Head Injury in Maiduguri: An 18 Month Review

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ABSTRACT

Background: Traumatic brain injury is a leading cause of death and disability in young adults (<44years) and in children (>1 year). Early diagnosis, prevention of secondary injury and treatment of complications reduces the morbidity and mortality. However, with the on-going civil-military conflict in our region (Boko Haram), achieving this is difficult.

Method: A retrospective analysis of case records of all patients with traumatic brain injury managed by our unit from May 2015 to October 2016 (18 months).

Results: A total of 1529 trauma cases were recorded in the Emergency Department. There were 269 traumatic brain injuries. One hundred and forty-seven (147) were treated at the emergency department, while 122 patients were transferred to the wards and Intensive Care Unit (ICU) for further management. Road traffic accident (RTA) was the leading cause (62.87%) followed by missile injury (bomb blast/Improvised Explosive Device [IED] and Gunshot) in 65 patients (24.17%). Neuro-imaging was not readily available for assessment. Fourteen (14) had various surgical interventions. Good outcome was recorded in 239 patients (88.91%). Mortality was recorded in 50% of ICU patients.

Conclusion: In addition to RTA, missile injuries are common causes of head injury in our society ravaged by a civil-military conflict (Boko Haram). The severity of the primary injury, non-availability of functional neuroimaging to guide subsequent intervention contributed to the mortalities.

Key words: Head injury, Bomb blast, gunshot, Computed Tomography

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INTRODUCTION

Traumatic brain injury (TBI) is a non-degenerative, non-congenital insult to the brain from an external mechanical force, possibly leading to temporary or permanent impairment of cognitive, physical, and psychosocial functions, with an associated diminished or altered state of consciousness[1]. Traumatic brain injury (TBI), remains a common clinical entity encountered by neurosurgeons with significant cause of death, disability, and cost in any young society (1 to 44 years)[2]. Intracranial hemorrhages complicate 25 to 45% of severe TBI cases, 3 to 12% of moderate TBI cases, and 1 in 500 persons with mild head injury[3]. It can be classified based on mechanism (closed or penetrating), severity (assessed by Glasgow Coma Scale) and radiological morphology. Most head injuries follow Road Traffic Accident (RTA). Penetrating head injury is on the rise globally as a result of the surge in civil-military conflicts. Prevention (prompt physiological resuscitation) and treatment of secondary head injury result in reduced morbidity and mortality associated with head injury.

Methodology

A retrospective study of all patients who met the criteria for traumatic brain injury managed in University of Maiduguri Teaching Hospital (UMTH) from May 2015 (commencement of neurosurgical practice) to September 2016 was done. The aim was to look at the pattern of head injury and challenges faced in the management of the patients.

UMTH is the only tertiary hospital in Maiduguri, Borno state, Northeastern Nigeria. It has 530-bed capacity and cares for over 25 million population of northeastern Nigeria. Data were retrieved from hospital records of all trauma cases admitted via the accident and emergency, operating theatre and the wards. Data were analyzed for age, sex, mechanism of injury, severity, type of intervention and outcome.

Results

A total number of 1529 trauma cases were admitted into Accident and Emergency (A and E) during the study period. Head Injury (HI) accounted for 269(17.6%) while other traumas accounted for 1260 cases (82.4%). Of the 269 Head Injuries, 107 (39.80%) were children, and 162 (60.20%) were adults (defined as age ≥ 16 years). Two hundred and nineteen (81.4%) were males while only 50 (18.6%) were females: a male to female ratio (M: F) of 4.4: 1

Table 1: The Various systems involved

Systems	Head Injury	MFU	Chest	Urologic	Multiple	Abdomen	Burns	Limbs	Other
Number	269	54	59	07	495	79	120	205	41
Percent	17.60	3.50	3.85	0.46	32.37	5.17	7.85	26.85	2.70

Table 2: Mechanisms of Head Injuries

Mechanism of Injuries	**Number of Patients (%)**
RTA	169 (62.83)
Bomblast/IED	54 (20.09)
Assault	21 (7.80)
Domestic violence	14 (50.2)
Gunshot	11 (4.08)
Total	**269 (100)**

