Study of Head Injuiry Patients at a Tertiary Health Care Center

Simran Singh[1], Shyam Lal Thukral[2], Ishan Bansal[3], Sham Sunder Goyal[4]

ABSTRACT

Introduction: Head injury is an important cause of high morbidity and mortality, particularly in young and productive age group patients. According to the World Health Organization report on road safety, RTAs would be the fifth leading cause of death worldwide by the year 2030. Majority of the head injuries are consequences of road traffic accidents (RTAs), falls, assaults, or injuries, occurring either in the workplace, during sport, etc. Present study was aimed to study patients with head injury coming to our tertiary care center.

Material and Methods: Present study was a prospective, observational type, conducted in patients with head injury who were admitted under the department of surgery during study period.

Results: After applying inclusion & exclusion criteria, total 230 patients were considered for present study. 57% patients were from 21-50 years age group. Male to female ratio was 2.6:1.Road traffic accidents (63%) was most common cause of head injury in present study followed by assaults (20%) &fall from height (10%). 63% patients had mild head injury, while 21% & 16% patients had moderate & severe head injury respectively. Total 17% deaths were noted in present study. Outcome worsens with worsening of severity of head injury.

Conclusion: Trauma remains leading cause of head injury in present study. Necessary preventive measures & vigorous training of all medico & para-medico staff for early management of head injury can definitively reduce mortality & morbidity due to head injury.

Keywords: Head Injury, Mortality, Glasgow Coma Score

INTRODUCTION

Head injury is an important cause of high morbidity and mortality, particularly in young and productive age group patients. The burden of head injury is greatest in low and middle income countries (LAMIC), where 85% of the worlds population live.[1] According to the World Health Organization report on road safety, RTAs would be the fifth leading cause of death worldwide by the year 2030.[2] Majority of the head injuries are consequences of road traffic accidents (RTAs), falls, assaults, or injuries, occurring either in the workplace, during sport, etc.

Commonly vehicular accidents happen with two wheelers due to large number of 2 wheel vehicle, poor road condition. The most prominent and vulnerable part of human body is head which is more vulnerable for injury in road traffic accidents. External forces hitting the head hard enough to cause brain movement cause traumatic brain injury (TBI). Injuries include those with skull fracture and those without skull fracture (closed head injuries). Acceleration, deceleration, rotational forces, and penetrating objects act to cause tissue laceration, compression, tension, shearing, or a combination, resulting in primary injury.[3] The lethality of injury depends on amount of strike force, skull properties at the point of the contact, thickness of scalp, amount of hair and thickness and elasticity of individual skull, etc.[4]

Present study was aimed to study patients with head injury coming to our tertiary care center.

MATERIAL AND METHODS

Present study was a prospective, observational type, conducted in department of surgery, Adesh medical college, Bathinda. Duration of study was 1 year (August 2018-August 2019). Approval was obtained from institutional ethical committee for present study.

Inclusion criteria

All patients with head injury who were admitted under the department of surgery during study period were included in present study.

Exclusion criteria

Patients referred after 24 hrs of head injury, operated outside, not willing to participate in present study & unknown patients were excluded.

Written informed consent was taken from relatives of patients for participation in present study. Demographic, clinical details collected from history & clinical records available. All patients were managed as per standard operative protocols of department. Laboratory investigations done were hemoglobin, total and differential leukocyte counts, hematocrit, blood urea and serum creatinine, random blood sugar, and serum electrolytes, X-rays skull, chest, limbs, and spine & Plain CT head were done in each patient on admission. Outcome was measured at the time of discharge using Glasgow outcome scale. Follow up was kept till 3 months from discharge. Statistical analysis was done using

[1]Assistant Professor, Department of Neurosurgery, [2]Associate Professor, Department of Anesthesiology & Intensive Care, [3]Assistant Professor, Department of Anesthesiology & Intensive Care, [4]Associate Professor, Department of Anesthesiology & Intensive Care, Adesh Institute of Medical Sciences and Research, Bathinda -151001, India

Corresponding author: Dr. Shyam Lal Thukral, Associate Professor, Anesthesiology & Intensive Care, Adesh Institute of Medical Sciences and Research, Bathinda 151001, India

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Age group (years)	Male	Female
Up to 10	23 (10%)	14 (6%)
11-20	27(12%)	13 (6%)
21-30	42 (18%)	14 (6%)
31-40	41 (18%)	13 (6%)
41-50	17 (7%)	5 (2%)
51-60	7 (3%)	2 (1%)
Above 60	7 (3%)	5 (2%)
Total	164(71%)	66(29%)

Table-1: Age & gender distribution

Mode of injury	Number of cases	Percentage
Road traffic accidents	144	63%
Assaults	47	20%
Fall from height	24	10%
Miscellaneous	12	5%
Falling objects	3	1%
Total	230	

Table-2: Causes of head injury

Glasgow coma score	Total (Percentage)	Glasgow outcome score				
		Death	Persistent vegetative state	Severe disability	Moderate disability	Good recovery
Mild (13-15)	144 (63%)	11	2	1	0	130
Moderate (9-12)	49 (21%)	15	4	3	6	21
Severe (3-8)	37 (16%)	13	6	7	6	5
Total (Percentage)	230	39 (17%)	12 (5%)	11 (5%)	12 (5%)	156 (63%)

