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Original Article

Profile of Craniocerebral Injuries among Medico Legal Autopsies Conducted in a Rural Medical College in Maharashtra

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ABSTRACT

Incidence of craniocerebral injury cases are on the rise year on year in urban as well as in rural population. This study involved all medicolegal autopsies referred from Pravara Rural Hospital or brought dead directly to department of forensic medicine, Rural Medical College, Loni, during the year July 1997 to June 2000. The observations made are represented in this paper.

Keywords: Head injury, Craniocerebral injury, Medicolegal autopsy, Skull fractures, Intracranial haemorrhages

INTRODUCTION

Accidents and injuries are the leading cause of death; disability and suffering in the present century world over . They are the result of continuous fast development in various fields with intention to provide maximum facilities to human beings. Sharp increases in human and vehicular population, rapid urbanisation and industrialisation have led to the increase in the incidence. India is undergoing major economic and demographic transition coupled with increasing urbanisation and motorisation. Motorised two wheelers being economical are very common mode of public transportation. According to 2008 report of National Crime Record Bureau of India, 1,18,239 persons were killed in fatal road traffic accidents (RTA) and out of these, 23,552 (19.9%) were killed while riding on two wheelers [2]. Craniocerebral injuries alone accounts for about one-fourth of all deaths due to violence and 60% of all fatal road accidents result in head injuries [3]. Lack of safety measures at home and work places add further to an in the craniocerebral injuries due to the accidents. Social factors like unemployment, difficult survival, illiteracy, consumption of alcohol and other drugs, all contribute to increase in craniocerebral injuries due to the criminal causes.

Craniocerebral injury constitutes one of the common medicolegal problems in living or dead persons. Incidence of injury cases are on the rise year to year in urban as well as in rural population. A large variety of craniocerebral injuries are sustained by persons in RTAs, followed by the domestic and other accidents. In rural area, agricultural accidents are supposed to be one of major causes of head injuries. Beside accidents, cases of craniocerebral injuries sustained in criminal violence are also on rise. All type of craniocerebral injuries whether accidental, homicidal or suicidal are at times accompanied with consumption of alcohol and other drugs. They

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aggravate the intention or ideas roaming in the mind of a person. This leads to the criminal violence. Alcohol and similar drugs are also produced in coordination in the movement and increase the reaction time leading to the accidents on the road or mechanised work places. Medicolegal problems associated with craniocerebral injuries are complex especially in the terms of accidental, homicidal or suicidal. Interpretation of craniocerebral injuries sustained by the impact of hard and blunt objects create major practical problems for many medicolegal experts, because of the common defence plea of accidental cause [4,5].

Most of the studies include the craniocerebral injury cases are limited to urban areas only. The study of craniocerebral injury cases, form medicolegal point of view, among rural population is still lacking. Hence this study is carried out in Pravara Rural Hospital (PRH) attached to Rural Medical College, Loni. It is mainly focused to interpret statistically analyse and make a separate Medicolegal evaluation of death due to craniocerebral injury.

MATERIALS AND METHODS

The present prospective study was carried out in the Department of Forensic Medicine, Rural Medical College, Loni, after obtaining Institutional Ethical Committee clearance. The protocol of all the medico autopsies performed in PRH, Loni, during the year July 1997–June 2000 were screened (Table 1). PRH is a teaching hospital attached to Rural Medical College, Loni. It is a 675-bedded hospital situated in a remote rural area of Ahmednagar in Maharashtra. The hospital provides outpatient and inpatient treatment to rural people from 91 villages of Ahmednagar, Aurangabad and Nasik districts covering a total of 2.2 lakh population. This is well equipped hospital with all facilities as those are available in a Level ITrauma Centre including CT scan. Loni is a well-developed ruralarea with almost all higher educational facilities. Though the people inand around Loni are mainly agricultural labourers and bidi workers belonging to the lower income group of population. The male to female ratio in the area drained to PRH is 1000:952. The rate of literacy is 52.32%.

