Journal of Cardiovascular Disease Research

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 08, 2022

ORIGINAL RESEARCH

Management and outcome of road traffic accident cases- an institutional based study

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Abstract

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 world's population live.The aim of this study was to study the hospital stay and outcome of head injury in patients admitted due to road traffic accidents in J.K. hospital.

Material and Methods: The present observational hospital based study was conducted among 61 patients of road traffic accident. On admission to the emergency department, all resuscitative measures were followed according to the Advanced Trauma Life Support (ATLS) guidelines. Data were compiled and analyzed using SPSS version 22. If p value was less than 0.05, then it was taken as statistically significant.

Results: Out of 61 cases, 91.8% were non-operated and 8.1% were operated. Out of 61 cases, ≤1 hospital stay was in 61.7% cases, 2-4days hospital stay were in 20 cases, 5-8 days hospital stay were in 11.67% cases, >8 days hospital stay were in 6.67% cases. Out of 61 cases, 3.3% were dead, 90% cases were discharged, 3.3% cases were Left against medical advice and 3.3% cases were referred.

Conclusion: Appropriate medical care facilities need to be established at District level, Sub-divisional/Tehsil level and Block levels to provide without delaying and quality care to head injury patients.The facilities at referral centre for the treatment of head injury patients need to be upgraded to cater to ever-increasing number of such patients.

Keywords: Head injury; Road accident; Trauma

Introduction

National Advisory Neurological Diseases and Stroke Council define Craniocerebral injury or Head injury as "a morbid state, resulting from gross or subtle structural changes in scalp, skull, and/ or the contents of the skull, produced by mechanical forces". Here, the forces are restricted to those that are applied externally to the head, thus excluding the surgical ablations and internally acting forces such as increased intracranial pressure resulting from oedema, hydrocephalus and mass occupying lesions without any antecedent trauma to the head.[1]

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.[2] According to the

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 08, 2022

World Health Organization report on road safety, RTAs would be the fifth leading cause of death worldwide by the year 2030.[3]

To determine the outcome in head injury patients, quality assistance of medical aid and emergency room care are extremely important contributing factors. Trauma with a head injury and associated injuries demands rapid management and interventions to save lives and permanent disabilities.[4]Many factors which also determine the outcome in head injury patients are namely age, sex, mode and severity of the injury, intracranial pathology and associated injuries.[5]

The aim of this study was to study the hospital stay and outcome of head injury in patients admitted due to road traffic accidents in J.K. hospital.

Material and Methods

The present observational hospital based study was conducted among 61 patients of road traffic accident who were admitted at L.N. Medical College & Research center and associated J.K Hospital Bhopal. Study was commenced over a period of 24 months i.e. between December 2019 and November 2021. Inclusion criteria consisted of patients of Head injury admitted to the JK Hospital with age ≥ 13 Years and those who gave consent for study. Exclusion criteria consisted of age ≤13 years, patients presenting late (>1week), patients brought dead, those who lost to Follow up and those who do not give consent for study.

All patients meeting the inclusion criteria were enrolled in this study. On admission to the emergency department, all resuscitative measures were followed according to the Advanced Trauma Life Support (ATLS) guidelines. Data of the patients were recorded as per the working pro forma to record the detailed description of injury, treatment given and discharge /death was recorded. No special investigation was done. We divided the patients in the score group, as per the triage pattern for the trauma patients with score 0–8 mild, 9–15 moderate, 16–25 severe, 26–49 very severe and ≥ 50 lethal and score of 16 or more was considered polytrauma. The patients who were discharged or referred to a higher center for further management were also followed up to 30 days of admission and any mortality occurring was also recorded. Data were compiled and analyzed using SPSS version 22. (IBM Corporation , New York U.S). Categorical data were analyzed using percentages. Statistical tests like t test and chi square test were used. If p value was less than 0.05, then it was taken as statistically significant.

