

Research Article

Assessment of Pattern of Skull Fractures in Cases with Head Injury by Blunt Force

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ABSTRACT

Objective: To study the skull fracture pattern in cases with head injury by blunt force.

Research methodology: Total 100 cases with injury of head by blunt force (cases of vehicle accidents, fall from height, gun shoot and fall of masonry) were selected from the Department of Forensic Medicine Quaid-e-Azam Medical College/Bahawal Victoria Hospital Bahawalpur from June 2016 to February 2017. Pattern of skull fractures was studied.

Results: Total 100 cases with skull fracture due to blunt force were selected. Male cases were 90 (90%) and female cases were 10 (10%). Most (72 (72%)) of the cases were road traffic accident followed by fall from height 18 (18%) cases and physical assault 10 (10%) cases. Among the cases of skull fracture, depressed, comminuted and fissured type were 11 (11%), 22 (22%) and 67 (67%) respectively.

Conclusion: Findings of present study showed that common causes of intracranial lesions due to blunt force are vehicular accidents, assault by blunt weapons, and fall from height etc. Maximum numbers of cases are due to vehicular accidents. Skull fractures in majority of the cases are due to direct trauma and few are due to indirect trauma.

Keywords: Scalp, Blunt trauma, Skull fracture, Head injury, Fissured fracture.

INTRODUCTION:

The history of trauma parallels the history of the evolution of man.¹Trauma to skull, brain or scalp is defined as head injury.² Injury of brain without skull fracture is not uncommon.³Head Injury is a considerable public health issue, with high rates of mortality and morbidity.⁴It is very important to analyze the pattern of skull fractures in these cases because human head is the most exposed part of the body.⁵ Head is the most susceptible to injuries due to any kind of criminal violence or any type of accident.⁵The skull fractures, especially by blunt force offer varying diagnostic and medico-legal problems to the forensic experts and also to the

clinicians.⁶Head Injury cases are presently increasing at an alarming rate in all world communities, especially in more densely populated areas with fast and heavy traffic flow along with rapid growth of industrialization.⁷In literature, there are some reports on this issue, so a study is planned to study the skull fracture pattern in cases with head injury by blunt force.

RESEARCH METHODOLOGY:

Total 100 cases with injury of head by blunt force (cases of vehicle accidents, fall from height, gun shoot and fall of masonry) were selected from the

Department of Forensic Medicine Quaid-e-Azam Medical College/Bahawal Victoria Hospital Bahawalpur from June 2016 to February 2017. Head injury cases with completely destroyed brain and skull were excluded from the study. A detailed post-mortem examination was done on every case. History was taken from eye witnesses and relatives regarding cause, time and place of injury, whether accidental or homicidal, any lucid interval, survival period after head injury and age of the cases. Examination of whole body was done and age of the cases was confirmed, general built was recorded. Type of Trauma, site and type of skull fractures were also recorded on predesigned proforma. All the collected was entered in SPSS version 20 and analyzed. Mean and SD was calculated for numerical variables and frequencies and percentages was calculated for categorical variables.

Total 100 cases with skull fracture due to blunt force were selected. Out which 75 (75%) cases had skull fractures with intracranial hemorrhages and injury to the scalp, 22 (22%) cases had skull fractures with intracranial hemorrhages without injury to scalp, only 1 (1%) case had skull fracture with injury to the scalp without any intracranial hemorrhage, 2 cases (2%) had fracture of the skull alone. (Fig. 1) Total 24 (24%) cases belonged to age group 10-30 years, 58 (58%) belonged to age group 31-50 years and 18 (18%) cases belonged to age group >50 years. (Table 1) Male cases were 90 (90%) and female cases were 10 (10%). (Fig. 2) Most (72 (72%) of the cases were road traffic accident followed by fall from height 18 (18%) cases and physical assault 10 (10%) cases (Fig. 3) Among the cases of skull fracture, depressed, comminuted and fissured type were 11 (11%), 22 (22%) and 67 (67%) respectively. (Fig. 4)

RESULTS:

Fig. 1 Frequencies for skull fractures.

