Original article

Indian Journal of Neurotrauma (IJNT)
2011, Vol. 8, No. 1, pp. 11-16

Outcome of head injury in unknown patients at Level-1 apex trauma centre

Haradhan Deb Nath M S*, **Vivek Tandon** M Ch, **Ashok Kumar Mahapatra** M Ch, **Saquib Azad Siddiqui** M S, **Deepak Kumar Gupta** M Ch**

Departments of Neurosurgery, All India Institute of Medical Sciences, Ansar Nagar, New Delhi,
*Department of Neurosurgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh,
**Jai Prakash Narain Apex Trauma Centre, All India Institute of Medical Sciences, New Delhi

Abstract: This was a retrospective study, carried out at the Department of Neurosurgery at Jai Prakash Narain Apex Trauma Centre (JPNATC), All India Institute of Medical Sciences (AIIMS), New Delhi. Many patients with head injury whose identity cannot be ascertained, are admitted in our hospital. Care and management of these neglected patients from pre-hospital till discharge, rehabilitation or death is fraught with many challenges. Very few studies in world literature are available on this subgroup of patients. We analyzed data pertaining to 70 consecutive patients at our hospital.

Out of 70 patients, 68 (97%) were male, most were in the age group of 21-30 years 25 (36%). The mean age was 33.7± 14.6 years (range 5-70 yrs). Mean duration of hospital stay was 27.9±52.2 days (range 2-368 days). Principal cause of head injury was road traffic accident seen in 47 patients (67%). Majority of the patients had Glasgow coma scale less than 8 on admission. Forty three patients were treated conservatively and 20 patients needed surgery.

Ten patients 10 (14%) died in hospital, 7 (10%) patients had good recovery. During the course of treatment identity of 51 (73%) patients could be established and they were either discharged to home 42 (60%) or referred to their 9 (12%) district hospital. Nine patients(12%) remained unknown and on recovery were sent to destitute homes for rehabilitation.

Keywords: anonymous patient; head Injury; nameless patient; outcome; unknown patients; unidentified patient

INTRODUCTION

The incidence of head injury per 100,000 population per year ranges from 56-430[1,2]. The incidence varies in urban and rural population. The overall incidence in US is around 200 per 100,000 per year[3]. Severe traumatic brain injury (TBI) has been one of the major causes of death in Malaysia[4]. Some of the epidemiological studies are hospital based[5,6]. In India, the studies are from traffic police or from the hospital records[7,8]. Nearly 1.6 million people per year suffered from head injury in US[9,10,11].

In India, the incidence of head injury is steadily increasing with urbanization and increasing number of vehicular population[12]. Among the road traffic accidents 70% have head injury, among road accident deaths 70% are due to head injury. Majority of deaths occur during first 72 hours. Recently, number of fatal accidents has increased in India. Total number of vehicles in India are only 1% of world's total vehicles, however, total number of accident in India as reported in 1991 were 6% of total accidents, thus making it highest incidence of accident rate in the world. Currently annual road accidents in India is over 12,00,000. Every minute there is an accident and every eight minute there is a death[13]. In 1987[14] New York Times reported that fatality rate in India for 10,000 vehicles is 55, which was that time reported to be highest in the world. Indian statistic as reported over a 12 year from 1980 to 1992, showed unacceptably high accidents and deaths. Baker et al 1986 reported over 8% of total death in US were due to injury[14]. Approximately in US each year, 50,000 die from head injury[16]. We are working at a level I Apex Trauma centre of a developing country and a lot of severe head injury patients are being referred to us.

Address for correspondence :
Dr. Ashok Kumar Mahapatra, Professor and Head
Department of Neurosurgery, Room No. 720
Cardioneurosciences Centre,
All India Institute of Medical Sciences
New Delhi, India. 110029 Phone: 91-11-26593291
Email: akmahapatra_22000@yahoo.com

Many such patients are brought by policemen and bystanders and their identities are not known at the time of admission. These patients present a unique challenge in management. In this backdrop we tried to analyze data pertaining to this group of patients for understanding their mode of injury, presentation, treatment and outcome after head injury.

METHODOLOGY

This was a retrospective study, conducted at Department of Neurosurgery, JPNATC, AIIMS, New Delhi. Data pertaining to 70 consecutive unidentified patients, admitted at our centre, between July 2008 to Dec 2010. We collected data regarding demography, mode of injury, clinical presentation, condition at admission, treatment given, hospital stay and outcome of these patients. Data analysis was done using SPSS 11.5 software. All patients were clinically evaluated by a team comprising of doctors from surgical, medical and orthopedics specialties in the emergency department and subsequently admitted and treated at Neurosurgery. Plain CT scan head along with X-Ray of cervical and for dorso-lumbar spine were carried out to rule out other injuries. Whenever necessary, CT scan of spine, USG abdomen (FAST). MRI spine or contrast CT (abdomen chest) were carried out to rule out other injuries.