Results

Out of 61 cases, 91.8% were non-operated and 8.1% were operated (table 1). Out of 61 cases, ≤1 hospital stay was in 61.7% cases, 2-4days hospital stay were in 20 cases, 5-8 days hospital stay were in 11.67% cases, >8 days hospital stay were in 6.67% cases. Mean days of hospital stay were 2.63 days (table 2). Minimum day of hospital was 1day; maximum (operated) days of hospital stay were 14 days. Mean days of hospital stay were 2.64 days (table 3). Out of 61 cases, 3.3% were dead, 90% cases were discharged, 3.3% cases were Left attended without medical attention and 3.3% cases were referred (table 4, graph 1). Out of 36 cases of RTA, 27.7% vehicle had alleged speed of 30-40Km/hr, 22.2% vehicle had alleged speed of 41-50Km/hr, 41.6% vehicle had alleged speed of 51-60Km/hr, 0% vehicle had alleged speed of 61-70Km/hr and 8.3% had alleged speed more than 70Km/hr (table 5). Table 6 shows comparison of hospital stay and outcome.

Table 1: Treatment among the study subjects

Treatment	No. of patients	%
Operated	5	8.1
Non-operated	56	91.8
Total	61	100

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Table 2: Hospital stay among the study subjects

Hospital Stay (in days)	No. of patients	%
≤1	38	61.7
2-4	12	20
5-8	7	11.67
>8	4	6.67
Total	61	100
Mean±SD	2.63±3.08	

Table 3: Hospital stay

Hospital Stay Chart	Days
Minimum	1 Day
Maximum (Operated)	14day
Mean	2.64 Day
Standard Deviation	2.69

Table 4: Outcome among the study subjects

Outcome	No. of patients	%
Death	2	3.3
Discharge	55	90
LAMA	2	3.3
Referred	2	3.3

Graph 1: Outcome among the study subjects

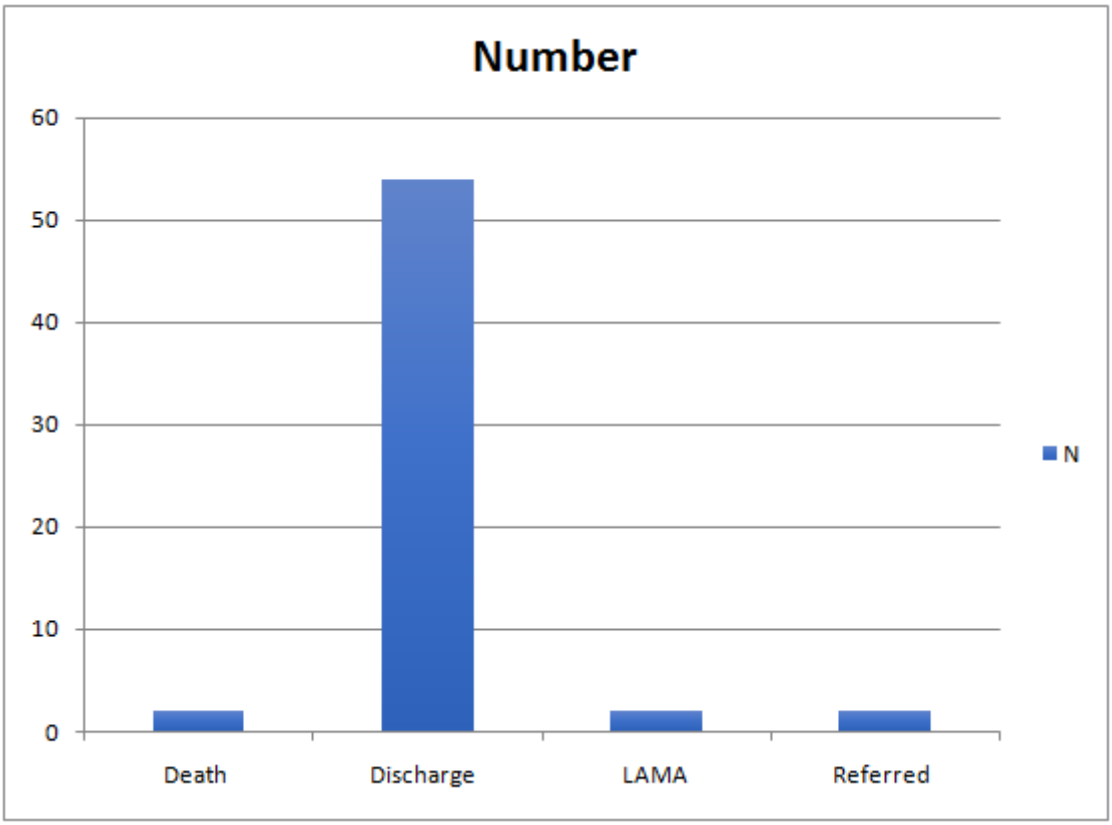

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Table 5: RTA cases speed wise

