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Research Article

Pattern of Head Injuries in Road Traffic Accidents

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Abstract

Road traffic accidents are one of the major causes of morbidity & mortality especially in developing countries including India. Craniofacial injuries are the most common injuries found in fatal road traffic accidents. The objective of present study was to analyze the pattern of craniofacial injuries in these fatal accidents. The study was conducted at the Department of Forensic Medicine,

Al - Ameen Medical College, Bijapur during the period of January 2010 to December 2012. During this period 196 victims of fatal road traffic accident were autopsied. In the present study the male ratio was more compared to female. Most of the victims in the present study belonged to the age group of 21 to 30 years. Mechanized four wheelers were the commonest offending vehicle. Most of the death occurred in the month of November during office hours. Most common intracranial hemorrhage was Sub dural hemorahage and fissured fracture of the skull bone was the commonest fracture found.

Keywords: Accident, Injury.

Introduction

Road traffic injuries are the eighth leading cause of death globally, and the leading cause of death for young people aged 15–29years. More than a million people die each year on the world's roads, and the cost of dealing with the consequences of these road traffic crashes runs to billions of dollars. Current trends suggest that by 2030 road traffic deaths will become the fifth leading cause of death unless urgent action is taken. Only 28 countries, covering 7% of the world's population, have comprehensive road safety laws on all five key risk factors: drinking and driving, speeding, and failing to use motorcycle helmets, seat-belts, and child restraints as per the global status report on Road Safety 2013 by World Health Organization.

India is undergoing major economic and demographic transition coupled with increasing urbanization and motorization. Injuries on roads, at homes, and in the workplace have increased due to lack of safety-related policies and programmes. The health sector bears the maximum brunt in terms of provision of acute care, and short-term and long-term rehabilitation service1.

Some of the factors that increase the risk of road crashes in India are unsafe traffic environment, poor road infrastructure and encroachments that restrict safe areas for pedestrians; lack of safety engineering measures; traffic mix and an increasing number of motorized vehicles; unsafe driving behavior and lack of valid or fake driving licenses.

Craniofacial injury, a common term which actually means cranio-cerebral damage and injury to face, has been recognized since ages. As found in medico-legal practice blunt craniofacial injuries are most frequently caused by traffic accidents, fall from height, assault, train accidents etc. and road traffic accidents are the main component, followed by fall from height and railway accidents. World Health Organization defined accidents as '' an unexpected, unplanned occurrence which may involve injury''.

The present study has been carried out regarding the various epidemiological and medico legal aspects of vehicular accidents. An attempt was made to analyze various risk factors, distribution and pattern of head injuries with respect to skull fracture and different intracranial hemorrhages.

Materials &Methods

This study has been carried out in the mortuary of the Department of Forensic Medicine and Toxicology, Al-Ameen Medical College, Bijapur,Karnataka; during the period of 1st January 2010 to 31st December 2012. During this period; fatal craniofacial injury cases numbered at 392. All these 392 cases selected for the study were due to craniofacial injuries. Pre-designed and pre-tested questionnaire were prepared and information or data was collected from the following sources.

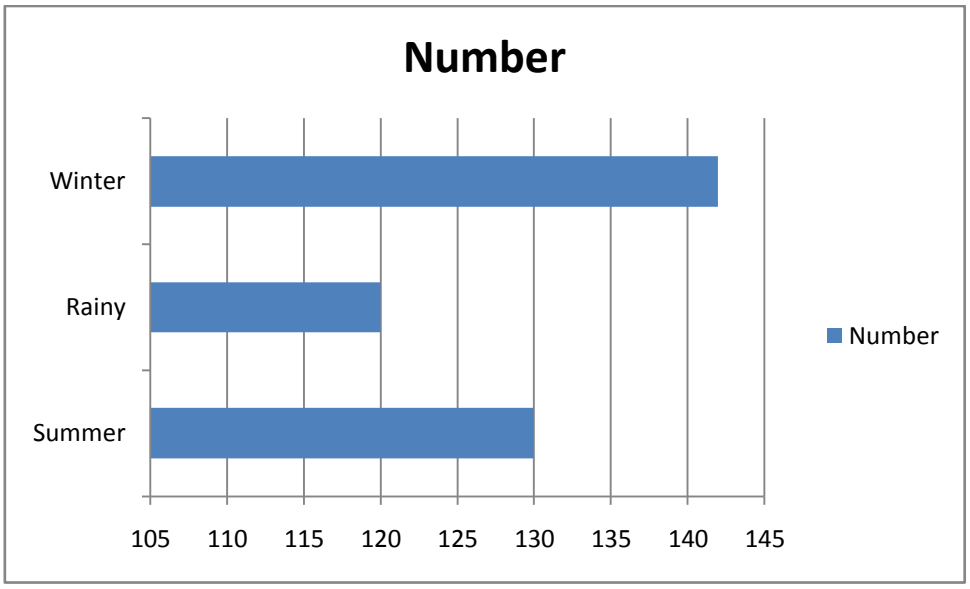
1) Inquest reports 2) History taken from the guardian 3) Hospital records 4) Post –mortem

