IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 18, Issue 6 Ser. 8 (June. 2019), PP 25-28
www.iosrjournals.org

A clinico-epidemiological study of fatal head injuries in an autopsy centre of Kolkata (West Bengal)

Tanay Mohanta[1], Shobhan Roy[2], *Saptarshi Chatterjee [3]
[1](Assistant Professor, Department of Forensic Medicine & Toxicology, Bankura Sammilani Medical College & Hospital, Bankura, West Bengal, India)
[2](Assistant Professor, Department of Forensic Medicine & Toxicology, Purulia Government Medical College & Hospital, Purulia, West Bengal, India)
[3](Associate Professor, Department of Forensic Medicine & Toxicology, Bankura Sammilani Medical College & Hospital, Bankura, West Bengal, India)
*Corresponding Author: *Saptarshi Chatterjee*

Abstract: *Incidence of head injury is increasing over years, and is one of the leading causes of mortality and morbidity in developing countries. Epidemiological data from different regions are required for planning appropriate preventive measures. Present study, a cross-sectional descriptive study, tried to reflect the epidemiological characteristics and temporal trends of fatal head injuries in Kolkata between 2013 and 2014. Subjects of age group 41-60 years were affected most (46%), with an overall majority of males (74%). Road Traffic Accidents comprised more than half of the total fatalities (56%), with an overwhelming 29% of the subjects adding to pre-hospital morbidity. Fissure fracture of the vault of the skull (72.72%) and fracture of anterior cranial fossa (44.45%) of the base of the skull were the most common fractures. Parietal bone was involved mostly (45.45%), with subdural hemorrhage being the most common intracranial hemorrhage (58%). 29% of the victims died on the spot, while 17% died within 24 hrs of the accident. 39 % of the subjects survived for 4-7 days & 15% survived for 8-14 days.*

Keywords: *Intracranial hemorrhage, Kolkata, Fatal head injury (FHI), Skull fracture*

Date of Submission: 29-05-2019 Date of acceptance: 15-06-2019

I. Introduction

Head, the relatively small portion at the cranial part of human body, has been always considered as a prime part in several aspects. The injury to head, naturally, has been again considered with serious thoughts (1). Numerous research works and studies have been done till date only to realize the pathology related to or the cause and circumstances resulting it and to find a way to get rid of either head injury or its consequences. Head injury is defined by National Advisory Neurological Disease and Stroke Council as "it is a morbid state resulting from gross and subtle structural changes in the scalp, skull, and/or the contents of the skull produced by mechanical forces".

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 (2). Some studies from India had described the incidence of traumatic brain injury, but there is lack of data from eastern part of India. 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 describe the epidemiological characteristics and temporal trends of fatal head injuries in Kolkata between 2013 and 2014, with regards to age, sex, manner of causation, anatomical sites involved and patterns of injury.

II. Materials And Methods

The present study is a cross-sectional descriptive study, which was undertaken in the Department of Forensic Medicine and Toxicology of Nil Ratan Sircar Medical College & Hospital, Kolkata, West Bengal between 2013 and 2014. The study includes total 100 medico-legal post mortem cases of fatal head injuries (FHI) where injury to other parts of body are not of much significance. SPSS version 22 for windows and Microsoft Excel for Windows 8 were used for analysis of results.

II.1. Inclusion criteria

First 100 cases of fatal head injuries reported at the Police Mortuary of Nil Ratan Sircar Medical College between 2013 and 2014.

II.2. Exclusion criteria

a. Patients with gross abnormalities of cranial cavities.
b. Patients known to be suffering from some cerebral poisoning.
c. Patients with blood dyscrasias.
d. Decomposed bodies.
e. Unidentified or unknown dead bodies.

III. Results

The present cross-sectional descriptive study was conducted with 100 cases of fatal head injuries.

III.1. Distribution according to age

Subjects of age group 41-60 years were affected most (46%), followed by 21-40 years (32%), 1-20 years (14%), 61-80 years (6%) and 81-100 years (2%).

III.2. Distribution according to gender

Of the total subjects studied, 74% were males and the rest 26% were females.

III.3. Manner of causation of injuries

Table 1 Manner of causation of injuries

Causative factors	Percentage
Road Traffic Accident (RTA)	56
Fall from staircase	13
Assaults and violent acts	10
Fall from height	4
Fall of tree on head	2
Train/railway accident	6
Factory/industrial accident	5
Dashed by animal	4
Total	100

III.4. Rate of hospital admission

Pre-hospital morbidity was found to be in 29 cases (29%). The rest 71 patients (71%) were taken to hospital.

III.5. Period of survival

A large proportion of the victims (n=29, 29%) died on the spot while 17% (n=17) died within 24 hrs of the accident. Thirty nine cases (39 %) survived for 4-7 days & 15 cases (15%) survived for 8-14 days.