RESULTS

Out of 70 patients, 68 (97%) were male, and only 2 (3%) were female. Only 12 (17%) patients were less than 20 yrs of age, while the most patients 25 (36%) were in the age group of 21-30 years, while only 5 (7%) patients were ≥ 60 years of age group only. (Figure-1, Table 1)

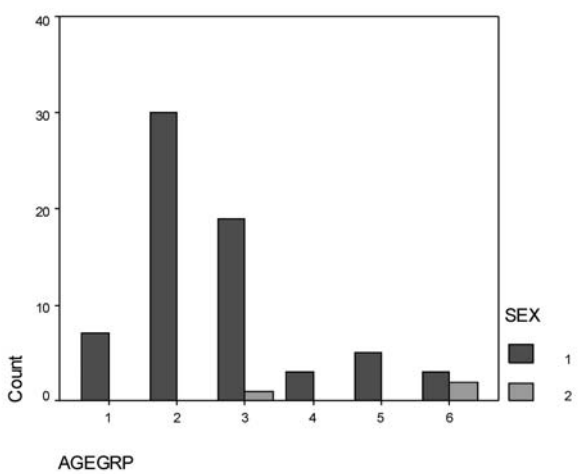

Fig 1: Age and sex distribution of unknown patients

Table 1: Demography of head injury in unknown patients: (N=70)

Demography	No.of patients	Percentage
Mean Age (years) 33.7 ± 14.6		
Age group		
<20 years	12	17
21-30 years	25	36
31-40 years	20	29
41-50 years	03	4
51-60 years	05	7
>60 years	05	7
Gender		
Male	68	97
Female	02	3
Total	**70**	**100**

Road traffic accident was the most common cause of injury in 47 (67%) cases. In 18 (26%) cases cause of injury was not known and these unconscious patients were brought from roadside by police men. At the time of admission Glasgow Coma Scale (GCS) score of less than 8 was seen in 35 (50%) cases. GCS between 8-12 was seen in 28 (40%) cases. Plain CT scan of head revealed cerebral contusion in 33 (47%) patients, 10 (14%) had EDH and 17 (24%) patients had SDH. (Table 2)

Table 2: Clinical characteristic and type of lesion in head injury of unknown patients: (N=70)

Cause of injury	No. of patients	Percentage
Road traffic accident	47	67
No cause was known	18	26
Any other cause (Assault / Fall from height / any other)	05	7
Glasgow comma scale (G.C.S.) at admission		
GCS 13-15	07	10
GCS 12-8	28	40
GCS < 8	35	50
Type of brain injury		
Extradural haematoma (EDH)	10	14
Subdural haematoma(SDH)	17	24
Cerebral contusion	33	47
Diffuse axonal injury(DAI)	25	36
Subarachnoid haemorrhage(SAH)	15	21
Intraventricular haemorrhage (IVH)	04	06
Other injury		
- Chest injury	03	05
- Abdominal injury	04	06
- Limb fracture	07	10
- Spinal injury	02	03

Diffuse axonal injury was diagnosed in 25 (36%) patients on the basis of CT scan. Forty three (61%) patients were managed conservatively using anti-epileptics, diuretics and osmotic agents. In patients with less than 8 GCS, ICP monitoring was done initially in 7(10%). Twenty (29%) patients needed surgical intervention where decompressive craniectomy was carried out in 10(14%), craniotomy was in 6 (9%), 2 patients (3%) underwent depressed facture elevation and another 2 patients (3%) underwent burr hole evacuation (Table 3).

Associated injuries were seen in total 12 (17%) patients. Three patients (5%) had chest injuries, 4 (6%) had abdominal injuries, 7 (10%) had limb fracture, and 2 patients (3%) had spinal injuries (Table 3). During treatment, 9 patients (12%) had pneumonia, 5 (7%) had septicemia, 4 (6%) had wound infection and 2 patients (3%) had CSF leakage (Table 4). At the time of discharge, 43 patients (61%) had GCS of 13-15 and 8 (11%) had GCS score less than 8. According to Glasgow outcome scale (GOS) of these patients, 7 (10%) had good recovery, 18 (26%) had moderate disability, 30 (43%) had severe disability, 5 (7%) had vegetative state and 10 (14%) died during treatment. During the course of treatment identity of 51 (73%) patients could be established. Forty two of these (60%) were discharged to home, and nine patients werereferred to their district hospital (Table 5).