The present work involved all medicolegal autopsies Referred from PRH or brought dead directly to post-mortem room. Cases of birth injury were not included in this study. Each injury cases have been studied in detail with the specific Performa, which is pretested, structured and pilot tested. Mode of causation was identified in terms of accidents, assaults and homicide, and suicides. This was determined by examination of type, size, shape and direction of injury and as per the panchnama. It was also supported by patient's record and history by Relatives. The photographs have been taken for proper assessment of mode of causation. The information thus collected, was analysed using appropriate statistical tools (namely Microsoft Excel 2007 and IBM SPSS V.20).

OBSERVATIONS AND RESULTS

Total of 97 cases of deaths due to head injuries were present out of 593 post-mortems. The maximum numbers of cases were between 40 and 50 years, that is, 25 cases and 21–30 years, that is, 23 cases out of total 97 cases (Table 2). Male death due to craniocerebral injury was 83.51% and female death due to craniocerebral injury was 16.49%. Areas shown above are taluk places near PRH Shrirampur and Sangamner had 18 cases, 18.55%; Rahata had 13 cases,13.40%; Kopargaon had 12 cases;

Table 1: Distribution of study subjects based on total hospital admission

Year	Total No. of hospital admission
July 1997 to June 1998	12675
July 1998 to June 1999	14427
July 1999 to June 2000	15803
Total	**42905**

Table 2: Distribution of study subjects based on number of Craniocerebral injuries

Total no of injury cases	No. of post mortems	No. of head injury deaths
926 (7.30%)	186	47 (0.3%)
784 (5.43%)	213	36 (0.29%)
828 (05.23%)	194	14 (0.08%)
2538	593	97

Rahuri had 1 case and 25 cases were from other areas then Ahmed nagar district (Table 3). Maximum number of cases were of RTA are 85 out of 97 amounting to 87.62%; due to fall, there were seven cases amounting to 7.21% and two cases of assault were found out of 97, that is, 2.06% (Table 4).

Table 3: Distribution of cranio-cerebral injury cases based on area of residence

Area	No. of cases	Percent of total
Rahata	13	13.40
Kopergaon	12	12.37
Sangamner	18	18.55
Shrirampur	18	18.55
Rahuri	10	10.30
Ahmednagar	1	1.03
Others	25	25.77

Table 4: Cause of cranio-cerebral injuries

Cause	No. of cases	Percent of total
Road Traffic Accident	85	87.62
Train Accident	1	01.03
Fall	7	7.21
Assault	2	2.06
Miscellaneous	1	01.03
Unknown	1	01.03

DISCUSSION

The 17th century has been called the age of Enlightenment; 18th century-the age of reason; the 19th century-the age of progress and the 20th-the age of anxiety. Although the path to a meaningful and satisfying way of life has probably never been an easy one, it seems to have become increasingly difficult in modern times 'James C. Coleman in Abnormal Psychology and Modern Life'.

A sharp increase in vehicular population, rapid urbanisation and industrialisation, introduction of modern equipment and safety measures on road, at home and work places; all on one side have led to the increase in the accidental head injury cases. A sharp increase in human population along with unemployment, illiteracy, difficult survival, frustration, consumption of alcohol and other drugs; all on the other sides have contributed to an increase in injury cases due to the criminal causes.

Head injury constitutes one of the common medicolegal problems in living or dead persons. These medicolegal problems associated with head injuries are complex, especially in terms of accidental, homicidal or suicidal. Interpretation of most of these injury cases creates practical problems because of common defence plea of accidental cause. There had been many studies carried out in relation to head injuries showing a continuous increase in the number of head injury cases with a change in mode of causation and their pattern with time.

Head injuries are a leading cause of death, disability and suffering still, comprehensive injury prevention programs, which are scientifically planned and implemented to not exist in many developing countries like India. A few important possible reasons for this situation are death due to craniocerebral injury are still considered as 'Acts of God' or due to Karma by communities. A fatalistic opinion of the community is one of the prime reasons for this grim scenario. Also, deaths due to craniocerebral injury are treated as transport-police-individual issues rather than health issues. The lack of epidemiological research is one of the prime reasons.

