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Original Research Article

Outcome of traumatic head injury in unknown patients

Ankit Ahuja, Siddhartha Verma*, Aditya Narayan Choudhary

Department of General Surgery, R.N.T. Medical college, Udaipur, Rajasthan, India

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***Correspondence:**
Dr. Siddhartha Verma,
E-mail: drsiddharthaverma@yahoo.co.in

ABSTRACT

Background: Traumatic brain injury is the most common cause of death in trauma victims accounting for about half of deaths at the accident site. Most commonly, traumatic brain injury occurs in the presence of additional injuries to other major organ systems, but it can also occur in isolation. Complications from closed head injuries are the single largest cause of morbidity and mortality in patients who reach the hospital alive. The objective of this study was to determine the outcome of traumatic head injury in patients admitted in the Department of Neurosurgery as unknown.
Methods: All patients admitted as "unknown" to Neurosurgery department with traumatic head injury were studied retrospectively. Data was collected regarding demography, mode of injury, clinical presentation at the time of admission, management and outcome of these patients.
Results: Data pertaining to 107 unknown patients were collected. Most patients were found to be males in 3rd decade of their lives with vehicular accidents as the common mode of injury. Patients presenting with Glasgow coma scale (GCS) score <8 at the time of admission had poor outcome and associated with higher mortality. Intra-cranial hemorrhage were predominantly found on CT scan. Only one-third of the patients were discharged after treatment while half of them suffered untimely death.
Conclusions: Outcome of these neglected patients is poorer in comparison to patients who are accompanied by their relatives. Their management from pre-hospital to treatment and discharge from hospital is fraught with challenges. They need special care from trained nursing staff as well as help from social workers for recovery and rehabilitation.

Keywords: Outcome, Traumatic brain injury, Unknown

INTRODUCTION

Head injury is considered as a major health problem. It is a frequent cause of death and disability and makes considerable demands on health services. Head injuries account for one-quarter to one-third of all accidental deaths, and for two thirds of trauma deaths in hospitals.[1] Although more severe injuries are associated with poorer outcomes, the moderately injured patients also are at risk.[2] Traumatic brain Injury is a leading cause of mortality in patients younger than 45 years. The injuries are generally blunt and motor vehicle accidents are most frequent.[3] As many as two thirds of all motor vehicle accident victims sustain some head injury.[4]

The management of head injury has been revolutionized by round the clock monitoring, carotid angiography, isotope brain scan, computerized axial tomography and monitoring of intracranial pressure. Intermittent positive pressure ventilation, dehydration therapy and better techniques of operations have made a huge difference in the ultimate outcome of severe brain trauma.[5] Majority of patients now require conservative management and only10-20% of patients need surgical intervention.[6] In spite of best management, 15-20% of head injuries prove fatal.[7]

In developing countries accident rates in general and traumatic brain injury in particular are increasing as

traffic increases besides other factors like industrialization, falls and ballistic trauma. Many such patients are brought by policemen and bystanders and their identities are not known at the time of admission. These "unknown" patients present a unique challenge in management. What happens to these patients after admission is not reported in world literature.[8]

The main aim to conduct this study is to determine the outcome of traumatic head injury in patients admitted in Department of Neurosurgery as unknown. Specific objectives of the study were to obtain data pertaining to this group of patients for understanding the mode of injury, presentation, management, outcome after head injury.

METHODS

Data source

This was a hospital-based time bound retrospective study centered in R.N.T. Medical College and associated M.B. govt. hospital, Udaipur. All patients admitted as "unknown" to Neurosurgery department with traumatic head injury were studied retrospectively. Data was collected regarding demography, mode of injury, clinical presentation at the time of admission, management and outcome of these patients.

Study technique

On arrival, all patients were clinically evaluated by a team comprising of doctors from surgical, medical and orthopedics specialties in the Emergency Department, primary survey and initial resuscitation was done and subsequently patient was admitted as cases of traumatic head injury at the department of Neurosurgery.

Table 1: Glasgow coma scale.

