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A study of pattern of injuries sustained in fatal road traffic accidents: An original research

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***Abstract*---**Aim: This study was conducted to examine the pattern of injuries in road traffic accidents (RTA) amongst the victims. Methodology: A study was undertaken at Gajra Raja Medical College, Gwalior (M.P.), to find out the types of injury patterns occurred due to the road traffic accidents. All Case histories and records, reports pertaining to road traffic accident victims were collected and analyzed to see different types of injury patterns sustained in the accident and data was compiled based on the findings with SPSS 20 software . Results: The study population consisted of 500 patients. Majority of them were males (84.25%) and belonged to the age group of 21 to 30 years with 25.31%. Majority of the patients had injury to Head neck and face constituting 53.61% and least had injury to the abdominal region constituting 9.14%. Abrasion was seen in most of the cases around 64.89% and Lacerations was the least found in 14.46%. Majority of the patients around 42.81% had skull and maxillofacial fracture and the least type of fracture observed was Ribs fracture observed in 4.79% of the cases. Conclusion: All efforts need to

undertaken to prevent a Road Traffic injury which is an important cause of mortality, morbidity and disability.

***Keywords*---**road traffic accident, road traffic injuries, fractures, pelvic, extremities.

Introduction

Fatal road traffic accidents (RTA) are a major cause of concern all over the world. The outcome of injuries sustained in an RTA depends on various factors including but not limited to: the location of the event, type of vehicle involved, nature of the roads, the time of accident, etc. The high mortality and morbidity associated with road traffic injuries is a major public health problem worldwide. Every year, road traffic accidents kill an estimated 1.2 million people and injures about 50 million people per year globally. The World Health Organization estimates that road side accidents could rise to 2.4 million by 2020, with 85% of this increase being in low- and middle-income countries, road accidents are at present No 9 on the list of causes of death and morbidity and it is projected that by 2020, it will the No 3 killer in the world and No 2 in the developing countries.[1] More people will be dying of accidents than of malaria, tuberculosis, diarrhoea and cancer. Scientists have worked relentlessly for the cure and prevention of diseases like smallpox, polio, tuberculosis, malaria, heart attacks and cancer, but no effort worth mentioning is being made against the epidemic of road accidents. India has had the unconvinced division of high rates and a steady increase in road fatalities over the past three decades. Investigations of transport and traffic related injuries may call upon the entire spectrum of forensic sciences and medico legal expertise.[2] RTAs involve forensic investigations that allow risk factors and cause of death to be examined. The forensics experts often assess if an RTA has induced disabilities and if so, they quantify the percentage of impairment.[3] The most prevalent injury was fracture of bones, particularly head and neck, and the lower limbs and then upper limbs followed closely while the least injured portion is the abdomen.[4] The best treatment of patients with severe injuries involves a structured strategy from the point of accident to recovery systems across a facility designed to address the demands of multi-system issues, which will re-enact the patient's maximum potential role in community.[5] In India, over 80,000 persons die in traffic crashes annually and over 1.2 million get injured seriously and 300,000 get disabled permanently.[6] Road accidents account for 2.5% of total deaths in India and are among the six leading causes of death.[7] India has the highest incidence of death due to road traffic accidents in Uttar Pradesh (11.4%) followed by Tamil Nadu (11.3%), Andhra Pradesh (10.7%), and Maharashtra (9.6%).[8] Many works of literature were available about the pattern of injury in road traffic accidents. Some reported that the motorized two-wheeler victims are the commonest in RTA.[9-11] Others reported pedestrians as the commonest victims of RTA.[12-17] Thus, different regions have different types of victims of RTA depending on the types of vehicle used, traffic safety rules and congestion, public awareness, and road condition.

Aim of the Present Study

This study was conducted to examine the pattern of injuries in road traffic accidents (RTA) amongst the victims.

Methodology

A prospective study was carried out at Mortuary of Department of Forensic Medicine, Gajra Raja Medical College, Gwalior (M.P.) where 500 cases were included as per consecutive sampling. All the dead bodies brought for postmortem examination having definite history of Road Traffic accidents during January - 2019 to Dec 2020 were included in the study. All cases without the involvement of Road Traffic accidents were excluded. The statistical analysis was done with the help of SPSS Version 20 program. The data is presented in the form of statistical tables. In depth, the sequence, extent and distribution of the injuries were examined for all the cases. Factors such as age, gender, nature of injury and distribution of fractures have been examined.

