ORIGINAL

Head Injury in Bir Hospital*

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Head injury is a common health problem throughout the world. The difference is only of the incidence and the way they are caused. The importance of disease is because of it's high mortality rate and irrepairable damage and disabling after-effects in those who are saved and it involves mostly the children and young people. In western countries road traffic accident is the major cause. Scottish hospital study shows 20% of head injury is caused by road traffic accident with 56% of deaths.[1]

In our country, fall is the main cause of head injury and road traffic accident is the next. Several factors play role for causing head injury. Development of new roads with improper traffic rules is also exposing the population of remote areas to this hazard. Study of head injury pt. attending emergency department and surgical ward of Bir hospital for last two years (2039 B.S. & 2040. B.S.)was done to know the impact of this disease. Every year 20,000-25000 pts attended emergency in one year, out of which 35-45% of the pts were having injury and 1.9-2.2% having head injury. Fall accounted for 60% and road traffic accident for 30-35% of cases. 75-85% had X-ray of skull taken. About 45% of the pts having head injury were admitted in hospital. Criteria for admitting in hospital are also discussed.

Methods

Our emergency department deals with all medical, surgical, orthopedic, obstetrical and eye & ENT emergencies. Most of the head injury pts. are admitted from emergency department. General surgical ward includes orthopaedic, accident, general surgery, head injury and paediatric surgery pts. Serious head injury ward established at the end of 2039. B.S. having four beds attends usually severe head injury requiring special care.

Retrospective study of pts. attending emergency during 2039 B.S. & 2040 B.S. was done from emergency record book and case-sheets. Patient were taken as head injury if presented with one or more of the following features.-

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1. Altered consciousness or repeated vomiting after relevant injury.
2. Skull X-ray showing fracture.
3. Scalp laceration after definite blow on head.
4. Bleeding from ear and nose after injury on head.

Results:

Incidence and hospital statistics (Table I)

In 2039 B.S., 25725 pts. attended emergency department, out of which 8938 (34.3%) had injury and 482 (1.9%) head injury. 180 (37.34%) pts. were admitted out of head injury pts. which is 7.57% of pts. admitted in surgical ward.

In 2040 B.S., emergency attendance was 20270 but precentage of injury increased to 43.6% and of head injury to 2.22% (52.44%) pts. were admitted out of head injury pts. which formed 9.11% of total admission in surgical ward.

Table I

Incidence & Hospital Statistics.

	2039. B.S.	2040.B.S.
Total emergency attendance	25725	20270
Total no. of pt with injury	8938 (34.3%)	8842(43.6%)
Total no. of pt with head injury	482 (1.88%)	450 (2.22%)
Total no. of admission in hospital	10693	10339
Total no. of head injury admission	180	236
Total no. of death in hospital	540	464
Total no. of death due to head injury	45	71

Age, Sex distribution and Cause of head injury. (Table IIA & IIB)

Fall from house roof while playing, kite, window, stairs, tree, hillside was the major cause of head injury and accounted for 58.1% in 2039. B.S. and 59.7% in 2040. B.S. of head injury. Out of total no. of head injury due to fall, 62.1% and 60.5% was present in age group 0-10 years in 2039. & 2040. B.S. respectively. Fall is less common in age group 16-30 years but incresing again in age group of above 40 years.

Road traffic accidents (vehicle occupants. pedestrians, motor cycle riders, passengers falling from running vehicle) accounted for 30-35% of head injury and increases as the age increases. Mostly affected by road traffic accident are males.

Physical assault represented about 3.3%-4.9% of head injury and common in age group of more than 20 years & in males.

Many of these pts. were young, 48-53% less than 15 years and 65-75% were under 25 years. About 15% were more than 40 years.

In general male: female ratio was 2:1 but in 16-30 years group 85% were represented by males.

Table IIA

Age, Sex distribution and Causes of head injury.