III.6. Sites of skull fracture

Table 2 Sites of fracture of skull

Sites	Number	Percentage
Vault of skull	34	65.39
Base of skull	8	15.38
Vault + Base of skull	10	19.23
Total	52	100

III.7. Types of skull fracture

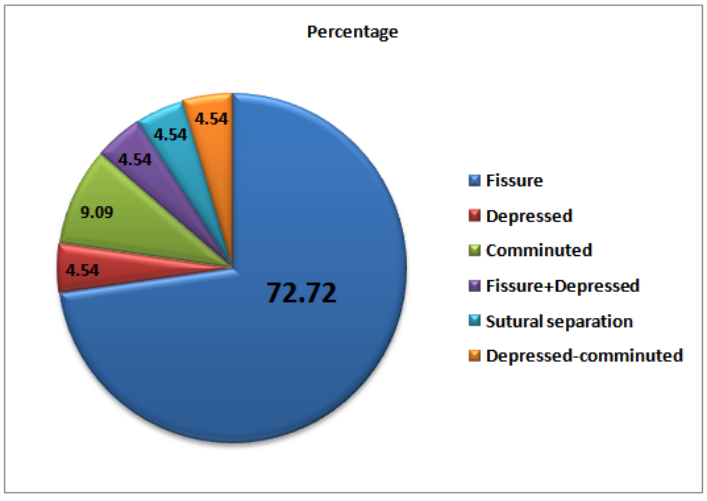


Figure 1 Distribution according to types of skull fracture

III.8. Distribution according to location of basilar fracture

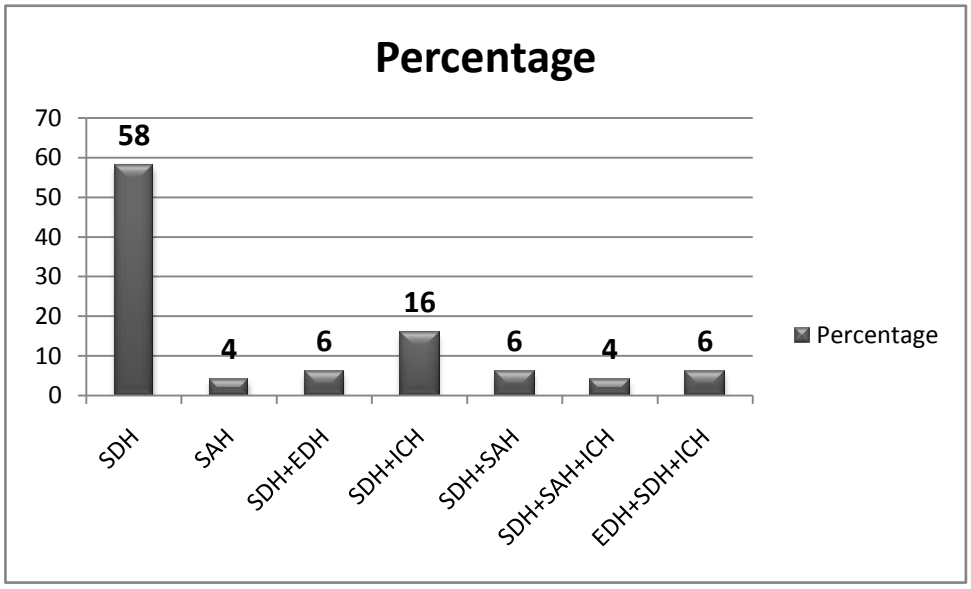
Fracture of anterior cranial fossa was observed in 8 (44.45%) cases, followed by 6 (33.33%) in middle cranial fossa. The lowest number of fractures was seen in posterior cranial fossa and combined middle and posterior cranial fossa with 2 (11.11%) cases in each.

III.9. Bones involved in skull fracture

Table 3 Bones involved in skull fracture

Bone(s) involved	Number	Percentage
Parietal	20	45.45
Temporal	4	09.09
Occipital	6	13.63
Frontal	4	09.09
Temporal + Occipital	2	4.54
Frontal + Parietal	2	4.54
Frontal + Parietal + Temporal	2	4.54
Parietal + Occipital	2	4.54
Parietal + Temporal	2	4.54
Total	44	100

III.10. Types of intracranial hemorrhage



EDH-Extradural hemorrhage, SDH-Subdural hemorrhage, SAH-Subarachnoid hemorrhage, ICH- Intracerebral hemorrhage

Figure 2 Distribution according to types of intracranial hemorrhage

IV. Discussion & Conclusion

This systemic review summarizes the epidemiological characteristics of head injuries in Kolkata, West Bengal. Head trauma as a leading cause of disability and death in young people is a major problem in society and yet it is preventable in the health systems (3). In this study, similar to the results in the other parts of the world, the age group, 20-60 years, constituted more than 70% of the affected (4). This age group is the most active phase of life, physically and socially, and hence outnumbers the other road users. Not surprisingly our study shows the overwhelming majority of the deceased (74%) were males. It is due to greater male exposure on urban streets and similar higher incidence of traffic accidents among males has been found by many other researchers (5, 6).