Results

Majority of the patients were males constituting 84.25% and females were less constituting 15.75%. Majority of the patients belonged to the mid age range group of 21 to 30 years with 25.31% and the least belonged to the age group of 71 to 80 years. Majority of the patients had injury to Head neck and face constituting 53.61% and least had injury to the abdominal region constituting 9.14%. (Table 1) Abrasion was seen mostly totalling 64.89% of the cases and Lacerations was the least found in 14.46%. Majority of the patients around 42.81% had skull and maxillofacial fracture followed by upper limb fracture seen in 21.85%, lower limb fracture seen in14.97%, spinal fracture seen in 8.08%, pelvic fracture observed in 7.48% and the least type of fracture observed was Ribs fracture observed in 4.79% of the cases. (Table 2)

Discussion

Death due to road traffic accidents (RTA) are one of the leading causes of mortality and morbidity in India. Jha, et al. noticed two-wheeler, pedestrian, and four-wheeler (LMV/HMV) as the commonest victims of road traffic accidents in South India.[18] Tandle, et al. reported two-wheeler victims as the commonest victims of RTA followed by four-wheeler victims and pedestrians in the Yavatmal district of Maharashtra.[19] Singh, et al, Dandona and Mishra, and Pathak, et al. reported that two-wheeler riders as the commonest victims of accidents. However, other authors reported pedestrians as the commonest type of victims of RTA. This difference may be due to good traffic sense among the people walking on the road along with the traffic control in the study area. Millo, et al. found pedestrians (39%) as the commonest type of victims followed by three-wheeler drivers (26%) and two-wheeler drivers (14%).

Banerjee, et al. reported high incidence in the age group of 31-40 years with a male-female ratio of 6.14:1. Similarly, Singh, et al. and Gupta, et al. too reported that males were 7 to 8 times commoner as compared to females; and Reddy, et

al.[20] reported a male-female ratio of 11.5:1 with 50% cases in ages between 21 to 40 years. Naik, et al. [21] and Jakhar, et al.[22] also noticed male predominance in two-wheeler victims with the highest peak in the age of 21-30 years followed by 31-40 years. Mandal and Yadav[23] observed male predominance in pedestrian victims with the highest incidence in the age group of 41-50 years. Lilhare, et al. too reported male predominance with the peak age of 41-50 years (27.8%) in four-wheeler (LMV/HMV) victims of RTA.[24.] The findings of our study coincide with other studies. Majority of the injuries were on the face, head and neck with 53.61%. Similar was the result of study done by Wong et al. in 1980. Abrasion, bruises and lacerations were seen in all the cases with abrasion being most common. The lower end fractions again are attributed to the interplay of gravity and speed of the automobile during collisions, which contributes to kinetic energy production that in effect contributes to fractures. Brain damage is a significant cause of morbidity in survivors; impairment may arise regardless of the original extent of the head injury and recovering patients with brain injuries are more affected than patients with injury to other areas of the body. The reasons for a greater number of RTA cases may be due to the inadequate knowledge about road safety among people, bad condition of the roads and improper lighting of the roads at night and drunk driving.

Conclusion

Injuries due to RTA can be prevented or at least can be minimised by preventing the occurrence of traffic accidents. Traffic rules are made and asked to be followed to ensure safety. Proper knowledge of traffic signs is absolutely essential for any person who drives a vehicle. All measures should be taken to avoid road accidents that are a significant cause of mortality, morbidity and disability.

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Tables

Table 1- Distribution of body regions injured in the accident

Site of Injury	ABRASION	CONTUSION	LACERATIONS	Total	Percentage
Extremities	31	12	9	52	11.06%
Lower Limb	29	2	19	50	10.63%

Upper Limb	59	11	3	73	15.53%
Abdomen	23	15	5	43	9.14%
others	163	57	37	257	53.61%

Table 2- Distribution of fracture across various body region

Region of Fracture	Total	Percentage
Skull and maxillofacial	144	42.81%
Lower limb	53	14.97%
Upper Limb	73	21.85%
Spinal	27	8.08%
Ribs	16	4.79%
Pelvic	25	7.48%