

Predictors of Non-Accidental Trauma in Children of South Carolina

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Background

- Non-accidental trauma (NAT) is a significant cause of pediatric morbidity and mortality.
- At our institution, suspected cases of NAT are referred to a pediatric forensics committee for further evaluation.

Objectives

- Evaluate all suspected cases of non-accidental trauma (NAT) and identify predictive factors for the cases determined to be probable NAT by the pediatric forensics committee.



Methods

- Retrospective chart review of all cases referred to the pediatric forensic committee.
- Admissions in the children's hospital from 7/12/2008-3/26/2014 was performed.

Methods

- 214 patients referred to the forensics committee
- Information collected
 - Age
 - Gender
 - Insurance status
 - Body system
 - Diagnosis of failure to thrive
 - Emergency department visit within 6 months



Table 1: Baseline Characteristics by Ultimate Diagnosis

Variable	All Patients	NAT	Uncertain	Not NAT
Consult Age, yr. ¹	0.58 (1.63)	0.54 (1.94)	0.51 (0.79)	1.32 (2.50)
Age <1 yr. ²	126 (58.9)	58 (58.0)	49 (71.0)	19 (42.2)
Male Gender ²	123 (57.5)	62 (62.0)	39 (56.5)	22 (48.9)
RACE, Caucasian ²	94 (43.9)	40 (40.0)	32 (46.4)	22 (48.9)
AA	109 (50.9)	53 (53.0)	33 (47.8)	23 (51.1)
Asian	1 (0.5)	0 (0.0)	1 (1.4)	0 (0.0)
Biracial	10 (4.7)	7 (7.0)	3 (4.3)	0 (0.0)
INSURANCE Medicaid ²	78 (82.1)	48 (75.0)	31(68.9)	157 (77.0)
Uninsured	4 (4.2)	7 (10.9)	5(11.1)	16(7.8)
Private	13 (13.7)	9 (14.1)	9(20.0)	31 (15.2)

¹Median (IQR) ²Count (%)

Results

Variable	Odds Ratio	95% Confidence Intervals	P value
Male Gender	2.33	[1.14, 4.74]	0.020
Genitalia	6.12	[1.57, 23.88]	0.009
Abdomen	5.77	[1.51, 21.97]	0.010
Chest	9.33	[3.13, 27.82]	<0.001
Bones	2.01	[0.79, 5.11]	0.144
Cutaneous	5.30	[2.31, 12.15]	<0.001
Head	3.37	[1.49, 7.63]	0.004
Failure to thrive	16.38	[4.70, 57.10]	<0.001
ED visit within 6 months	2.22	[0.99, 4.98]	0.053

Discussion

- No prediction based on insurance status, race, age
- Each body system yielded a significant odds ratio
- Highest likelihood NAT with chest and genitalia related injuries

Discussion

- Diagnosis of failure to thrive as strongest predictor of NAT
- Failure to thrive diagnosis can be difficult to make, often delayed
- Early involvement of pediatrician during trauma admission

Limitations

- Exclusion of accidental trauma patients
- Retrospective
- Small sample size
- Criteria for forensic committee consultation
- Accuracy and potential bias of forensic committee

Conclusions

- Early recognition of NAT is important to reduce life-threatening injuries.
- Our study identified multiple strong predictors of true versus not NAT within the population of suspected patients.
- Future study may examine failure to thrive within a broader pediatric population.