Similarly, the reported mechanisms of injury for FHI [Table 1] in our study compares well to data from other states and countries, with RTAs comprising more than half of the total fatalities. The increased percentage of RTA may be due to faulty roads, lack of awareness among the majority and absence of stringent traffic rules. In this study, 71% of patients after sustaining injuries could be admitted to the hospital, where they later succumbed to their injuries. This figure is similar to studies, conducted in the other parts by fellow researchers (7). Taking period of survival into consideration, similar findings are available in a study conducted in Pune, India (8).

Identical results are found across the country, taking the skull fractures into consideration, where fracture of vault of the skull [Table 2] clearly outnumbers the basilar fractures (9). Rash driving and lack of preventive measures while driving contribute to this high percentage of skull fractures. In the present study, fissure fracture of the skull was the most frequently found fracture [Fig. 1]. Parietal bone was the most commonly fractures bone of the scalp [Table 3]. The base of the skull has maximum fractures at anterior and middle cranial fossae, with the least percentage at posterior cranial fossa. Other researchers also came to similar findings (10, 11).

Most commonly found intra-cranial hemorrhage happens to be subdural hemorrhage [Fig. 2], which is consistent to the findings by other researchers (12).

Discovery of' wheel, years ago, ushered in an unending era of revolution in the field of transportation, that still goes on with men's persistent hunt for better, faster and comfortable automobiles (9). A byproduct of this revolution, is the road traffic accident, of which, fatal head injury is an important consequence. Hospitals should establish 'Trauma Teams' to initiate rapid assessment and resuscitation of trauma victims in general, and head injury, in particular. Primary Health Care Centers need to be equipped with life support measures and proper transportation facility for referral of suitable head injury cases to the nearest specialized centers. Finally, the follow up of fatal head injury cases should be extended up to the autopsy fable, by establishing proper co-ordination with the doctor conducting the autopsy.

Acknowledgements

Special acknowledgement goes to the Department of Forensic Medicine & Toxicology, Nil Ratan Sircar Medical College, Kolkata.

Conflict of interest

No conflict of interest is associated with this work.

Ethical clearance

Taken

Source of funding

None declared

References

[1]. Irgebrigtsen T, Mortensen K, Romner B. The epidemiology of hospital referred head injury in Northern Norway. Neuroepidemiology 1998;17:139-46.
[2]. Amitava S, Meena RN, Vivek S, Nilesh K, Meena LP. Evaluation of the incidence, nature of injury and clinical outcomes of head injuries in North Eastern part of India. International Journal of Medical Science and Public Healt 2013;2(2).
[3]. Gururaj G. Epidemiology of traumatic brain injuries: Indian scenario. Neurological Research 2013;24(1).
[4]. Kasmaei VM, Asadi P, Zohrevandi B, Raouf MT. An epidemiologyic study of traumatic brain injuries in emergency department. Emergency 2015;3(4):141-145.
[5]. Sharma BR, Harish D, Sharma V, Vij K. Road Traffic accidents – a demographic and topographic analysis. Med Sci Law 2001;4:266-74.
[6]. Henriksson EM, Ostrom M, Eriksson A. Preventability of vehicle-related fatalities. Accid Ann Prev 2001;33:467-75.
[7]. Montazeri A. Road-traffic-related mortality in Iran: a descriptive study. Public Health 2004; 118:110-113.
[8]. Arvind K, Sanjeev L, Deepak A, Ravi R. Fatal road traffic accidents and their relationship with head injuries: An epidemiological survey of five years. Indian Journal of Neurotrauma 2008;5(2):63-67.
[9]. Chavali KH, Sharma BR, Harish D, Anup S. Head Injury: The Principal Killer in Road Traffic Accidents. JIAFM 2006;28(6).
[10]. Ranjit MT, Keoliya AN. Patterns of head injuries in fatal road traffic accidents in a rural district of Maharashtra- Autopsy based study. J Indian Acad Forensic Med 2011 Jul;33(3).
[11]. Anand M, Nagesh KR. Pattern of fatal head injuries due to vehicular accidents in Manipal. JIAFM 2005;27(1):19-22.
[12]. Menon A, Pai VK, Rajeev A. Pattern of fatal head injuries due to vehicular accidents in Mangalore. J Forensic Leg Med 2008;15:75-7.

Dr. Saptarshi Chatterjee. "A clinico-epidemiological study of fatal head injuries in an autopsy centre of Kolkata (West Bengal)". IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) , vol. 18, no. 06, 2019, pp. 25-28.