Table-3: Glasgow coma score on admission & Glasgow outcome score on discharge

Associated injuries	Number of cases	Percentage
Extremities fracture	48	21%
Cervical spine	31	13%
Lung and Pleura	22	10%
Dorsal spine	15	7%
External injuries of head		
Scalp	188	82%
Face	124	54%

Table-5: Lesion on CT scan in head injury patients

Lesions	Number of cases	Percentage
Contusions	115	50%
Fractures	92	40%
Brain edema	81	35%
Extradural hematoma	54	23%
Subdural hematoma	35	15%
Subarachnoid bleed	25	11%
Intraventricular blood	18	8%
Diffuse axonal injury	11	5%
Infarcts	8	3%
Pneumocephalus	6	3%
Brain stem lesions	3	1%
Subdural effusions	2	1%

Table-5: Lesion on CT scan in head injury patients

descriptive statistics.

RESULTS

After applying inclusion & exclusion criteria, total 230 patients were considered for present study. 57% patients were from 21-50 years age group. Male to female ratio was 2.6:1. (Table 1)

Road traffic accidents (63%) were most common cause of head injury in present study followed by assaults (20%) &fall from height (10%). (Table 2)

Post-resuscitation GCS (Glasgow coma score) was used for categorizing the severity of head injuries. Based on the post-resuscitation GCS, the head injury was categorized as minor head injury (GCS 13-15), moderate head injury (GCS 9-12) and severe head injury (GCS 8 or less). 63% patients had mild head injury, while 21% & 16% patients had moderate & severe head injury respectively. Total 17% deaths were noted in present study. Outcome worsens with worsening of severity of head injury. (Table 3)

Most road traffic accidents & fall from height patients had multiple injuries. Fractures in extremities (21%), cervical spine (13%), lung and pleura (10%), dorsal spine (7%) were common associated injuries noted in present study. (Table 4)

On CT scan multiple lesions were present in same patient. Contusions (50%), fractures (40%), brain edema (35%), *extradural* hematoma (23%), subdural hematoma (15%) were common findings noted. (Table 5)

DISCUSSION

Trauma is a major cause of morbidity and mortality in both developed and developing countries. The usual causes are road traffic accidents (RTAs), fall from height, occupational injuries, and assault. Mortality & morbidity due to head injury can be easily prevented by prevention & adequate management in first golden hour.

In our study, 21-50 years age groups (57%) were the major suffers which are similar to other studies.[5] We noted male to female ratio as 2.6:1. Similar male preponderance is also observed in many other studies.[5] Men for the livelihood are away from homes in comparison to women who are usually housewives. The majority of the drivers or mechanics in the vehicles or machinery as a profession are men who increase the risk of accidents more in men. Males are predominantly engaged in outdoor activities and operation of automobiles and hence are more vulnerable to injuries.

Road traffic accident was the leading cause of severe head injury accounting for 63% of patients. It was followed by

assault (20%) & fall (10%) which is similar with other studies.[6] Severe head injury accounts for more than 50% of trauma-related deaths; these usually occur following road traffic accidents, assaults, and falls. Fakhry*et al.* in their study found 28.8% mortality rate of severely head injured patients.[7] It has also been shown that developing (low and middle income) countries have a pooled mortality rate of 51% for severe head injuries as compared to 30% for high income countries.[1] The need to implementation of safety protocols and the future progression of the injury burden was emphasized by WHO way back in 1990's, stating trauma will ascend the top 10 causes of disease burden from the ninth position to third by 2020 globally.[1] Agrawal D et al noted an overall mortality of 22% with the mortality for severely head injured patients being is 36%.[8]

Alcohol consumption in drivers is also a major cause contributing factor in road traffic accident cases. Narwade N et al[9] noted 62.4% alcohol consumption in their study. Alcohol consumption in drivers contributed not only to their injuries but also caused significant harm to other vehicular passengers and pedestrians. Chaudhury et al.[10] found GCS<8, advanced age, dilated pupil, extensor rigidity, and altered blood pressure as risk factors with bad prognosis.

Scalp injury with skull fracture along with intracranial hemorrhage was the most common presentation of head injury. The predominance of contusion and laceration in scalp can be explained by the heavy blunt force, loose areolar space available for blood accumulation beneath scalp, minimal musculature of the scalp and the velocity of victim to fall on the ground.[11] Studies have reported 34 to 35% of skull fractures among traumatic brain injury patients.[12]

Between 5% and 10% of head injuries have an associated cervical spine injury.3 Such an injury can be excluded in almost all cases with a combination of computed tomography (CT), magnetic resonance imaging, or flexion-extension radiography of the neck and should clinical suspicion indicate it.

CONCLUSION

Trauma remains leading cause of head injury in present study. Necessary preventive measures & vigorous training of all medico & para-medico staff for early management of head injury can definitively reduce mortality & morbidity due to head injury.

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