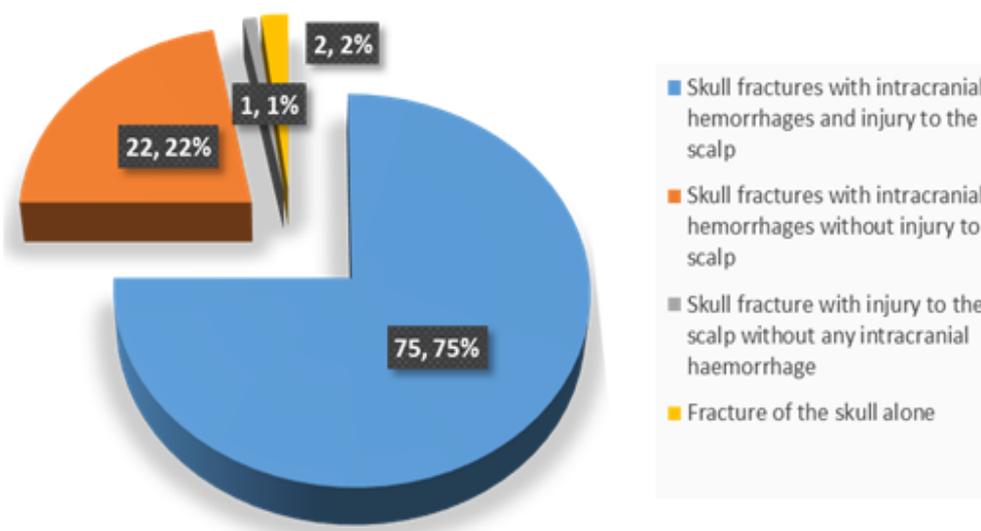


Table 1 Age distribution

Age group (years)	N	%
10-30	24	24
31-50	58	58
>50	18	18

Fig. 2 Gender Distribution

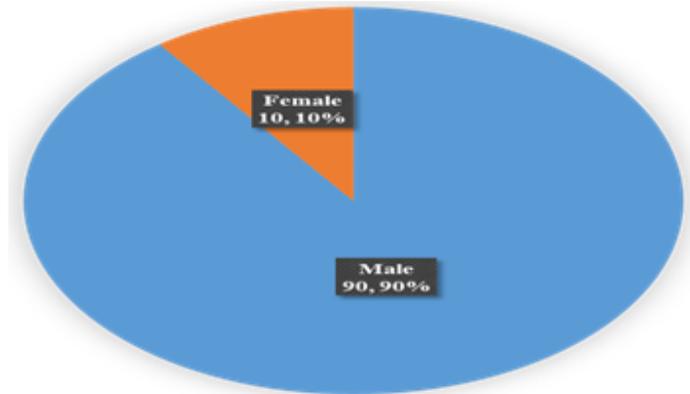


Fig. 3 Causes of skull fracture

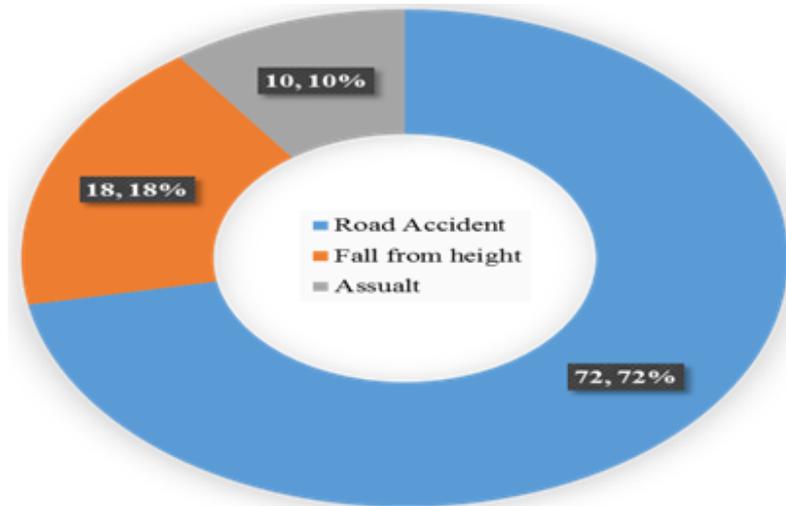
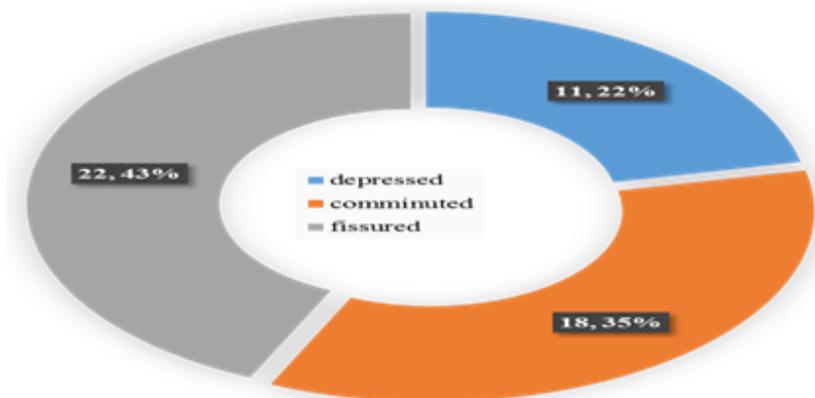