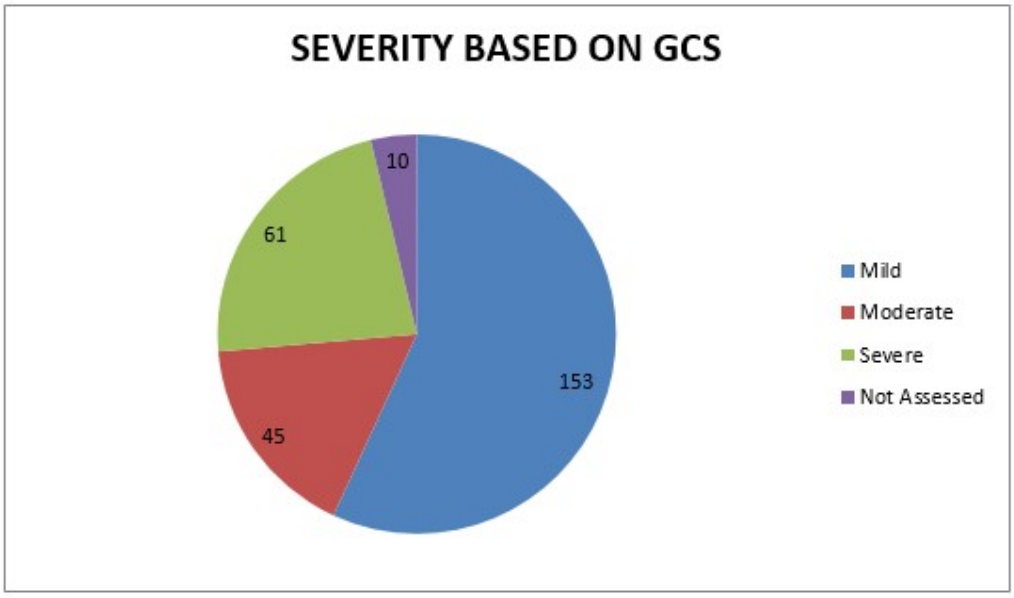

Figure 1: Severity based on GCS

Figure 2: Available imaging modalities

All patients were triaged, resuscitated and admitted into various wards as follows: observed and discharged in Accident and Emergency (147), surgical wards (96), Intensive Care Unit (26).

Depending on the identified indication, patients were grouped into nonsurgical: N=255(94.86%) and surgical: N=14(5.14%).

The surgical group included those with penetrating head injury (8), chronic subdural haematoma (4), brain oedema (1) who had Decompressive Craniectomy (DECRA), and cerebrospinal fistula repair (1). None had any objective monitoring of intracranial pressure because of non-availability.

Two hundred and thirty-seven (88.10%) were discharged home with variable disabilities. While 32 deaths were recorded, half of this (16) was in the Intensive Care Unit (ICU)

Table 3: Pattern of Mortalities in ICU

Severity Using GCS	Mechanism of Head Injury	Number of Patients
Severe Head injury	Bomb Blast / IED	09
	Road Traffic Accident (RTA)	03
	Gunshot	01
	Assault	01
Moderate Head Injury	Road Traffic Accident (RTA)	01
	Gunshot	01
Total		**16**

Discussion

Head injury accounted for 17.6% (N=269) of 1529 trauma cases admitted, which is less than that of a 1-year study in Jos. [5] Head injury was common among adults (≥16 years), accounting for 60.2%. Children accounted for 39.8% which is about twice the number reported in Benin city. [6] Males were commonly affected, with a male: female ratio of 4.4:1, this is about same as findings by Emejulu et al. [7] This is higher (twice) than similar reports in developed countries.[4] Major cause (N=169, 62.9%) was Road Traffic Accidents (RTA) as in other studies[8], followed by missile injuries (N=35, 13.8%).

Mild head injury accounted for 57% which is similar to a local study[8] that reported 57.1%. Twenty-two percent (22%) had a severe head injury.

Brain imaging was available in 37(13.8%) patients, as the only functional CT scan in town is about 15 km from our hospital and operates twice a week (Tuesdays and Thursdays). The role of CT scan in determining the management and outcome of head-injured patients had been reported[9]. Fourteen patients had surgical intervention. Where: 8 (57.1 %) patients with penetrating head injury and clear-cut indications for surgery had a craniotomy/craniectomy, minimal debridement, and duraplasty[10]

We recorded good outcome with variable disability in (N=237, 88.1%) and mortality of 32 (11.9%). This mortality was better than 15-20% reported in another study.[9] The highest mortality was in the non-surgical group (N=28, 87.5%). Only 4 0f the surgical group died. Half the mortality (16) was in the ICU that included 14 nonsurgical and 2 who had surgical intervention.

Conclusions:

Head injury is an important cause of morbidity and mortality. Missile injuries (bomb blast and gunshot) ranked as the second most important cause of head injury in our environment. This is due largely to terrorist attacks (Boko Haram) using IED-laden suicide bombers.

The severity of the primary injury, non-availability of a dedicated trauma centre equipped with functional CT scan to guide subsequent intervention, and non-availability of intracranial pressure measuring devices contributed to the high mortalities recorded in our study.

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