
CLINICAL INVESTIGATIONS

AN AUDIT ON ADMISSION OF PATIENTS WITH HEAD INJURY TO TEACHING HOSPITAL KARAPITIYA, GALLE

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Key Words: Head injury, Glasgow coma scale.

Background:

Head injury is a leading cause of morbidity and mortality among the young. The aim of this audit was to analyze the head injured patients admitted to the neurosurgical unit of the Teaching Hospital Karapitiya. The analysis was according to the type of injury, age, sex distribution and the functional outcome.

Method:

All details of patients admitted to the neurosurgical unit are computerized. Data collection was done retrospectively for a period of 3 months.

Results:

Patients with head injury admitted to the neurosurgical unit accounted for 37% of all admissions with trauma. The most affected age group was 20-40 years. Out of the 108 patients admitted, 91 were males giving a male: female ratio of 5.3:1. 15 patients died. Road traffic accidents (RTA) were the commonest cause of head injury.

Conclusion:

Head injury is mainly due to road traffic accidents and affects the young adult male population.

Head injury is one of the major causes of morbidity and mortality world wide. Some of those who do not succumb are permanently disabled resulting in a large cost to society.

THK is the tertiary care unit where neurosurgical facilities are available for the entire southern province. The hospital has one neurosurgical unit with one consultant neurosurgeon to cater for the direct admissions and the transfers from the rest of the province.

There are no direct admissions of trauma patients to the neurosurgical unit. They are first admitted to the on call surgical unit. At the request of the surgical team patients are seen by a medical officer of the neurosurgical unit or if necessary by the consultant. Those patients with neurological

symptoms, a drop in GCS > 2 from the initial GCS or an abnormal CT finding are admitted to the neurosurgical unit. The patients who are critically ill are directly admitted to the general intensive care unit after being resuscitated in the emergency treatment unit (ETU). The neurosurgical unit has its own high dependency unit (HDU) with facilities to ventilate.

The patients are discharged from the unit when they have recovered completely or are transferred to the local hospital if they have permanent neurosurgical deficits and needs rehabilitation. Patients who have other injuries are referred to the respective specialties and are taken over by them.

Patients and Methods

We studied 108 patients in this audit. They were admitted to the neurosurgical unit from 1st January to 30th March 2009 with head injury. The data collection was retrospective from the unit computer which stores all details of patients including details of follow up.

The following data were obtained

1. Age of the patient.
2. Sex of the patient.
3. Type of trauma (RTA, assault, fall, fire arms, found unconscious).
4. CT findings (cerebral haemorrhage, extra dural haemorrhage, sub dural haemorrhage).
5. GCS on admission.
6. Functional outcome (complete recovery, recovery with residual effects, death).

Table 1 – Head injury as a percentage of total number of trauma between months of January to March 2009

Month	Jan	Feb	Mar
Number of male patients	21	29	41
Number of female patients	9	5	3
Male : Female ratio	2.3 : 1	5.8 : 1	13.7 : 1
Total number of admissions following trauma	970	932	1031
Number of patients with head injury	30 (3%)	34 (3.6%)	44 (4.2%)

Month	Jan	Feb	March
0 - 9	1	1	2
10 – 19	2	2	6
20 – 29	9	5	5
30 – 39	3	5	10
40 – 49	4	7	9
50 – 59	3	5	2
> 60	8	9	10

Table 2 – Sex distribution of patients.

Table 3 – Age distribution of patients.

Fig 1 - Age distribution of patients from Jan to March.

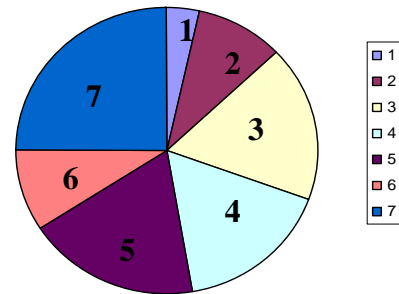


Table 4 – Type of accident.

Month	Jan	Feb	Mar
Road traffic accident	17	10	19
Assault	3	13	9
Fall	8	8	15
Found unconscious	1	3	0
Fire arms	1	0	1

1	RTA	46	42.6%
2	Assault	25	23.1%
3	Fall	31	28.7%
4	Found unconscious	4	3.7%
5	Fire arms	2	1.8%

Fig 2 - Cause of injury (Jan – March).

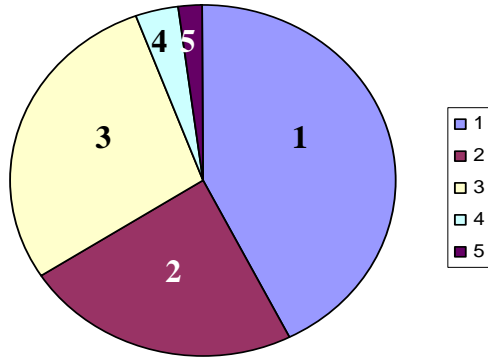


Table 5 – Average Glasgow Coma Scale on admission.