Fig. 4 Type of Skull Fractures



DISCUSSION:

Knowledge of head injury is very important due to increasing trend in head injury.⁶In present study, most of the cases 72 (72%) were road traffic accident followed by fall from height 18 (18%)

cases and physical assault 10 (10%) cases. One study by Thangarajet al⁸ reported that majority of the cases (34%) of such injuries caused by fall from height which is not comparable with our findings. Evidence of external injury i.e. scalp

involvement may not present in any case of head trauma as told by Gradwhol et al⁹ and Pathak et al.¹⁰ In our study most of head trauma cases had no evidence of external trauma but had intracranial lesion which caused mortality. In present study, among the cases of skull fracture, depressed, comminuted and fissured type were 11 (11%), 22 (22%) and 67 (67%) respectively. About 75 (75%) cases had skull fractures with intracranial hemorrhages and injury to the scalp, 22 (22%) cases had skull fractures with intracranial hemorrhages without injury to scalp, only 1 (1%) case had skull fracture with injury to the scalp without any intracranial hemorrhage, 2 cases (2%) had fracture of the skull alone. Manish et al¹¹ noted 39% linear fracture followed by comminuted 20% and depressed 11%. Same findings were noted by Pathak et al.¹⁰ Ranjit et al¹² experienced 84% skull fracture in 113 cases series with significant number of linear fracture of skull with base 24.21% followed by linear fracture alone 16.84%, basal alone 15.79% and depressed fracture 14.74% and the commonest location were temporo-parietal and fronto-parieto-temporal region.

CONCLUSION:

Findings of present study showed that common causes of intracranial lesions due to blunt force are vehicular accidents, assault by blunt weapons, and fall from height etc. Maximum numbers of cases are due to vehicular accidents. Skull fractures in majority of the cases are due to direct trauma and few are due to indirect trauma.

REFERENCES:

1. Tandle RM, 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):228-31.
2. Mukherjee JB. *Forensic Medicine & Toxicology*, P.390. Academic publishers, Kolkata.
3. MCKEE AC, DANESHVAR DH. The neuropathology of traumatic brain injury. *Handb Clin Neurol.* 2015;127:45-66.
4. Opreanu RC, Kuhn D, Basson MD. The Influence of Alcohol on Mortality in Traumatic Brain Injury. *Journal of the American College of Surgeons.* 2010 Jun;210(6).
5. Chattopadhyay S, Tripathi C. Skull fracture and haemorrhage pattern among fatal and nonfatal head injury assault victims – a critical analysis. *J Inj Violence Res.* 2010 Jun;2(2):99-103.
6. Force B. Pattern of Skull Fractures in Cases of Head Injury. *J Indian Acad Forensic Med.* October-December. 2013;35(4):0971-3.
7. Puttaswamy. Analysis of Cranio-Cerebral Injuries by Blunt Force. *J Indian Acad Forensic Med.* 2012;34(4):324-7.
8. Thangaraj M. Thesis for M.D. (For.Med.), Lucknow University. A Study of pathology and medico-legal aspects of cranio-cerebral injuries by blunt force. 1965.
9. Gradwhol RBH Forensic aspects of Trauma to the CNS & its membranes. In: *Legal Medicine*, Moresby Co. St. Louis 1954; 363-401. Pathak A, Desania NL, Verma R. Profile of road traffic accidents & head injury in Jaipur. *JIAFM*; 30(1):6-9.
10. Manish K, Jyothi NS, Gurudatta SP, Vijayakumar BJ. Fatal head injuries in road traffic accidents in and around Davangere: A prospective study. *Indian Journal of Forensic Medicine & Pathology* 2012; 5(2):61-65.
11. Ranjit M. Tandle, A. N. Keoliya. Patterns of Head Injuries in fatal road traffic accidents in a rural district of Maharashtra-Autopsy based study: *JIAFM* July-Sept. 2011, Vol.33 (3).s