

Original Article

Observational findings during Postmortem Examination among the Victims of Road Traffic Accidents (RTA)

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Abstract

Background: Road traffic accident (RTA) is a curse of rapid and unplanned urbanization. Frequency of accident is increasing dramatically with rapid growth of motor vehicle in poorly maintained road system. Purpose of this study was to evaluate the fatal effects of victim's deceased body due to RTA.

Methods and results: This study was conducted in the Department of Forensic Medicine of Sylhet M. A. G. Osmani Medical College from January 2015 to December 2015. A total of 68 deceased bodies of RTA victims were examined in this study. Among 68 victims, 48 were male and 20 were female, mean age was 27.06(±14.53) years with age range from 3 years to 76 years. There were 7 drivers, 41 occupants and 20 pedestrians became victims of RTA. Major injury site was head and neck (86.76%) followed by upper limb (76.47%), chest (57.35%), abdomen (50.00%), lower limb (20.59%), pelvis (16.18%) and spine (13.24%). All the victims were suffered from multiple injuries. Abrasion and contusion found in most of the victims (95.59% and 76.47% respectively). Fracture other than head region and crash injury in head observed in 54.41% and 41.18% victims. Major cause of death in this sample was hemorrhage and shock (47.06%) followed by craniocerebral (41.18%), spinal injury (7.35%) and pulmonary embolism (4.41%). Loss of young citizens is a great loss of any developing country. Moreover, death caused by hemorrhage and shock is preventable. Taking immediate measure is worthy to save life from RTA.

Conclusion: Increasing number of RTA cost of valuable work force as well as resources, which is preventable. As hemorrhage and thus shock following multiple injuries is the cause death observed in this sample, early detection of injury pattern and prompt action might save some lives. Educating general people about first aid service and providing well equipped ambulance with well-trained paramedic will be worthy.

Keyword: Road traffic accidents (RTA)

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Introduction

The process of rapid and unplanned urbanization has resulted in an unprecedented revolution in the The process of rapid and unplanned urbanization has resulted in an unprecedented revolution in the

growth of motor vehicles worldwide. In the developing countries, like Bangladesh, current trends in population growth, industrialization and urbanization are making heavy pressure on the transport network in general and on road system in particular. Road traffic accident (RTA) is a kind of unwanted acute event of immense public health issue that results from the population explosion and increased motorization. The RTA alone is the cause of 1.35 million death each year around the world, 8th leading cause of all age deaths and the leading cause of death of 5-29 years aged population. The rate is 3 times higher in low-income countries.^{1,2} Incidence is increasing day by day; developing and middle-income countries are mostly affected. According

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to the report of "Nirapod Sarak Chai" (We want safe road), a non-profit organization on road safety of Bangladesh, more than 5000 deaths (approximate 5,227 reported deaths), nearly 7000 wounds occurred in over 4500 RTA in 2019 in Bangladesh³.

Several factors - like human (driver's fatigue, poor traffic sense, violation of traffic rules), vehicle (too old and poorly maintained vehicles, mechanical faults of vehicles) and environment (damaged road, over-congested traffic, road encroachment) - plays vital role on RTA and its consequences. Injury sites and patterns varies affected persons depending on their position and cause of the accidents. Studies on patterns and severity of injury in RTA are inconsistently available in different countries. As there is no observed in North-East portion of Bangladesh, this present study was carried out to evaluate demographic and injury profile in autopsy cases with alleged history of RTA.

Methods:

This observational cross-sectional study was conducted at Department of Forensic Medicine of Sylhet M.A.G. Osmani Medical College mourned among victims of RTA during the period from January 2015 to December 2015. Data regarding victim's particulars and incident / events of accident noted from the inquest report which came along with the dead bodies. Pattern and depth of injuries were noted during post mortem examination. Confidentiality of the data was ensured.

Results:

There were 68 deceased body due to RTA came to the department for medico-legal autopsy during the study period. All the autopsies were done by subject specialist. Mean age of the victims was 27.06(\pm 14.53) years, ranging from 3 years to 76 years. Maximum number of victims(41.18%) were came from below 20 years of age group, and minimum number (7.35%) from 40 to 49 years of age group. From 20 years to 39 years age groups comprised 42.65% of study population and 8.82% came from more than 50 years age group. There

were 70.59% victims were male and 29.41% were female. Among the victims, 60.29% victims were occupants, 29.42% were pedestrian and 10.29% victim were driver. (Table no. 1)

Table-1: Demographic profile of RTA victims

Characteristics	Frequencies	%
Age distribution		
<20 years	28	41.18
20-29 years	17	25.00
30-39 years	12	18.18
40-49 years	5	7.35
50 years and above	6	8.82
Sex		
Male	48	70.59
Female	20	29.41
Position during RTA		
Driver	7	10.29
Occupant	41	60.29
Pedestrian	20	29.42

Distribution of injuries involving different body parts showed in Table no. 2. Injury to the head and neck region observed higher in both sexes, male (87.50%) and female (85.00%). Among the male victims, other affected sites included upper limbs (81.25%), chest (58.33%), abdomen (39.58%), lower limbs (20.83%), pelvis (10.42%) and spine (8.33%). On the other hand, 70.00% affected site was abdomen followed by 60.00% in upper limbs, 55.00% in chest, 35.00% in pelvis and 25.00% in both spine and lower limbs among the female victims.

