Television Tipovers: a Continued Public Health Concern and Source of Significant Pediatric Morbidity and Mortality

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Introduction

Crush injuries resulting from television (TV)/furniture tipovers cause significant injury and death to young children, (1 death every 2 weeks) particularly to those 2 years and younger. This study describes the experience with TV tipover injuries at Children's Medical Center Dallas (CMCD) and identifies characteristic injury patterns that may help expedite treatment and improve patient outcomes.

Methods

An IRB approved, retrospective chart review was completed using data from the Trauma Registry of Children's Medical Center Dallas. Patients admitted between January 2000 -July 2012 with TV tipover-related injuries were included. Data collected were demographic (age, gender), length of hospital stay, injuries, operative and radiographic procedures, neurologic exam and discharge disposition. Chart reviews for details of the TV tipover event were included.

Results

An average of 8.69 patients/year were admitted to CMCD with TV tipover injuries, which is higher than reported by other institutions (0.78-5.20 patients/year) within a comparable time frame.

Total # of Patients: 116
Males: 61
Females: 55

Length of Hospital Stay
<1 day: 14%
1-3 days: 55%
4-7 days: 22%
8-14 days: 4%
>15 days: 5%

Disposition from Hospital
Home: 102 (88%)
Home w/ Outpatient: 6 (5.2%)
Inpatient Rehab: 3 (2.6%)
Death: 5 (4/3%)
- all after Jan. 2007
- avg age 24 months
- all result of extensive head trauma

Services Consulted
Trauma (every case)
Orthopedics
OMFS
ENT
Neurosurgery

Total # Procedures
45

TV Statistics
Type of TV:
- ***Tube 111***
- Flat 2
- Unknown 3

Supporting Structure:
- TV stand 35%
- ***Dresser 38%***
- Inside Cabinet 12%
- Table 6%
- Nightstand 6%
- other <1%

Height of Fall:
- 2 feet 17%
- ***3 feet 56%***
- 4 feet 24%
- 5 feet 3%

Accident Scenario:
- ***Climbing: 42%***
- Pulled or struck TV: 21%
- Getting into drawers under TV: 7%
- Pushing structure w/ feet: 8%
- Bumped into: 7%
- Unknown: 14%

Location in Home:
- Family/Living room: 35%
- ***Child's bedroom: 36%***
- Playroom: 13%
- Parent's room: 18%

Neurosurgery
72 patients consulted
15 procedures completed
- Craniotomy 4, EVD 6
- Lumbar Drain 2
- Carotid Sacrifice: 2 (by IR)
- CN VII decompress: 1 (by ENT)

Skull Fractures 96% (69 pts)
Depressed 9
Linear 24
Skull base 53
- 66% petrous temporal bone

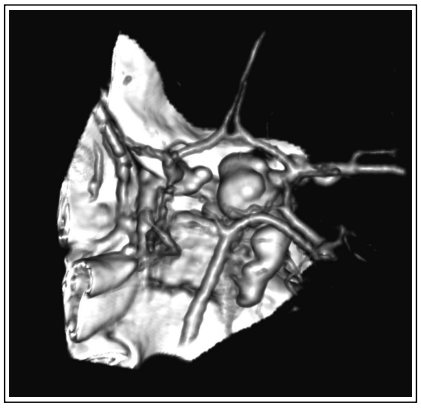
Sequelae of Basilar Skull Fx
CSF leak 10 (19%)
- ***otorrhea 8***
- rhinorrhea 2

CN injury 10 (19%)
- CN II 1; CN VI 2
- ***CN VII 11***
- CN VIII 2; Multiple 3

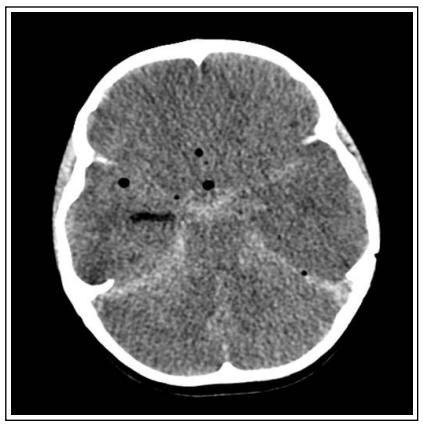
Pneumocephalus 36 (68%)

Vascular injury 17 (68%)
Arterial:
- ***Focal narrowing vs. spasm 8***
- Carotid pseudoaneurysm 2
- Carotid cavernous fistula 1
- External carotid injury 1
- Transection 1

Venous:
- ***Occluded sigmoid/transverse 6***
- Narrowed sigmoid/transverse 4



Intracranial hemorrhage 55%
SDH 36%
SAH 29%
IVH 15%
EDH 11%



Conclusions

Crush injuries to the head as a result of TV tipover cause significant morbidity and mortality in young children. In this series, the common neurologic injuries were intracranial hemorrhage, skull fractures, skull base fractures and related sequelae (CSF leak, cranial nerve palsy, pneumocephalus, vascular injury). These are low velocity, crushing injuries. Screening for blunt cerebrovascular injury should be considered in appropriate patients. Recognition of pattern type injuries may help practitioners expedite appropriate evaluation of the suspected injury and mobilization of consulting and ancillary resources to best improve patient outcomes.