RESEARCH ARTICLE

EVALUATION OF THE INCIDENCE, NATURE OF INJURY AND CLINICAL OUTCOMES OF HEAD INJURIES IN NORTH EASTERN PART OF INDIA

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ABSTRACT

Background: Incidence of head injuries/ traumatic brain injuries (TBI) is increasing day by day, and this is the major cause of morbidity and mortality in developing countries.

Aims & Objective: To evaluate the incidence, nature of injury and clinical outcomes of head injuries in North eastern part of India.

Material and Methods: 1300 patients of head injury were included in the study. On presentation a patient's clinical status was grossly assessed with the Glasgow Coma Scales (GCS). X-ray cervical spine in suspicious cases and Non contrast computed tomography scan was done of all head injury patients.

Results: 21-40 years age group (40.0%) was most commonly affected and most of patients (74%) were male. Road traffic accident (47.07%) was most common cause of head injury followed by fall from height (32%). Overall mortality in total head injury patient was 13%. According to GCS al 368 (43.5%) patients of severe head injury patient expired while mortality in moderate grade injury was 5.6% and 100% of mild head injury patients were saved. A total of 532 (40.92%) patients had skull bone fracture and among bone fracture simple bone fracture was most common.

Conclusion: Most of the injuries occur more commonly in certain age groups, at certain localities and mostly in male. So the knowledge about the causes and pattern of head injury may be extremely helpful in making preventive policies.

KEY-WORDS: Head Injury; Road Traffic Accident; GCS

Introduction

Incidence of head injuries/ traumatic brain injuries (TBI) is increasing day by day, and this is the major cause of morbidity and mortality in developing countries.[1-5] Some studies from India had been described the incidence of traumatic brain injury or head injuries[1,5-15], but there is lack of data's from eastern part of India, specially U.P., Bihar states. Epidemiological data from different regions are required to start appropriate preventive measures and for planning the necessary services. However, reliable statistics are difficult to extract from routinely collected data. This study was planned with the objective to evaluate the incidence, nature of injury and clinical outcomes of head injuries in North eastern part of India.

Materials and Methods

The study was conducted at Department of Neurosurgery, Institute of Medical Sciences, Banaras Hindu University, Varanasi between May 2007 to June 2009. Total 1300 patients of head injury who came in Casualty were included in the study. On presentation a patient's clinical status is grossly assessed with the Glasgow Coma Scales (GCS), the GCS with rating for eye opening response, motor response and verbal response. All subjects underwent details of history, clinical examinations and laboratory investigations. X-ray cervical spine in suspicious cases and Non contrast computed tomography scan was done of all head injury patients.

Results

Among all age groups 21-40 years age group (40.0%) was most commonly affected and most of patients (74%) were male [Table 1 & 2]. Road traffic accident (47.07%) was most common cause of head injury followed by fall from height (32%). Road traffic accident was the most common cause in age group 11-20 and 21-40 years and fall from

height was most common cause of head injury in <1 and 1-10 year age group [Table-3].

Table-1: Age Distribution

Age Group (Years)	Number of Patients	Percentage
<1	8	0.61
1-10	300	23.07
11-20	184	14.15
21-40	520	40.00
41-60	216	16.61
>60	72	5.53

Table-2: Demographic Profile of Patients

Profile of Patients		Number of Patients (%)
Sex	Male	964 (74.00)
	Female	336 (26.00)
Occupation	Housewife	152 (11.69)
	Farmer	348 (26.76)
	Businessmen	20 (1.53)
	Servicemen	232 (17.84)
	Retired	36 (2.76)
Socio-Economic status	Upper class	8 (1.00)
	Middle class	632(49.00)
	Lower class	660 (50.00)
Native Place	Urban	180 (14.00)
	Sub – urban	496 (38.00)
	Rural	624 (48.00)

Table-3: Incidence of Mode of Injury in Different Age Group

Age Group (Years)	Mode of Injury					
	Assault	Fall From Height	Fall of Object on Head	Road Traffic Accident	Sport Injury	Others
<1	0	8	0	0	0	0
1-10	8	212	28	44	8	0
11-20	36	36	4	108	0	0
21-40	64	100	20	336	0	0
41-60	64	36	12	96	4	4
>60	16	24	0	28	4	0
Total	188	416	64	612	16	4