There were six types of injuries observed - abrasion, contusion, laceration, fracture, crush injury in head and abdomen in this study. All the victims were suffered from multiple types of injuries. Abrasion occurred in 93.75% male and 95.00% female victims. Second commonest injury was contusion, found in 83.33% male and 65.00% female victims. Third common injury was bone fracture (60.42%) in male and crush injury head (45.00%) in female. While crush injury head in male (37.50%) and fracture in female (35.00%) were fourth common injury

type. Least common injuries were laceration in 18.75% of male and 30.00% of female, followed by crush injury abdomen, happened in 10.42% males and 5.00% females.

Table-2: Distribution of injury types on the body of the victims

Sl. No.	Body parts involvement	Male 48 (100%)	Female 20 (100%)	Total 68 (100%)
1	Head and neck	42 (87.50%)	17 (85.00%)	59 (86.76%)
2	Chest	28 (58.33%)	11 (55.00%)	39 (57.35%)
3	Abdomen	19 (39.58%)	14 (70.00%)	34 (50.00%)
4	Pelvis	5 (10.42%)	7 (35.00%)	11 (16.18%)
5	Spine	4 (8.33%)	5 (25.00%)	9 (13.24%)
6	Upper limb	39 (81.25%)	12 (60.00%)	52 (76.47%)
7	Lower limb	10 (20.83%)	5 (25.00%)	14 (20.59%)

Table-3: Magnitude of injuries

So. No.	Injuries	Male 48 (100%)	Female 20 (100%)	Total 68 (100%)
1	Abrasion	45 (93.75%)	19 (95.00%)	65 (95.59%)
2	Contusion	40 (83.33%)	13 (65.00%)	52 (76.47%)
3	Laceration	9 (18.75%)	6 (30.00%)	15 (22.06%)
4	Fracture	29 (60.42%)	7 (35.00%)	37 (54.41%)
5	Crush injury head	18 (37.50%)	9 (45.00%)	26 (41.18%)
6	Crush injury abdomen	5 (10.42%)	1 (5.00%)	6 (8.82%)

Cause of death of the RTA victims showed in Table no. 4. The highest victims died from hemorrhage and shock in 47.06% cases followed by injury of skull and brain in 41.18% cases, spinal injury in 7.35% and pulmonary thromboembolism in 4.41% cases.

Table-4: Pattern of cause of death

So. No.	Cause of death	Frequency	Percentage
1	Hemorrhage and shock	32	47.06%
2	Injury of skull and brain	28	41.18%
3	Spinal injury	5	7.35%
4	Pulmonary thromboembolism	3	4.41%

Discussion:

Among the death due to injuries, RTA is playing the leading role globally. It not only kills the victims, but also affects badly to the other non-fatal victims personal, social and financial life. Incidence is increasing all over the world including Bangladesh. Males are predominantly victims of RTA, almost three fourth of the study population. Similar predominance observed in several countries around the world.⁴⁻⁶ This is because of their most of the activities are outside the home. They are moving several areas due to their profession and earning. In Bangladesh, like other third world countries, females are usually confined within home.

Young people are found to be mostly affected more than 65% of study population was young people (aged below 30 years). Now a day, young generations are using motor vehicle with high velocity carelessly. They are not educated enough about driving any vehicle and road safety; even most of them do not have driving license too. Teenager drivers are also visible in public services in certain portion in Bangladesh. Younger age with powerful vehicle is a cause of increased accident and fatality. Younger age group found to be also affected in different parts of India.^{4,7,8}

Major injury site in this study was the head and neck region. This was also found to be major site of injury in other countries like India, Pakistan, Nepal.^{7,9-11} Among them, one third were crush injury in head, and this injury was the cause of death in about one sixth cases in this injury. Other

than the crush injury, intracranial injury was commonly present. This was due to the deceleration/acceleration injury, where brain tissue has edema and blood congestion at both front and back side. This might be a cause of loss of consciousness at the beginning and leads the person unprotected to have multiple body site injury. All the victims in this study found to have multiple injuries in their body. Injury in upper limb, chest and abdomen were observed commonly next to the head and neck region. Fracture were commonly present in limbs, chest and spine, which were usually fatal in nature. Fracture and crush injury causing death by excessive hemorrhage (either internal or external or both) followed by shock and embolism too. Abrasion invariably present in multiple sites in almost all the accident victims followed by contusion in this study. However, several researchers described similar pattern of injury sites and types with variable proportions in different countries.^{8,9,11}

Hemorrhage followed by shock was found to be major cause of death in this study. Second cause was head injury (Injury of skull and brain), where victims were dead during the accident event. Massive hemorrhage due to ruptured large blood vessels which might happen in spinal injury, closely related large bone fracture, and abdominal injury (liver and spleen injury) leads to immediate death on the spot. Sometimes lack of primary care and transportation delay caused death of victims of progressive shock due to internal hemorrhage. Crush injury head leading to death due to head injury (intracranial bleeding), skull bone fracture and direct brain injury predominantly happened in two wheeler accidents victims do not wear helmets.^{4,8} Different forms of head injury were observed to be leading cause of immediate death by several researchers.^{4,9,12,13} Pedestrians usually suffered from multiple injuries, mainly in peripheral body parts along with crush injury to the head and abdomen.¹⁴

Nevertheless, there were several challenges has to be confronted during this study. Information regarding the site of accident (road type and

traffic condition) and probable factors (particular of the driver and the vehicle, seating position of the victims within vehicle) were insufficient. Delay in carrying of victims and improper handling observed in certain cases. Histopathological data of all the victims could not be obtained too.

Conclusion:

Increasing number of RTA cost of valuable work force as well as resources, which is preventable. As hemorrhage and thus shock following multiple injuries is the cause death observed in this sample, early detection of injury pattern and prompt action might save some lives. Educating general people about first aid service and providing well equipped ambulance with well-trained paramedic will be worthy.

Conflict of Interest: The author declares no conflict of interest in this study.

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