Eye opening response	Verbal response	Motor response
4 = spontaneous	5 = oriented	6 = obeys commands
3 = to verbal stimuli	4 = confused	5 = localizes pain
2 = to pain	3 = inappropriate words	4 = withdraws from pain
1 = none	2 = incoherent	3 = flexion to pain or decorticate
	1 = none	2 = extension to pain or decerebrate
		1 = none

Assessment of head injury

- Visible evidence of injury lacerations and bruising etc.
- Signs of basal skull fractures- CSF rhinorrhoea, periorbital ecchymosis etc.
- Assessment of patient's conscious level as per Glasgow coma scale (GCS) score.[9]
- Pupil response by light reflex test
- Assessment of Limb weakness by comparing the response in each limb to painful stimuli
- Evaluation of eye movements
- Evaluation of Cranial nerve lesions

Plain CT scan head along with X-Ray of cervical and dorso-lumbar spine were carried out to determine the injuries sustained.

Whenever necessary, investigations like USG abdomen (FAST), contrast CT (chest/abdomen and pelvis) were carried out to rule out other injuries. The outcome and recovery of the patient was assessed using Glasgow outcome score (GOS).[10]

Table 2: Glasgow outcome score.

Score	Grade	Explanation
1	Good recovery	Returned to the original functional level and employment with no deficit
2	Moderate disability	Minor neurological deficit that does not interfere with daily functioning or work
3	Severe disability	Significant neurological deficit that interferes with daily activities or prevents return to employment
4	Vegetative	Coma or severe deficit rendering the patient totally dependent
5	Death	Self-explained

RESULTS

Data pertaining to 107 unknown patients in the department of neurosurgery was analyzed.

Table 3: Age distribution.

Age	No. of patients	Percentage
0 - 10	2	1.86
10-20	5	4.67
20-30	52	48.59
30-40	24	22.43
40-50	14	13.08
50-60	5	4.67
60-70	3	2.80
70-80	1	0.93
80-90	1	0.93
Total	107	100
Average	29.89	

Out of 107 patients, most were in the age group of 21-30 years 52(48.59%). The mean age was 29.89 years (range5-90 years). Majority, 101(94.39%) were males. At the time of admission, 34(31.78%) patients had a GCS score of less than 4 and out of these 29 expired and

42(39.25%) patients had a GCS score from 5 - 8 of which 15 patients expired as compared to 2(1.87%) patients with a GCS score more than 13 and both of them survived. This indicates poor outcome in patients with lower GCS scores at the time of admission.

Table 4: Sex distribution.

Sex	No. of patients	Percentage
Male	101	94.39
Female	6	5.61
total	107	100

Table 5: Mode of injury.

Mode of injury	No. of patients	Percentage
Road traffic accident	84	78.50
Assault	3	2.80
Fall	10	9.35
Unknown	10	9.35
Total	107	100

Table 6: Presentation of the patient at the time of admission.

GCS score	No of patients	% of patients	No. of patients who died	Group specific mortality (%)
3-4	34	31.78	29	85.29
5-8	42	39.25	15	35.71
9-13	29	27.10	7	24.14
>13	2	1.87	0	0
Total	107	100	51	

Table 7: CT scan finding.

Anomalies noted on CT scan	No of patients	%
ICH- intracerebral hemorrhage	37	34.58
IVH- intraventricular hemorrhage	10	9.34
SAH- sub-arachnoid hemorrhage	26	24.30
SDH- sub-dural hemorrhage	20	18.69
EDH- Extra-dural hemorrhage	14	13.08
Diffuse axonal injury	15	14.02
Pneumocephalus	5	4.67
Midline shift	12	11.22
Cerebral edema	2	1.87
Calvarial fracture	2	1.87
Extra calvarial collection	1	0.93
Corpus callosum contusion	1	0.93
Normal	6	5.61
CT could not be obtained	14	13.08

On CT scan of head and neck, intracerebral hemorrhage (34.58%), sub-arachnoid hemorrhage (24.30%) and sub-dural hemorrhage (18.69%) were the most common findings among others whereas 6 patients had normal CT scan. In 14(13.08%) patients CT scan could not be obtained due to poor hemodynamic status at the time of admission and they expired before any such examination could be undertaken.

