Management and outcomes of patients with traumatic brain injury in Kunduz, Afghanistan

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Introduction

• Each year, traumatic brain injuries (TBI) contribute substantial numbers of deaths and cases of permanent disability

• Most of the burden (90%) is in low- and middle-income countries

• Care for TBI is considered too demanding in many settings where MSF works
TBI care in Kunduz - Afghanistan

• Kunduz has an estimated population of less than one million inhabitants

• Severely impacted by the ongoing conflict

• Hosts the MSF Kunduz Trauma Centre (92 beds), providing TBI care since 2013
Kunduz Trauma Centre

- Offers emergency department, intensive care, trauma surgery, hospitalization, physiotherapy and mental health

- Kunduz trauma centre includes an ICU level 2+ with possibility to perform invasive mechanical ventilation

- Doctors in both ED and ICU are mostly generalists who have been trained on specific care in the field by both ED and ICU international specialists
Objectives

A. To assess whether care for traumatic brain injury (TBI) is feasible in an MSF setting

B. Specifically, among patients with TBI in Kunduz Trauma Centre, to describe:

- The characteristics of such patients
- The quality of care provided
- The ward-specific and programme outcomes
Methods

• Traumatic brain injury was classified according to the Glasgow Coma Scale (neurological scale) at arrival into:
  
  • Severe: GCS ≤ 8
  • Moderate: GCS 9 - 12
  • Mild: GCS 13 - 15

• Retrospective review of routine programme data (February 2014-March 2015)
Methods - CRASH

- Risk for mortality was assessed through the CRASH model

Calculates the risk of day 14 mortality, based on the GCS, age, pupil reactivity, extra-cranial injury.

Risk is provided for low/middle income (LMIC) and high income (HIC) settings.
Patient flow

Emergency Department

Inpatient facilities

Intensive care unit

Inpatient department

Inpatient comfort care
1. Emergency department

- Emergency Department
- Intensive care unit
- Inpatient department
- Inpatient comfort care

Inpatient facilities
Characteristics in the ED

- 1446 cases of TBI seen over study period:
  - 9% moderate TBI
  - 10% severe TBI

- Most cases are **traffic accidents** (55%), **falls** (26%) and **violence** (13%)

- 35% presented **within 2 hours of incident**, 19% presented **>24 hours later**

- 205 patients had a **>10% risk of death** within 14 days of the incident
Provision of CT scans in the ED

- **Coverage of CT scan provision was suboptimal**: of 297 cases with an indication for CT scan, 178 (60%) received it.
- Provision of CT scans was dependent on the indication:

![Bar chart showing proportion of CT scans provided for specific indications and moderate/severe TBI.]

- Patients with moderate/severe TBI **not receiving a CT** had a higher probability on deterioration and death (RR 1.8 [95%CI 1.2-2.8]).
ED outcomes

• Out of 1446 TBI cases in the ED:
2. Inpatient care

396 (28%) of all TBI patients were admitted for inpatient care.
Intensive care unit

- 3% of the moderate and 7% of the severe TBI cases experienced seizures in the ICU.

- Improvements in GCS score observed during stay in ICU:
ICU outcomes

- Out of 203 patients admitted to the ICU (200 direct, 3 transfers):
IPD outcomes

Discharge home; 296; 90%
Death; 3 (1%)
Default; 14 (4%)
Transfer ICU; 1 (0.3%)

n=330

Comfort care

Discharge home; 8 (21%)
Discharge (continuity care); 3 (8%)
Referred; 2 (5%)
Death; 25 (66%)

n=38
3. Programme outcomes

- Outcomes of all TBI patients seen at Kunduz Trauma Centre
Programme performance

- Comparing the actual mortality to the expected mortality in low/middle income and high income settings (CRASH model):
Discussion

- CT scans were provided for TBI patients, but some CT indications were missed; missed opportunities may have led to patients at risk of deterioration not being identified on time
- Programme performance was high in general, though mortality was higher than expected during specific months
- The high number of TBI caused by traffic accidents needs to be addressed at community level
- ICU care was a crucial component in TBI care
- Care for TBI was shown to be feasible in the MSF setting of Kunduz
Thank you!

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