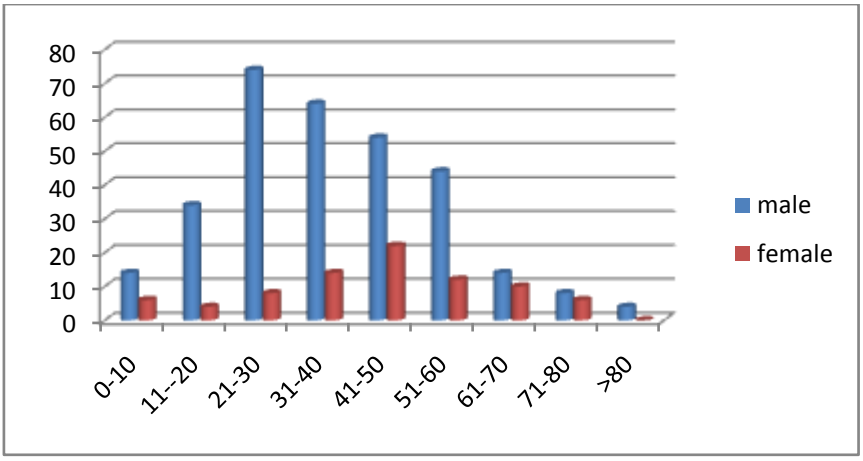
examination findings. Detail post mortem examination of the cases were done and the findings were recorded in a master chart prepared in Microsoft excel sheet and then appropriate statistical analysis using percentage and proportions was done for data analysis.

Observations and Results

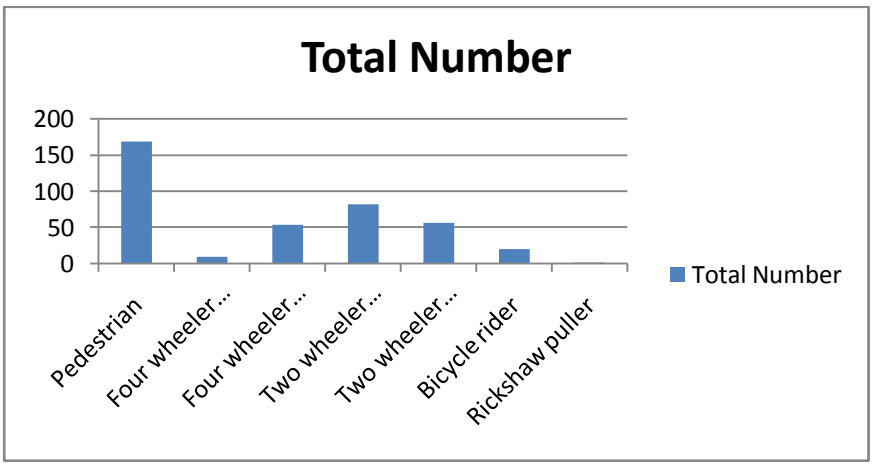
Out of these cases a total 392 cases were due to road traffic accidents which constituted and that have been charted are represented in the form of diagrams which are as follows:

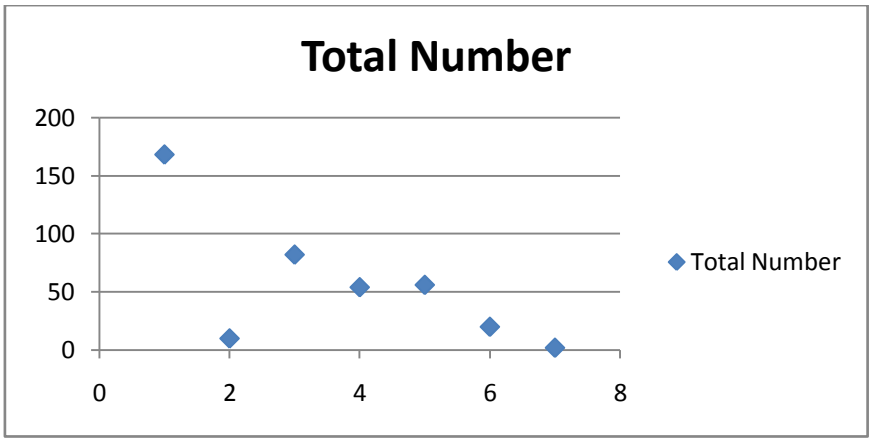
Seasonal wise variation are as depicted in the chart more were in Winter and Summer and least were in Rainy season.





Sex of the victims: It is seen that majority of the victims sustaining fatal craniofacial injuries in RTA were male with a total number of 310 cases and only 82 cases were female. The male female ratio was found to be





Type of the offending vehicle: The vehicles were broadly categorized into two classes that are mechanized and non-mechanized. Mechanized vehicles were again sub classified into 03 categories like Two wheeler, Three wheeler and Four wheelers while non-mechanized vehicles were sub classified as Two wheelers and Three wheelers.

