

Original Article***Epidemiological Profile of Cranio-Cerebral Injuries in a Tertiary Care Hospital – A Retrospective Analysis***

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Abstract

Cranio-cerebral injuries are among the most serious consequences of trauma, often resulting in high morbidity and mortality. The present study was carried out at a tertiary care hospital, Bogura for duration of three years. This study was conducted on 185 cases, which were directly brought to mortuary for postmortem examination from the site of incidence. The objective of this study is to find out the pattern of skull fractures irrespective of cause of injury. Linear fracture was found to be more common among the total no of cases. In the present study it was observed that skull fractures are more commonly seen in assault cases. In this study it is observed that extradural hemorrhage is most commonly associated with motor cycle riders. It has been also noticed that younger age group (20-30 years) are most commonly effected age group.

Key words: *Cranio-cerebral injury, skull fracture, hemorrhage and autopsy, trauma, road traffic accident.*

Introduction

Cranio-cerebral injuries, also known as traumatic brain injuries, are a major global health concern, particularly in low- and middle-income countries. Due to rapid surge in urbanization, motorization and economical liberation, many Asian countries have an increased risk of traumatic brain injuries (TBI) as well as cranio-cerebral injuries. Cranio-cerebral injuries accounts for the most serious injuries in terms of morbidity and mortality¹. Cranio-cerebral injuries is one of the most devastating types of injury. It affects all ages; however majority of road traffic injuries (RTI) occurs in young adult of productive age group. Cause of Cranio-cerebral injuries may be assault, RTA, fall from height and even fall on ground¹. Head is the most common part injured in road traffic accident as it is the most prominent and vulnerable part of human body by virtue of its situation and to sustain serious and fatal injuries owing to the great risk of striking the head². Depending upon the severity of violence involved, cranio-cerebral injuries can be associated with injury to the scalp skull intracranial hemorrhages and injury to brain tissue². Skull fracture that is an indicator for more several internal brain injury and is frequently associated with development of intracranial hematoma. Cranio-cerebral injuries are a major public health problem and have already attained epidemic proportion in India. As a result cranio-cerebral trauma places a huge financial and psychological burden upon the society³.

Material and Method

The present study was carried out at Shaheed Ziaur Rahman Medical College, Bogura, Bangladesh, for period of three years from January 2022 to December 2024. This study was done on 185 cases, which were directly brought to mortuary for postmortem examination from site, irrespective of cause of injury. Hospitalized and operated cases were excluded from the present study. The present study has been carried out after obtaining the ethical clearance and consent from the relatives to collect the relevant information. Meticulous postmortem examination was done, skull and brain was specifically studied for the presence of fracture, hematoma, hemorrhage and injury to the brain tissue. To study the fractures and other injuries, magnifying lenses and measuring tape were used. Detailed study of police inquest and police record was done.

All data were collected and analyzed.

Results

The results of the present study which was carried on 185 cases at Shaheed Ziaur Rahman Medical College, Bogura, Bangladesh, for period of three years, which were directly brought to mortuary for postmortem examination from site, irrespective of cause of injury are as follows.

Table I: Pattern of skull fractures according to the type of cases.

Case	No of Cases	Percentage %
Motor Cycle Rider	64	34.59 %
Assault	53	28.64 %
Three Wheeler Rider	41	22.16 %
Four Wheeler Accident	10	05.40 %
Railway Accident	09	04.86 %
Fall From Height	08	04.32 %
Total	185	100%

In Table I, in the present study we found that skull fractures are more commonly seen in motorcycle rider’s cases that is 64 cases (34.59%), followed by assault 53 cases (28.64%), least commonly seen in fall from height 08 cases (04.32%).

Table II: Pattern of type of skull fracture.

Type of Fracture	No of Cases	Percentage %Li
Linear	71	38.37
Depressed	58	31.35
Comminuted	49	26.48
Signature	04	2.16
Ring	02	01.08
Sutural	01	0.54
Gutter	00	00
Ponds	00	00
Total	185	100 %

In Table II, most common type of fracture seen is linear fracture that is 71 cases (38.37%), followed by depressed fracture 58 cases (31.35%), and least common type of fracture seen is sutural fracture only 01 case (0.54%). Gutter fracture and ponds fracture are not seen in any cases of this study.

Table III: Pattern of intracranial hemorrhage associated with skull fracture.

Type of Cerebral Haemorrhage	No of Cases	Percentage %
Extradural	121	33.51
Subdural	53	28.64
Subarachnoid	41	22.16
Intracerebellar	29	15.67
Total	185	100 %

In Table III, we found that the most common type of Intracranial hemorrhage is extradural hemorrhage that is 121 cases (40.88%), followed by subdural hemorrhage 102 cases (34,46%). least common type of intracranial hemorrhage is intra cerebral hemorrhage 12 cases (4.06%) and is always seen with one or the other type of intracranial hemorrhage.

Table IV: Pattern of skull fractures according to the age group and sex

Age Group	Male	Female	No of Cases	Percentage %
0-10 Years	05	02	07	03.78%
11-20 Years	26	11	37	14.05%
21-30 Years	39	15	54	29.18%
31-40 Years	41	08	49	26.48%
41-50 Years	18	10	28	15.13%
51-60 Years	07	01	08	04.32%
>60 Years	01	01	02	01.08%
Total	137	48	185	100%

Table IV, in this present study we also found that most commonly effected age group of victims is 21-30 years which is 54 cases (29.18%), followed by 31-40 years 49 cases (26.48%). least commonly effected age group is 60 years only 02 case (01.08%). It is also seen that males (74.05%) are most commonly affected as compare to females (25.94%).

Discussion

The present study was carried out at Shaheed Ziaur Rahman Medical College, Bogura, Bangladesh, for period of three years. This study was done on 185 cases, which were directly brought to mortuary for postmortem examination from site, irrespective of cause of injury. This study shows that the skull fractures are more common in motorcycle riders cases that is 64 cases (34.59%) 56 followed by assault 53 cases (28.64%). Similar findings were observed by Kirti jaiswal et al⁴ The most common type of fracture seen is linear (38.37%) followed by depressed fracture. Similar findings are observed by Sreekanth S Nair⁵ The most common intracranial hemorrhage seen is extradural hemorrhage (33.51%), followed by Subdural hemorrhage (22.16%), similar findings were observed by Rahman MA⁶ The majority of the victims in this study are of 21-30 years age group (29.18%), followed by 31-40 years age group. Similar findings were observed by S Gowda H⁷. and Dhakankar S⁸.

Conclusion

From the present study we observed that, the skull fractures are most commonly seen in motor cycle

accidents, followed by assault. Majority of the victims in this study are of 21-30 years i.e. nothing but the younger age group. Most common type of fracture is linear fracture, followed by depressed fracture. Most common type intracranial hemorrhage was extradural hemorrhage.

Prevention

So road traffic accident and assault is an unfortunate economical burden for a developing country like Bangladesh. Cranio-cerebral injuries due to Road traffic accidents are recognized as a major health problem causing death and disabilities among the population of this country. Mortality and morbidity due to vehicular accidents cannot be stopped completely but it can be definitely reduced by implementing strict road traffic rules as well as by improving road conditions by concerned authorities, at the same time users of the road and vehicles also realize their responsibility in following traffic rules. Awareness programmed regarding proper protective measures and effect of intoxicating substances on ones driving ability, help in preventing their injuries by accidents.

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