Month	Jan	Feb	March
14 – 15	16	13	20
8 – 13	9	13	17
4 – 7	3	6	7
3	2	2	0

Fig 3 - Average Glasgow coma scale (January – March).

1	14 – 15	49	45.4%
2	8 – 13	39	36.1%
3	4 – 7	16	14.8%
4	3	4	3.7%

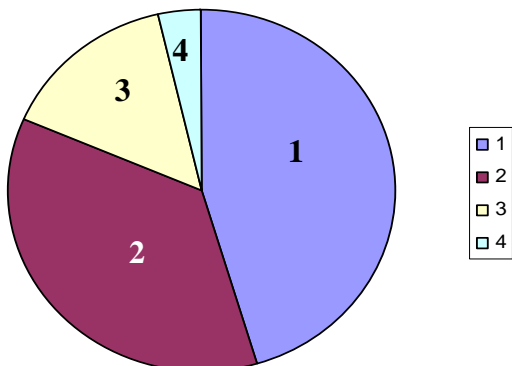


Table 6

Month	Jan	Feb	Mar
Extra dural haemorrhage (EDH)	5	2	1
Sub dural haemorrhage (SDH)	4	7	9
Intra cerebral haemorrhage (ICH)	9	9	3
Cerebral contusion	6	5	9
Depress fracture of skull	3	9	5
Others (sub arachnoid haemorrhage / cerebral oedema)	4	11	7

Fig 4 - CT Finding.

1	EDH	8	7.4%
2	SDH	20	18.5%
3	ICH	21	19.4%
4	Contusion	20	18.5%
5	Fracture	17	15.7%
6	Others	22	20.4%

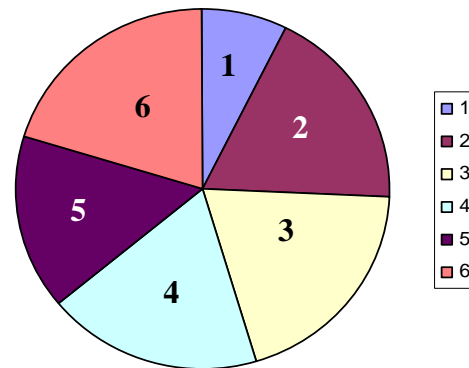
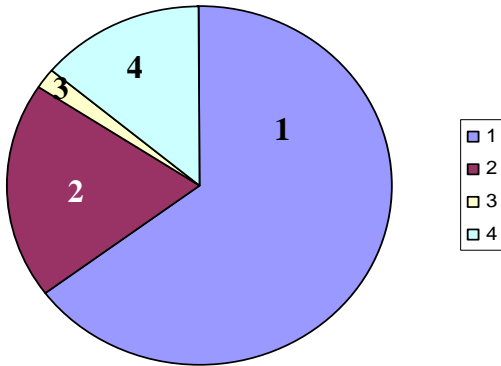


Table 7 – Functional outcome of patients.

Month	Jan	Feb	Mar
Full recovery	21	20	29
Recovery with residual effects	6	6	9
Vegetative state	1	0	1
Death	2	8	5

Fig 5 - Functional Outcome.

1	Full recovery	70	64.8%
2	Residual effects	21	19.4%
3	Vegetative state	2	1.85%
4	Death	15	13.9%



Discussion

Traumatic brain injury is a major cause of morbidity and mortality world wide. Young males within the age group of 20 - 40 years were affected most. There was also a significant number from the elderly population (25%). When looking at the type of trauma, RTA had the highest incidence. CT findings showed a mass lesion in 64% of the patients. Vast majority of the patients recovered completely (64%). Only 15 deaths (13.9%) were reported.

The primary brain damage caused at the time of injury is irreversible. Some of the patients, who live to reach the hospital die later mainly due to secondary brain damage. Hypoxia, hypotension and increased intracranial pressure are the main causes of secondary brain damage¹. It has been shown that a single episode of hypotension increases the mortality and morbidity significantly². When patients get admitted to the

local hospital where neurosurgical facilities are not available, a delay occurs in the admitting and transfer process. This time period is detrimental in the head injured patient where secondary brain injury is a concern³. Poor resuscitation and improper management at the local hospital and during transport are equally important causes of secondary brain damage⁴.

Conclusion and Recommendations

It can be concluded from the audit that young adult males are the most vulnerable to head injury. RTA is the leading causative factor.

1. Road discipline should be stressed and taught from school level.
2. There should be better transfer and communication facilities between health institutions.
3. In hospitals where a CT is available without a neurosurgical facility, a computer link should be established with the closest available facility.
4. Medical staff in peripheral hospitals should have adequate knowledge and training in resuscitation of the trauma patient.

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