



## Pediatric Head Injury during Operations Iraqi Freedom and Enduring Freedom

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## Introduction

Children are the inevitable and unfortunate victims of armed conflicts throughout history. The operations in Afghanistan (Operation Enduring Freedom) and Iraq (Operation Iraqi Freedom) were no different (1-3). Military neurosurgeons from all branches of service (Army, Navy, Air Force) have been deployed for varying lengths of time, typically 6 months, in support of these campaigns. Although the primary objective of military medical facilities was to care for coalition casualties, local nationals were also treated. This study reports the scope and outcome of children who sustained head injuries during both of these campaigns and were treated by coalition physicians.

## Methods

Using the Joint Theater Trauma Registry (JTTR), which is the largest injury database in existence, we searched for all children (<18 years old) who sustained a severe head injury (defined as an AIS of 3 or more) during OEF or OIF from January 2001 to August 31, 2010. The database is limited in that it contains information during the patient's initial admission. As such, the primary endpoint for this study was in-hospital mortality.

## Results

Five hundred thirty-nine children (m=401, f=138) met our criteria; 238 from OEF and 263 from OIF (could not ascertain the conflict in 38 children). The mean age was 7.9 (+/- 4.4). There were only 17 closed head injuries; the rest were 'open' (n=202) or 'penetrating' (n=320). The average GCS on admission was 8.2.

Intracranial pressure monitoring was performed in 198 patients (37%, 138 ventriculostomies, 60 bolts) and 174 (32%) underwent a craniotomy or craniectomy. The average length of stay and GCS at time of discharge was 5.5 days and 12.9, respectively. Two-hundred thirty-one (43%) were discharge from the military hospital to home; the rest were transferred to a local national facility.

In-hospital death occurred in 130 (24%) children, including 38 out of the 174 (22%) who underwent a craniotomy/craniectomy. There was no difference in mortality based on age (as defined as 'infant' (0-1yr), 'toddler' (2-3yrs), 'child' (4-10), 'preteen' (10-12) & 'adolescent' (13-17)), OEF vs. OIF, gender and type of injury (penetrating vs. non-penetrating), and early years of the conflicts (2003-2006) vs. later years (2007-2010).

## Conclusions

Many children who were injured as a result of combat operations or non-battlefield causes were cared for by coalition forces during OEF and OIF. Almost one-quarter of children with severe head injuries died. Given the challenging environment and limited available resources, coalition forces were able to provide quality and timely care.

## Learning Objectives

By the conclusion of this session, participants should be able to:

1. Describe the types of head injuries in children during the recent OIF and OEF conflicts
2. Provide the overall mortality rate and
3. Describe the neurosurgical procedures required for these children.

## References

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