Table-4: Comparison of GCS Score with Outcome

GCS Score	Outcome				Total
	Expired		Discharged		
	No.	%	No.	%	
Severe	160	43.5	208	56.5	368
Moderate	8	5.6	136	94.4	144
Mild	-	-	788	100	788
Total	168	12.9	1132	87.1	1300

In terms of occupation 512 (39.38%) students were most commonly affected by head injury followed by farmer (26.76%). Lower class people (50%) were affected by head injury followed by middle class people (49%). Sub urban people, 624 (48%) were most commonly involved followed by rural people, 496 (38%) [Table-2]. Overall mortality in total head injury patient was 13%. According to GCS al 368 (43.5%) patients of severe head injury patient expired while mortality in moderate grade injury was 5.6% and 100% of mild head injury patients were saved [Table-4]. CT scan findings were directly correlated with the increasing number of symptoms. A total of 532 (40.92%) patients had skull bone fracture and among bone fracture simple bone fracture was most common. Scalp laceration was present in 51.08%.Other intracranial lesions as shown in table 5, were also present. Among the systemic injuries recon eyes followed by long bone fracture were most commonly involved [Table-5].

Table-5: Computerized Tomography Scan (CT Scan) Findings

CT Scan Findings	N (%)
Skull fractures	532 (40.92)
Contusion	532 (40.92)
Scalp laceration	664 (51.08)
Extra Dural Hematoma (EDH)	316 (24.30)
Acute SDH	76 (5.84)
Chronic SDH	28 (2.15)
ICH	88 (6.77)
Subarachnoid Haemorrhage	160 (12.30)
Midline Shift	200 (15.4)
Pneumocephalous	120 (9.24)
Cervical spine	40 (3.07)
Abdominal Injury	84 (6.46)
Maxillofacial Injury	116 (8.92)
Chest Injury	94 (7.23)
Long bone injury	206 (15.85)
Pelvic injury	56 (4.30)
Raccon eye	274 (21.08)
Facial laceration	172 (13.23)

Discussion

Among all age groups 21-40 years age group (40.0%) was most commonly affected and most of patients (74%) were male.[4,7,8,10,15-18] In our study road traffic accident was most common cause 40.07% followed by fall from height (32%). In age group 1-10 year fall from height was most common cause. These findings are similar to some other studies.[4,6] In terms of occupation 512 (39.38%) students were most commonly affected by head injury followed by farmer (26.76%). Lower class people (50%) were affected by head injury followed by middle class people (49%). Sub urban people, 624 (48%) were most commonly involved followed by rural people, 496 (38%). These observations are also similar with some studies.[4,19] Mortality in total head injury patient was 13% and 87% patient discharged after treatment. In total 368 (43.5%) patients of severe

head injury patient expired and 56.5% patient discharged after treatment while mortality in moderate grade injury was 5.6% and 94.4% patients were discharged after treatment. 100% of mild head injury patients were saved and discharged. In mild head injury patient as number of symptoms increases, chances of CT lesions goes on increasing. There was no patient who presented asymptomatic early with moderate head injury. Similar to mild head injury chances of getting lesion with numbers of symptoms increases but has more chance than mild head injury. In severe head injury, if patient presents with four symptoms there is 100% chance of intracranial lesions. In some studies[7,14], incidence of subdural haemorrhage (SDH) and subarachnoid haemorrhage (SAH) was maximum in the victims of RTAs while extradural haemorrhage (EDH) was observed in the least, while in our study EDH was the most common finding. Total mortality due to head injury was 13% in the present study and was dependent according to severity of injury. In this study incidence of mild injury was 61%, moderate injury was 11% and of severe injury was 28%. Mortality in severe grade of head injury was 43.5% in moderate grade it was 5.6% and in mild grade of head injury it was 0%. In a TCCB study the mortality rate in severe TBI was about 33% and in another study in Central Virginia, the mortality rate in moderate TBI was found to be 2.5%.[20]

Conclusion

Pattern and causes of head injuries in present study are more or less similar to most of the other studies. Most of the injuries occur more commonly in certain age groups, at certain localities and mostly in male. The rate of incidence is higher in India because of its traffic patterns and possibly the lack of preventive. So the knowledge about the causes and pattern of head injury may be extremely helpful in making preventive policies.

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