001
Unadjusted OR (95% CI) Multivariate OR (95% CI)*	2.74 (1.50-5.00) 3.25 (1.57-6.72)	1.00 (Referent) 1.00 (Referent)	0.001 0.002

*Multivariate logistic regression model was adjusted for age, gender, race, prevalence of past ER visits for injury, and current ADHD medication use

Results

- Many children with injuries due to deficits in vigilance and attentiveness (impulsivity)
  - Often have ADHD
  - Have parents that are not aware of the diagnosis
  - Are not receiving counseling or treatment
  - Have been to the ED before for injury

Conclusions

- Impulsivity injuries are sufficiently strongly associated with ADHD that children suffering from such injuries should be screened for the disorder and referred for further evaluation and treatment

- Identification of the disorder through understanding of this strong association may decrease the incidence of further injuries in this patient population

Screening for Risky Alcohol Use Among Caregivers of Pediatric Trauma Patients

A Pilot Study

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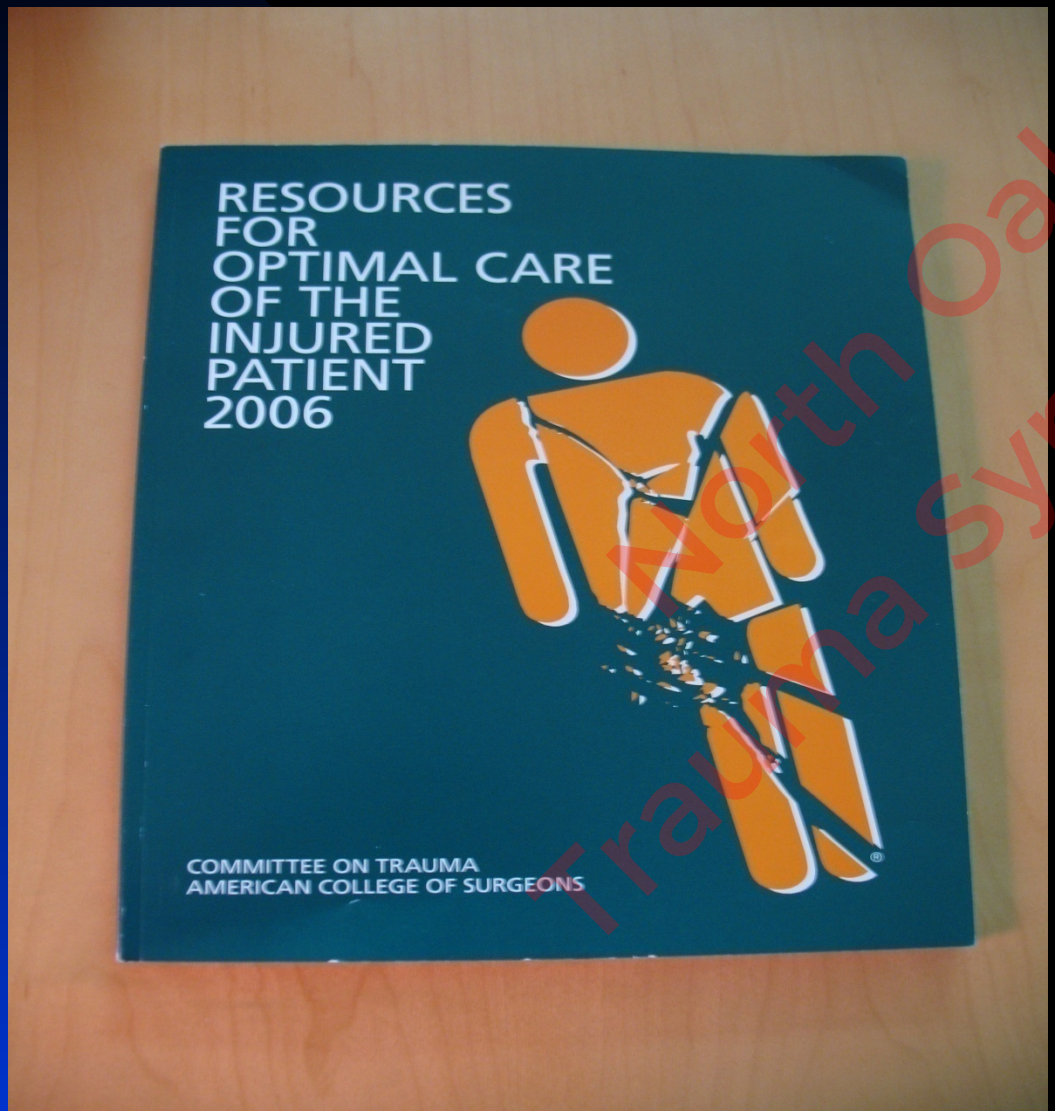
ACS Requirements