Table 8: Outcome of the patient.

Outcome	No of patients	% of patients
Discharged	36	33.65
Expired	51	47.66
Left against medical advice	19	17.76
Sent to rehabilitation centre	1	0.93
Total	107	100

Table 9: Recovery of the patient.

Glasgow outcome score	No of patients	% of patients
1	51	47.66
2	7	6.54
3	9	8.41
4	30	28.04
5	10	9.35
Total	107	100

Table 10: Status of identity at discharge.

Status	No of patients	% of patients
Unknown	25	23.37
Known	82	76.63
Total	107	100

By the time of discharge, 82(76.63%) patients were identified, and their relatives were informed with the help of police personnel and social workers.

DISCUSSION

In a study conducted by Deb Nath et al was found that males contributed to a major chunk of the fraction amongst the injured (98%), and most patients (36%) were in 3rd decade of their life.[11] Ahmad FU et al also showed majority of patients were in between 25 to 40 years of age group. The above fact is also evident in present study as majority of victims are males (94.38%) with mean age of 29.89 years.[8] Deb Nath also concluded that Road traffic accident was the most common cause of injury (67%). 50% of the cases at the time of admission had a Glasgow Coma Scale (GCS) score of less than 8 and 40% had between 8-13 as compared to 71% and 27.10% respectively which was found in present study. This signifies severity of the injury at the time of presentation. Poor GCS score is associated with worse prognosis. More than 50% patients present with therapeutic challenges like threatened airway, difficult other system evaluation and inability to assess underlying co morbidities.

The same study also showed that most injuries were cerebral contusion- 33 (47%) patients, 10 (14%) had EDH and 17 (24%) patients had SDH. Wanger et al, reported most of the injuries were cerebral contusions and/or subdural hematomas with a high mortality rate.[12,13] this conclusion was supported by present study which showed intracerebral hemorrhage and subdural hematomas were common lesions noted on CT head with a mortality of 47.66%.

Ahmad FU et al studied 325 unidentified patients and of these, 193 (65%) could be identified during the hospital stay.[8] An additional 40 (13%) patients were sent home after they regained memory of their addresses. In another study identity of 73% patients could be established. Comparing to present study 82 (76.63%) patients could be identified until the time of discharge which aided to their recovery.

Liew BS et al showed in their study that 61(85%) patients were discharged from hospital, with only 29(40%) having good outcome (GOS 4 and 5).[14] Similarly only 40 (37.4%) of patients in the study had a Glasgow outcome score of 4 and 5. Some other authors also have come across comparable observations which suggest that the overall cognitive recovery of the patients in this setting remain grim, and many patients suffer from a residual functional loss at least for some duration after recovery.

CONCLUSION

These groups of patients with unknown identities present innumerable challenges in their management. They are usually found lying on road in unconscious state and brought to hospital by policemen or bystanders who are ill equipped and often unaware in handling patients with severe injuries. Their pre-hospital management is usually improper and lack of proper transfer facilities, in ambulances, further aggravates their condition. Very often such patients are destitute, and their injuries are compounded by presence of debility because of poor nutrition, other medical conditions like diabetes, hypertension, substance abuse and mental illnesses. Hence, the outcome of these neglected patients remains poor.

During their hospital stay, the role of paramedical staff is of paramount importance; their daily nursing care in absence of a relative is a difficult. It needs a team of trained and empathetic nursing staff along with a physiotherapist, dietician, psychologist, and social worker who can help and rehabilitate them. There is an urgent need to sensitize the general public and police about the transportation and pre-hospital management of such severe head injury patients. Peripheral hospitals need to be well equipped for treatment of such patients. Treatment of such unknown patients can entail a huge expenditure and therefore, every hospital should allocate funds for the above purpose.

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