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ORIGINAL ARTICLE

Assessment of pattern of Head Injuries in 200 autopsies- A forensic study

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***ABSTRACT*:**
Background: Road traffic accidents are the major causes of death worldwide. Head injury is the single most common cause of mortality in road traffic accidents. The present study was conducted to determine pattern of head injury and skull fractures in victims of road traffic accidents undergoing autopsy. **Materials & Methods:** This study was conducted on 200 victims who died in road traffic accidents. All cases were thoroughly analyzed considering parameters like age and sex, area to be injured and head injuries etc. **Results:** Out of 200, males were 120 (605) and females were 80 (40%). Maximum deaths occurred in <24 hours (36%) followed by 24 hours – 1 week (28%), 1 week- 2 weeks (20%), 2 weeks- 4 weeks (10%) and 4 weeks- 5 weeks (6%). The difference was significant (P< 0.05). There was head involvement in 100 (50%), in 46 (23%) Head+ Chest, in 36 (18%) Head+ limbs, in 10 (5%) abdomen and in 8 (4%) Head+ Chest+ abdomen was involved. The difference was significant (P< 0.05). The most common pattern of skull fracture was depressed vertex fracture seen in 62 (31%) followed by basal fracture in 50 (25%). The difference was significant (P< 0.05). **Conclusion:** With increase in vehicles, the number of RTA is increasing day by day. Head injuries are most prominent are to be affected in road traffic accidents.
Key words: Abdomen, Head, Road traffic

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INTRODUCTION

Road traffic accidents are the major causes of death worldwide. Head injury is the single most common cause of mortality in road traffic accidents; head being the most vulnerable part of the body. India accounts for about 10% of road accident fatalities worldwide.[1] WHO defined the accident as, “an unexpected, unplanned occurrence that may involve injury”. Head injuries are responsible for more than one-fourth of all traumatic deaths and nearly two-third of road traffic accident. In medico-legal practice blunt head trauma are most frequently caused by traffic accident, fall from height, assault, train accident etc.[2]

Head injury has been defined as "a morbid state, resulting from gross or subtle structural changes in the scalp, skull, and/or the contents of skull, produced by mechanical forces".[3]

The magnitude of Road traffic accidents and fatalities in India is alarming. In 2009, it reached to 4.22 lakh road traffic accidents and 1.27 lakh road traffic fatalities. The rate of incidence of head injury is higher in India because of its traffic patterns and possibly the lack of preventive measures such as helmets in motor cyclists and seatbelts in automobiles, poorly controlled traffic conditions and road conditions.[4]

Various patterns of head injuries like scalp abrasions, contusions, lacerations, incised wounds, meningeal haemorrhages and skull fractures can be found in road traffic accident cases. The types of skull fractures are basilar fractures, linear fractures, depressed fracture, comminuted fractures, separation of suture (diastatic fracture), pond or indented fractures, gutter fracture, ring fracture. The different types of meningeal hemorrhages includes subdural hemorrhage, extra-dural or epidural hemorrhage, subarachnoid hemorrhage and intra-cerebral hemorrhage.[5] The present study was conducted to determine pattern of head injury and skull fractures in victims of road traffic accidents undergoing autopsy.

MATERIALS & METHODS

This study was conducted on 200 victims who died in road traffic accidents and undergoing post-mortem in department of Forensic Medicine and Toxicology.

In all these cases detailed personal information was recorded from relatives/accompanies of victim, inquest papers, and hospital records. The history regarding the circumstances of the accidents and other relevant data about injuries to the victims, the site of impact was obtained from inquest papers. All cases were thoroughly analyzed considering parameters like age and sex, area to be injured and head injuries etc. The analysis and interpretation of the data were done using appropriate statistical methods by using SPSS V.20.0. A p value of <0.05 was considered as significant.