Discussion

The two years study period was divided into three categories like summer season (March to June), Rainy season (July to October) and winter season (November to February). It was found from data analysis that maximum craniofacial injury cases occurred during the winter months with a total number of 142 cases. In summer season 130 cases and in rainy season 120 cases occurred. The findings of the study are similar to those conducted by Kumar A et al (2001-2005).2 These findings are similar to the studies conducted by Kaul A et al.3

It was seen that maximum fatal craniofacial injuries in RTA were sustained by those who were in between 21 years to 30 years of age comprising a total 82 cases. 74 males who belonged to 21-30 years age group sustained fatal craniofacial injuries while 22 females who belonged to 41-50 years age group sustained such injuries in RTAs. These findings are similar to the studies conducted by Momon chand A and Fimate L.4

For the purpose of study the victims were divided into 5 categories- Pedestrian, Driver, Occupant, Motor cyclist, Pillion rider, bicycle rider and rickshaw puller. Analysis of the data revealed that majority of the victims were pedestrians with a total number of 168 cases who are closely followed by the motorcyclists with a total number of 82 cases. Pillion riders were involved in 56 cases and occupants of the 4 wheelers in 54 cases. The findings of the study are similar to those conducted by Sevitt S.8

Data analysis shows that majority of the victims died in the hospital. 36 numbers of victims died on the way to the hospital and 28 victims died on the spot. 100 number of victims did not receive any treatment before their death at AGMC and GBP Hospital. Findings of the study are similar to the studies conducted by Baruah AP.6

It is evident from data analysis that majority of the victims died within 01 day (1st 24 hours) of the incident. 190 numbers of victims died within the first 06 hours of the incidence showing the need of strengthening emergency medical care in our state.

Mechanized 04 wheelers were the most common offending vehicle in a total number of 204 cases followed by the mechanized 02 wheelers (bike and scooter) in a total number of 170 cases. In 10 cases the offending vehicle was Auto rickshaw, in 6 cases the vehicle was bicycle and rickshaw was involved in a single case.

It was observed that the commonest injury sustained was facial abrasion with a total number of 158 cases. Contusion of the eyes commonly known as black eye was present in 30 cases. Fracture of the nasal and other bones of face were present in three cases only. Abrasions as a whole constituted the major injury type on craniofacial and face with a total number of 216 cases.

Data analysis suggests that contusion was the major scalp injury with a total number of 260 cases followed by laceration of the scalp with a total number of 176 cases. Combinations of the injuries were present in 176 cases. Surgically made incised wound were present in the operated cases. Crush injury was present in nine numbers of cases. The findings of the present study is consistent with the findings of study conducted by Sharma BR et al.7

It is evident from data analysis that a total number of 192 victims, 150 males and 38 females sustained skull fracture including both skull cap and skull base fracture. 80 male victims and 22 female victims did not sustain skull injury. Out of these 192 cases, 58 cases sustained skull base fracture while the remaining 67 cases sustained fracture of vault of skull. 36 numbers of cases had combination of both skull cap and skull base fracture. Fissured fracture was most common finding in the fatal craniofacial injury cases with a total number of 56 cases out of total 192 fractures followed by comminuted fractures with a total number of 24 cases.

Middle cranial fossa was most commonly involved sustaining fracture with a total number of 30 cases. It is also found that fracture of the temporal bone is the commonest involving 116 cases. Crush injury of the skull bones were present in 18 cases. Craniotomy (Burr hole) done were detected in 16 parietal bones and 10

temporal bones. The findings are consistent with the studies conducted by Singh D et al (1996).8

Subdural hemorrhage was the most common finding with a total number of 362 cases followed by subarachnoid hemorrhage with a total number of 298 cases. Combination of both subdural and subarachnoid hemorrhage was present in 208 cases. Extradural hemorrhage was found in 64 cases and intracerebral hemorrhage was found in 38 cases only. The findings are consistent with the studies conducted by Tyagi AK et al.9

It is seen that brain was contused in 174 cases. Contusion is the most common injury encountered by the victims. These contusions were found to be associated with subarachnoid hemorrhages. Brain laceration was found in 22 cases. Crush injury was present in nine cases.

Conclusion

Maximum head injury cases occurred during the winter months. Most commonly affected victims were the pedestrians. Total 292 cases died in the hospital after sustaining the head injuries. Majority of the victims died within six hours of the incident. Most of the accidents occurred during the office hours (from 10 am to 5 pm) Mechanized four wheelers (trucks, buses, vans, jeeps etc.) were the most common offending vehicle.

Road traffic accidents have become significantly responsible for loss of life, economic and social resources even in our small state of Tripura. With the sudden rise in the number of vehicles in the past ten years the incidences of traffic accidents also has risen. It is high time to better define the specific characteristics of the problem in a uniform manner so that preventive measures can be implemented accordingly. Primarily safety measures should focus upon three main factors viz. infrastructure, human behavior and vehicle design.

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