Age group	Sex	Cause of injury in 2039 B.S.				Total	Percentage
		Fall	RTA	Assault	Others		
0-5 yrs.	M	82	8	—	4	94	
	F	52	6	—	4	62	32.37%
6-10 yrs.	M	26	12	—	—	38	
	F	14	8	—	—	22	12.45%
11-15 yrs.	M	4	10	2	—	16	
	F	—	2	—	—	2	3.73%
16-20 yrs.	M	22	24	2	2	50	
	F	4	2	—	—	6	11.62%
21-25 yrs.	M	2	10	2	2	16	
	F	4	4	2	—	10	5.39%
26-30 yrs.	M	6	22	6	2	36	
	F	2	—	—	—	2	7.88%
31-35 yrs.	M	6	10	—	—	16	
	F	2	2	—	—	4	4.15%
36-40 yrs.	M	6	6	2	—	14	
	F	6	4	—	—	10	4.98%
41-above yrs.	M	26	26	—	2	54	
	F	16	14	—	—	30	17.43%
TOTAL		280	170	16	16	482	100%
		In 2040. B.S.					
0-5 yrs.	M	61	10	—	—	71	
	F	55	10	—	1	66	30.44%
6-10 yrs.	M	25	12	—	—	37	
	F	22	8	—	1	31	15.11%
11-15 yrs.	M	12	12	2	1	27	
	F	9	4	—	—	13	8.89%
16-20 yrs.	M	15	16	2	2	35	
	F	5	3	—	1	9	9.78%
21-25 yrs.	M	7	13	5	3	28	
	F	4	2	—	—	6	7.56%
26-30 yrs.	M	7	11	1	2	21	
	F	5	—	—	—	5	5.78%
31-35 yrs.	M	3	7	3	—	13	
	F	3	—	—	—	3	3.56%

36-40 yrs.	M	4	6	3	—	13	
	F	3	3	—	1	7	4.44%
41-above yrs.	M	20	14	5	4	43	
	F	9	10	1	2	22	14.44%
Total		269	141	22	18	450	100%

Table IIB

Causes of head injury with percentage.	2039. B.S.	2040. B.S.
Fall	280(58.1%)	269(59.7%)
Road Traffic Accident	170(35.2%)	141(31.4%)
Physical assaults	16(3.3%)	22(4.9%)
Others	16(3.3%)	18(4.0%)
Total	482(100%)	450(100%)

Presentation (Table III)

Head injury pt. usually presented with a history of unconsciousness lasting for minutes to few hours and comprised for 35-40%. Out of which 50% were having altered level of consciousness at the time of examination in emergency. 12-15% were unconscious at the time of examination representing severe brain damage.

Repeated vomiting is common among age group below 10 yrs. and 20-25% presented with this symptom. Bleeding from ear and nose after blow on head was 8-11%. Laceration of scalp 20-23%. Haematoma of scalp 10-15% and Multiple injury in 5-10% of cases.

Table III

Presentation	2039. B.S.	2040. B.S.
H/o Unconsciousness	200	152
Altered consciousness	102	76
Unconscious	60	70
Vomiting	110	115
Bleeding ear/nose	40	50
Laceration of scalp	100	105
Haematoma scalp	54	100
Multiple injury	20	30

Investigation:

75-85% of pts had X-ray of skull taken of which fracture of skull was reported in 7%. In admitted pt. echo-encephalogram and carotid angiography was done in relevant cases.

Admission to the hospital:

In 2039 B.S. 37% of head injury pt attending emergency department were admitted. As there was no head injury ward and no definite criteria for admission all pt. were admitted in general surgical ward (G.S.W.).

In 2040 B.S. 52% of head injury pt. attending emergency were admitted. Of which 61.44% were admitted in general surgical ward, whereas 38.56% were in severe head injury ward.

In total, 7.5%-9.0% of admission in surgical ward were due to head injury with mean duration of hospital stay as 5,5 days.

Criteria for admission:

Following criteria were followed for admission in head injury ward and general surgical ward.

In Head Injury Ward-

1. Loss of consciousness with suspicion of having brain damage.
2. Focal signs leading to suspicion of haematoma or other lesions.
3. Deteriorating coma scale or coma scale below 9.
4. Patients needing intra-cranial tension monitoring.
5. Head injury pts. going for craniotomy.

In General Surgical Ward or observation in Emergency.

1. Patients Who have fracture skull as indicated by-
   - — Radiograph
   - — Orbital/Retromastoid haematoma.
   - — C.S.F. leaking from ear or nose/Bleeding from ear or nose.
2. Patients with depressed fracture of skull.
3. Patients who have amnesia, confusion, severe headachre or vomiting especially in children.
4. Patients who have head injury and impaired sensorium inspite of alcohol consumption.

Final Outcome: (Table IV).

482 pts. with head injury attended emergency in 2039 B.S., 58.9% were disposed from emergency. 31.3% of total were discharged with no deficit after admission and 0.41% were discharged with disability. 5.6% expired in the ward and 3.75 expired in emergency.