RESULTS

Table I Distribution of victims

Male	Percentage	Female	Percentage
120	60	80	40

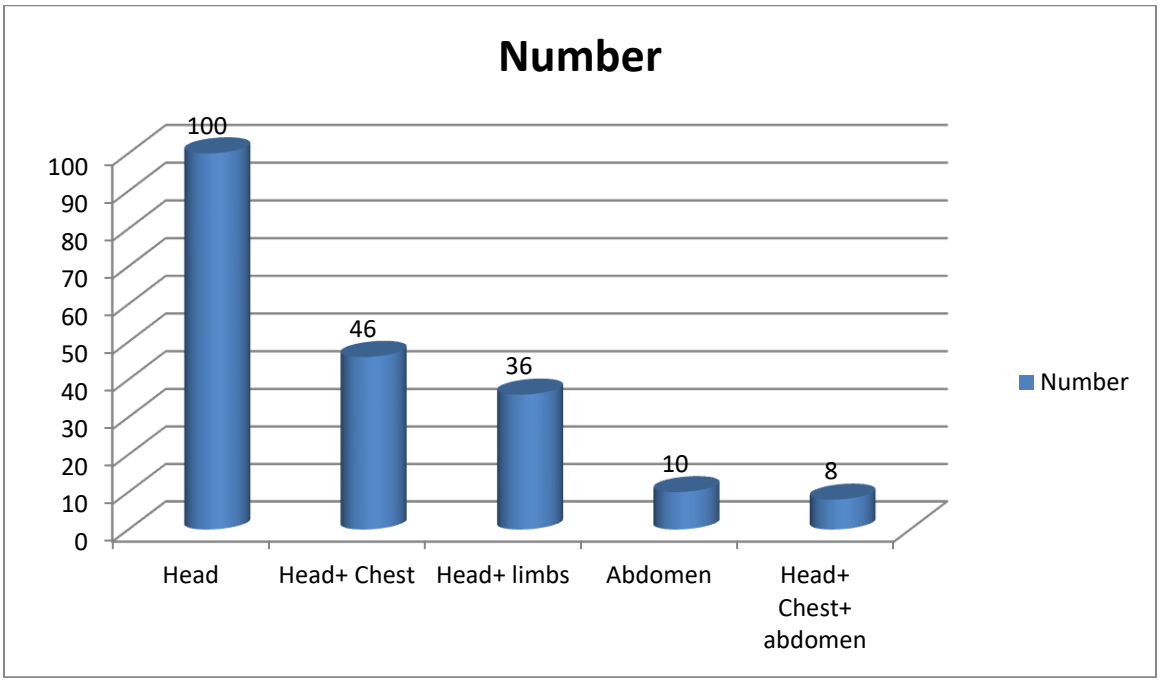
Table I shows distribution of victims. Out of 200, males were 120 (605) and females were 80 (40%).

Table II Survival period of victims

Survival period	Number	Percentage	P value
<24 hours	72	36	0.001
24 hrs- 1 week	56	28	
1 week- 2 weeks	40	20	
2 weeks- 4 weeks	20	10	
4 weeks- 5 weeks	12	6	
Total	200	100	

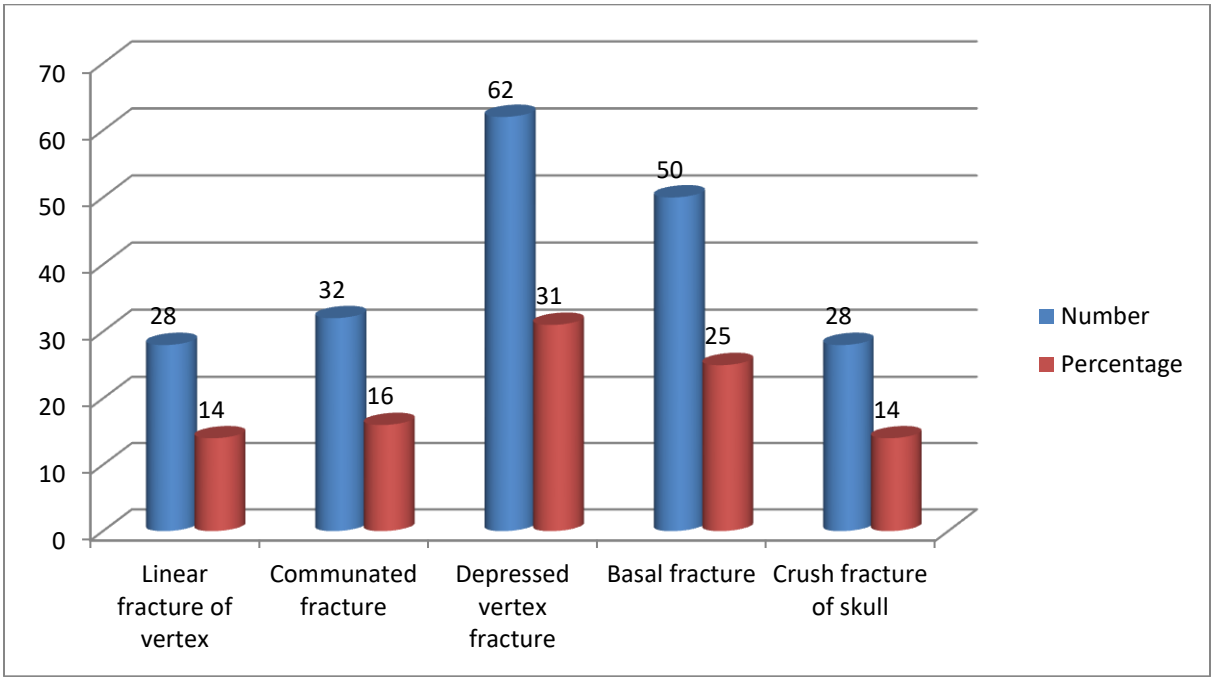
Table II shows survival period of victims. Maximum deaths occurred in <24 hours (36%) followed by 24 hours – 1 week (28%), 1 week- 2 weeks (20%), 2 weeks- 4 weeks (10%) and 4 weeks- 5 weeks (6%). The difference was significant (P< 0.05).