Alleged speed of vehicle KM/HR	Number of RTA cases	Percentage
30-40	**10**	**27.7**
41-50	**8**	**22.2**
51-60	**15**	**41.6**
61-70	**0**	**0**
MORE THAN 70	**3**	**8.3**
TOTAL	**36**	**100**

Table 6: Comparison of hospital stay according to outcome

Outcome	Mean Hospital Stay	SD	t test	p value
Death	3.50	3.54	0.16	0.69
Discharge	2.64	3.09		

Discussion

The National Advisory Neurological Diseases and Stroke Council (NANDSC) defines head Injury as a morbid state, resulting from gross or subtle structural changes in the scalp, skull and/or the contents of the skull, produced by mechanical forces. Majority of fatalities in trauma cases occurs due to head injury.[6]Unintentional injuries contribute 66.0% of all injury deaths and 70.0% of injury Disability Adjusted Life Years (DALYs). Road Traffic Injuries (RTI) contribute a large among unintentional injuries in low middle income countries. Estimates suggest that New Delhi has the highest number of road side accidents in India.[7]Unintentional head injury varies with extremes of outcome from good recovery to death. 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.[8]

It is observed that the victim is more vulnerable in frontal collision, side collision and if hit by heavy motor vehicle. Head injury is also caused by the assault as a common reason and pattern of injuries depends upon type of weapon.[9]

Out of 61 cases, 91.8% were non-operated and 8.1% were operated. Bhole Anil M *et al.*, in their study managed 81% cases conservatively and only 19% cases required surgical intervention mainly for significant intracranial hematomas and compound fractures.[10] Accordind to Shekhar C et al overall 89% cases were managed conservatively and rest 11% cases were managed surgically.[11]

Out of 61 cases, ≤1 hospital stay was in 61.7% cases, 2-4days hospital stay were in 20 cases, 5-8 days hospital stay were in 11.67% cases, >8 days hospital stay were in 6.67% cases. Mean days of hospital stay were 2.63 days.

Minimum day of hospital was 1day; maximum (operated) days of hospital stay were 14 days. Mean days of hospital stay were 2.64days.

Out of 61 cases, 3.3% were dead, 90% cases were discharged, 3.3% cases were Left against medical advice and 3.3% cases were referred.

According to a Malaysian study, MVAs were the frequent cause of head injury worldwide, after accidents at home, workplace, and during a sports event. 10% of patients were referred to higher centers, 29% went through the rehabilitation process, and 68% were discharged. Based on the findings, head injury was one of the increasing (7.86%) causes of hospitalization in Malaysian government hospitals in 2014.[12]

Alnaami I et al found in the study that 34% patients went to rehabilitation centers, 63.2% were discharged, and 2.8% were referred to other centers during the acute phase based on either family'/patient's request.[13]

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Out of 36 cases of RTA, 27.7% vehicle had alleged speed of 30-40Km/hr, 22.2% vehicle had alleged speed of 41-50Km/hr, 41.6% vehicle had alleged speed of 51-60Km/hr, 0% vehicle had alleged speed of 61-70Km/hr and 8.3% had alleged speed more than 70Km/hr.
As the maximum number of cases of head injury is due to vehicular accidents and proved to be fatal for life, the safety measures, for both the drivers and the passengers of the respective vehicles should be addressed. Awareness of safety rules should spread through the society by judicious use of multimedia facilities available to us in the modern era. Speed limit for different type of vehicles should be implemented strictly. Helmet use for two wheeler motorized vehicle should be made mandatory.[14]

Conclusion

Appropriate medical care facilities need to be established at district level, sub-divisional/tehsil level and block levels to provide without delaying and quality care to head injury patients.The facilities at referral centre for the treatment of head injury patients need to be upgraded to cater to ever-increasing number of such patients.
In India personalized vehicles are increasing with the same growth rate. Projection of the present trend of vehicles usage reveals a rather ugly and unsustainable situation both in terms of traffic congestion and safety. Most important method to bring down accidents is strict enforcement of speed limits. Driving tests for issue of driving license is to be made more stringent and foolproof. Lower age limit for two wheeler and Heavy Vehicle license should be raised to 21. Helmet should be made compulsory by law in all countries and existing traffic rules should be strictly enforced. Newspaper, television and other media should be effectively used for public safety awareness.

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ISSN: 0975-3583,0976-2833 VOL13, ISSUE 08, 2022

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