Identity of 9 patients (13%) could not be established and they were rehabilitated by the social worker and provided shelter in Home for the destitute run by non-Government organization.

On comparing the mean GCS values of eye, verbal and motor scores at admission and at discharge, though higher values were seen at discharge but no statistical significance between them was observed (Table 6).

Table 3: Treatment given at hospital (N=70)

Types of treatment	No. of patients	Percentage
Conservative	43	61
ICP monitoring	7	10
Surgery		
Decompressive Craniectomy	10	14
Craniotomy	06	9
Depressed fracture elevation	02	03
Burr hole evacuation	02	03

Table 4: Other injuries and complication during treatment of the patients (N-70)

	No. of patients	Percentage
Complications		
- Pneumonia	9	12
- Meningitis	1	1.5
- Septicemia	5	7
- Wound infection	4	6
- CSF leak	2	3
Total	21	30

DISCUSSION

In a previous study, out of 325 unidentified patients, there were 9 (3%) patients in the pediatric age group

Table 5: Outcome and destination of patients during discharge (N=70)

Outcome	No. of patients	Percentage
Glasgow outcome scale		
Good recovery	07	10
Moderate disability	18	26
Severe disability	30	43
Vegetative state	05	07
Death	10	14
Glasgow Coma scale at discharge		
13-15	43	61
8-12	09	13
< 8	08	11
Discharged location		
Home	42	60
Referred to District Hospital	09	13
Destitute Home	09	13

Table 6: Comparison between GCS during admission and during discharge N= 70

	Mean	N	Std. Deviation	Std. Error Mean
Eye score				
- At admission	2.07	70	1.231	0.147
- At discharge	3.39	70	1.183	0.141
Motor score				
- At admission	4.70	70	1.095	0.131
- At discharge	5.23	70	1.524	0.182
Verbal score				
- At admission	3.04	70	0.751	0.090
- At discharge	3.99	70	1.324	0.158
GCS				
- At admission	9.81	70	2.23473	0.26710
- At discharge	12.60	70	3.46994	0.41474

and 16 (5%) patients were above 60 years of age. Of these, 193 (65%) could be identified during the hospital stay. An additional 40 (13%) patients were sent home after they regained memory of their addresses. Forty seven patients (15%) died without their identities being established. Seventeen (6%) patients remained unknown and were sent to rehabilitation/poor homes with the help medical social worker: All pediatric patients were identified[16]. In study of Wanger et al, they reported approximately one third of patients with moderate head injury and half of patients with severe head injury were operated, most of them being for cerebral contusions and/or subdural hematomas[17]. Mortality following head injury has been reported to be in the range of 39-51%[18,19]. Previous study showed both known and unknown head injury patients, among 72 patients of head injury eleven patients (15%) died during hospitalization. There were only sixty one (85%) patients were discharged from hospital, whereby twenty nine (40%) with good outcome (GOS 4 and 5) while the remaining thirty two (44%) patients were with either severe disability or vegetative state. Only one patient continued to suffer severe disability, while the rest had moderate or good recovery.[20]

Compared to this in our study there were twelve patients(17%) under the age of twenty years, only 5 patients (7%) were above 60 years. Twenty patients (29%) were treated by surgery, most often for cerebral contusion (33 patients, 47%).

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 who are ill equipped and often not knowing how to handle patients with severe injuries. Their prehospital management is usually improper and lack of proper transfer facilities, in ambulances, further aggravates their condition. We receive many such patients from peripheral hospitals, because of lack of proper facilities there. 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. Therefore, it is imperative that these patients be evaluated with a very high index of suspicion for above conditions. During their hospital stay, the role of paramedical staff is of paramount importance; their daily nursing care in absence of a relative is a challenging task. 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. We are blessed to be working at a level I trauma centre where because of existing infrastructure and very well trained staff, many unidentified patients with severe head injury have been rehabilitated. It is highly gratifying for the treating team to see such patients return back to our out patient department with their relatives.

We believe that there is an urgent need to sensitize the general public and police about the transportation and prehospital management of such severe head injury patients. Our 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 and only those patients who are in need of higher medical care should be referred to higher centre.

CONCLUSION

Unknown head injury patients are usually neglected. Outcome of these patients is poorer in comparison to patients who are accompanied by their relatives. Their management from prehospital to treatment and discharge from hospital is fraught with challenges. They need special care for which staff should be well trained and hospital must have economic resources. A good network of social workers helps in rehabilitating these patients.

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