Total information on death due to craniocerebral injury is not available as underreporting–missing information and is a common observation with police, transport and health records. Any analysis of injuries based on local injury patterns has not been carried out and lack of the epidemiological transition in India over the past few years has resulted in the emergence of head injuries as a major public health problem. The enormous loss to society and phenomenal burden on health care services need immediate attention; socio-epidemiologically based, scientifically designed and culturally relevant programs with community participation are required to save precious human lives. A safe life is the basic right of a human. Safe life leads to a longer and more productive safe community. Safe community can participate in head injury preventive programs. About 70–80% of road users

are constituted by pedestrians, motor cars and cyclist; keeping this in mind the appropriate technological measures should be implemented to achieve favourable results.

According to the Institute of Road Traffic Education, New Delhi, 85% of the road accident deaths occur in developing countries and nearly half in the Asia-Pacific region. India accounts for 10% of the road accident fatalities worldwide. An estimated 12,75,000 persons are grievously injured on the road every year [6].

In the study conducted by [7], on head injury victims in fatal RTAs in Delhi, 31% were victims of vehicular accidents.

This study was carried out at PRH attached to Rural Medical College, Loni, Ahmednagar in Maharashtra; with the main objective to access and evaluate the medicolegal aspects of death due to craniocerebral injuries and to bring out any special feature of medicolegal significance of injuries occurring in the rural population. The study has included 97 head injury cases resulted from vehicular accident, fall, assault and other.

In this study, a total of 12,675 cases were hospitalised from July 1997 to June 1998.Out of these, injuries were reported as cause of hospitalisation in 926 cases (7.309%) from which death due to craniocerebral injury was 47 (0.3%).

A total of 14,427 cases were hospitalised from July 1995 to June 1999. Out of these, injuries were reported as cause of hospitalisation in 789 cases (5.43%), from which death due to craniocerebral injury was 47 (0.3%).

A total of 15,803 cases were hospitalised in July 1999. Out of 826 cases, 5.23% of death due to craniocerebral injuries were reported in 14 cases (0.08%). [8] in their study among non-survivors observed maximum head injuries in 85% cases. The percentage in above study was much more as there authors included extremely injured victims in their study. The number of total post-mortem done due to all cases from July 1997 to June 1998 was186 cases, out of which death due to craniocerebral injuries were 47 cases (25.26%).The number of total post-mortem done due to all cases from July 1998 to June 1999 was 213 cases, out of which death due to craniocerebral injuries were 36 cases (16.90%).

Out of 593 deaths from July 1997 to June 2000, head injuries were observed in 97 (16.35%) cases of death, maximum due to RTA in 85 (87.629%) and fall contributed in 7 (7.26%) cases. The mortality of head injury cases remained 16.35% (97 total with maximum contribution of RTA). Among 97 cases, death due to RTA was in 87.62%.

In this study, 97 cases of deaths were due to head injuries out of 593 post-mortems. The maximum number of cases was in between 40 and 50 years, that is, 25 cases; 21–30 years, that is, 23 cases out of total 97 cases. Male dying due to craniocerebral injury was 83.51% and female dying due to craniocerebral injury was 16.49%. Our findings are in general agreement with those of other workers in the field who also reported maximum fatality in the age group 21–40 years [9–11].

CONCLUSION

Majority of the victim died in RTAs. This further shows the need of strict implementations of rules for controlling the speed of vehicle. As head injury is the major cause of death in RTAs, the government should make strict rules for the implementation of use of safety helmets for bike riders, for prevention of driving under influence of alcohol, and for the proper training of drivers, police personnel and traffic controller. The state must also make arrangement for proper street lighting and signalling over roads and install modern monitoring systems in rural areas. Overall, we conclude that improvement in the emergency medical services is a must to decrease the death rate due to RTAs.

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