Level II Trauma Centers
Screening mechanisms

Level I Trauma Centers
Screening mechanisms and intervention

Drinking and Driving

MVC with Improper Restraints

Methods

- Seven months
- 295 caregivers screened by CHES
  - English or Spanish speaking
  - Excluded abuse and death
- Injury prevention assessment
  - Child passenger restraint
  - Bike helmets
  - ATV or jet ski use
  - Guns in the home
  - Smoke detectors

Methods

- Injury Prevention Assessment
  - Tobacco use
  - Drug use
  - Alcohol use
    - Risky use - NIAAA guidelines
      - Last 12 months
        - F ≥ 4 drinks on one occasion
        - M ≥ 5 drinks on one occasion

Findings of Children

- Male 64% Age 6.6 ± 4.5
- Ethnicity
  - Non-hispanic white – 54%
  - Hispanic - 36%
  - African American - 5%
  - Other - 5%
- Insurance status
  - Private - 47%
  - Public - 38%
  - Uninsured – 15%

Findings of Caregivers

- 234 patients (295 caregivers)
  - 173 pts – one caregiver screened
  - 61 pts - two caregivers screened
- Age of caregiver 34 yr (17 – 59)
- 97% parent
  - 66 % mother
  - 31% father
- Males screened – 32% of total

- No caregiver refused screening

Results

Caregiver substance use		
Screening parameter		
Alcohol Screen Results (%)		
Positive		96 (32.5%)
Negative		199 (67.5%)
Tobacco Screen Results (%)		
Positive		64 (21.7%)
Negative		231 (78.3%)
Drug Screen Results (%)		
Positive		0 (0%)
Negative		295 (100%)

Results

	Screened #	Positive #	
Total Caregivers	295	96	32.5 %
Male Caregivers	95	51	53.7 %
Female Caregivers	200	45	22.5 %

$p \leq 0.01$

Results

- No differences seen
  - Age of child
  - Gender of child
  - Race / Ethnicity

Insurance status

Child's Insurance Status	Positive Caregiver Screen	%	Negative Caregiver Screen	%
Private	49	58.3	62	42.5
Public	22	26.2	64	43.8
Uninsured	13	15.5	20	13.7

$p = 0.025$

Other Results

Characteristic	Positive screen		Negative Screen	
Appropriate restraint				
Always	54		106	
Never	26		31	
Appropriate gun storage	10		13	
Jet ski drivers	3		2	

P - NS

Study limitations

- Selection Bias:
  - More female caregivers screened
  - Excluded death from injury and potential abuse
  - Unable to screen on weekends for the first three months of the study
- All potentially ***underestimate*** the incidence of risky drinking
- Sample size
  - Too small to show relationships

Conclusions

- Caregivers are accepting of conversation about risky drinking with their child's medical team
- High percentage of risky alcohol use among caregivers of injured children
- Unwilling to disclose illicit drug use

Conclusions

- Population is different from “adult” trauma patients
- Pediatric trauma setting is ideal for SBI
  - Captured population
  - Injury prevention “culture”
  - Willingness among hospital workers

Recommendations

- Incorporate alcohol screening into injury risk assessment (secondary prevention)
- Provide for intervention for at risk drinkers
- Participate in future studies

Questions???