450 pts. with head injury attended in 2040 B.S. of which 43.7% were disposed from emergency and 37.5% were discharged with no deficit after admission. 2.8% discharged with disability after admission. 12.0% expired in the ward whereas 3.7% in emergency.

Table IV

Final outcome	2039. B.S.	2040. B.S.
Disposed from emergency	284 (58.92%)	197 (43.78%)
Disposed with no deficit after admission	151 (31.33%)	169 (37.56%)
Discharged with disability after admission	2 (0.41%)	13 (2.89%)
Death in wards + L.A.M.A.	27 (5.6%)	54 (12.0%)
Death in emergency	18 (3.73%)	17 (3.78%)
Total	482 (100%	450 (100%)

Thus, mortality rate of head injury in our hospital is 10-15%, and accounted for 8-15% of total deaths in hospital. Out of head injury deaths in ward majority were due to road traffic accidents.

Discussion:

Incidence rate of head injury in our study is too less as compared withs scottish hospital study but age & sex distribution did not differ significantly. In our study, only 2-2.5% of pts attending emergency were having head injury wheras in Scottish hospital 6-16% had head injury.[2] 43% were less than 15 years compared with 48-53% in our study.[3] Sex ratio is similar to our study i.e. male female ratio is 2:1. 85% of those aged 16-30 years were males in our study as compared to 80% in Scottish hospital study.[3]

However, the cause of head injury is quite different. Fall is the major cause in our context but road traffic accdent in theirs, even then the precentage due to RTA is higher in our study. Severity of injury due to R.T.A. is also different. Due to high speed and associated alcohol consumption head injury is more severe in western countries, as their data shows 56% of head injury deaths are due to RTA compared to 30-40% of RTA deaths in our study[2], X-ray of skull taken and no. of fracture reported is also high in our study i.e. 58% to 75-80% and 2.7%-7% respectively. Admission rate is also double than the Scottish hospital but similar to Vancouver hospital.

Conclusion:

It is clearly understood from the above study, the incidence of head injury is increasing day by day resulting into high morbidity and great loss to the community. Mortality of head injury is higher than other injuries. Investigations and treatment of head injury is expensive and final outcome in severely injured pt is poor, either dies or lives with severe disability. High mortality rate is due to, detayed arrival of the pt at the hospital because of their poor health knowledge and as the pts are serious the pt's relative prefer to take pt to Ghat, which causes delay in proper observation and treatment and on the other hand, even now diagnosis of intra-cranial injury is missed due to non-availability of diagnostic aids as C.T. scan. Thus possesing great hurdle to improve the situation.

Effect of Head Injury:

On one hand, head injury, as other injuries causes physical & mental trauma to the

person involved and socio-economic effect to the family involved and on the other, causes great losses of money and manpower to the community. Loss of manpower is due to it's high mortality rate and severe disability. Drugs used in head injury pt as corticosteroids, mannitol, antibiotics are costly. Investigations as X-ray skull, echo-encephalography, carotid angiography and CT scan are expensive. CT scan is not available in the country but soon will be available and one head injury pt has to get repeated scanning. Hospital stay in severe head iniury pt is longer with increasing hospital expenses.

Prevention of Head Injury:

Our Nepalese society is characterised by large family, low education level and poverty. Usually in the family mother is also busy and there is nobody to look after the children or are looked by older chidren, who can not care themselves. Architecture of houses, stairs and windows are also hazardous to young and old. In the hilly region, living condition predisposes to such hazard. Thus all these factors predisposes the population to head injury due to fall. On the other hand, RTA is also increasing which is due to development of new roads with poor traffic rules, ignorance of general public to traffic rules. In Kathmandu, motorcycle accidents are also not uncommon which injures the young population due to uncontrolled speed & increasing alcohol consumption. In highway, accidents are due to passenger load as well as poor conditions of vehicles and untrained drivers.

It is difficult to prevent head injury but if we can point out the hazardous condition so are can be aware of it. Improvement of education status of general public is the main-stay regarding this. Health education regarding gchild care and injuries and first aid measures should be given. Government has to implement strict rules regarding architecture of houses before they are built so as to prevent youngster and eldeh to get this hazard. License should be strict and should be given on the basis of ability of drivers and not others. In the highway, there should be strict & regular vehicule checkup and passenger load checkup and patrolling should be done by police honestly. Helmet should be made compulsory to motorcycle riders. General education of public regarding traffic rules including audio-visual aids should be given to improve the situation.

References:

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