Graph I Area of the body injured



Graph I shows that there was head involvement in 100 (50%), in 46 (23%) Head+ Chest, in 36 (18%) Head+ limbs, in 10 (5%) abdomen and in 8 (4%) Head+ Chest+ abdomen was involved. The difference was significant (P< 0.05).

Graph II Pattern of skull fracture



Graph II shows that most common pattern of skull fracture was depressed vertex fracture seen in 62 (31%) followed by basal fracture in 50 (25%). The difference was significant (P< 0.05).

DISCUSSION

Road Traffic accident is an unplanned event occurring suddenly, unexpectedly and inadvertently in an unforeseen circumstance. India accounts for about 10% of road accident fatalities worldwide. Road accident contributed 30.2 percent to all kind of natural and unnatural accidental deaths during 2005. According to the Institute of Road Traffic Education (2006) Institute of road education, New Delhi, out of the estimated 1.4 million serious road accidents/ collisions occurring annually in India, hardly 0.4 million are recorded. This indicates that the surveillance system for vehicular accidents is not well established in India.[6]

In present study, out of 200 victims, males were 120 (605) and females were 80 (40%). Jha et al[7] in their study assessed 77 people who died in road traffic accidents. Farooqui et al[8] in their study on 98 victims found that men died in road traffic accidents more than women.

In present study, maximum deaths occurred in <24 hours (36%) followed by 24 hours – 1 week (28%), 1 week- 2 weeks (20%), 2 weeks- 4 weeks (10%) and 4 weeks- 5 weeks (6%). Hanumantha et al[9] found that twenty-five of 303 (8.3%) patients reached center within 1 h (golden hour) of trauma. A majority of patients numbering 159 (52.5%) reached center within 2–6 h after injury. Of the 303 fatal head injuries, 153 (50.5%) died within 24 h of reaching center. Ninety-five died within first 12 h. Ninety-two of the remaining (30.4%) died 2–7 days after reaching to hospital. Bharathi MO et al[10] found that 36% died within 24 hours after the accident. 33% victims survived beyond 24 hours but died within one week. The number of cases decreased with increase in survival period. Only 4% victims survived for more than 4 weeks. The victim who survived for shortest period of 1 hour had fracture of skull, clavicle, patella and leg bones. The victim who survived for maximum period i.e. 34 days after the accident died due septicemia (intestinal perforation).

In present study, there was head involvement in 100 (50%), in 46 (23%) Head+ Chest, in 36 (18%) Head+ limbs, in 10 (5%) abdomen and in 8 (4%) Head+ Chest+ abdomen was involved. Honnungar et al[11] found combination of Head+ Chest fractures in 59% of victims. Saleem et al[12] found Head+ upper limbs fracture in 62% of cases.

In present study we found that most common pattern of skull fracture was depressed vertex fracture seen in 62 (31%) followed by basal fracture in 50 (25%). Jha et al[7] found depressed and linear fractures (38%) in almost the same numbers of cases. Farooqui et al[8] found that the dominant type of skull fracture found was the linear (fissured) fracture in 40% cases followed by basilar fracture counting 29.17% and being the 2nd common type. The depressed, comminuted and crush fracture shared a percentage of' among all showing their lesser

and uncommon existence. Saleem et al[12] found that most common type of skull fracture was linear fracture alone (32.0%) followed by depressed 9.5%) and least common sutural fracture alone, in combine linear with sutural fracture were most common i.e. (5.0%), least common was comminuted with linear fracture (0.5%).
Incidences are more common among the two wheeler vehicles. Head was the most common site to be injured in RTAs. As motorized two wheeler vehicles constitute a large portion of the vehicle fleet in India, the exponentially increasing number of automobile vehicles, poor adherence to traffic rules and regulations such as maintaining lane discipline, driving in zigzag patterns by public, poorly maintained and congested roads, abuse of alcohol, and lack of awareness about helmets and new generation of high speed vehicles are altogether responsible for accidents.[13]

CONCLUSION

With increase in vehicles, the number of RTA is increasing day by day. Head injuries are most prominent are to be affected in road traffic accidents.

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