

Original Article**Pattern of Injury in RTA Patients in Department of Neurosurgery, Rangpur Medical College Hospital**Roy R¹, Rahman H², Sultana S², Bhuiya TH³

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Abstract:

Background: Road traffic accident (RTA) is a common problem of neurosurgery department. It is one of the leading causes of death in Bangladesh; the World Health Organization estimated that it kills over 21,000 people in the country annually.

Aims: This study aims at to give special attention to RTA patients having head injury or spine injury rather than other injury.

Method: The data were collected using a set of structured questionnaires from January/2018 to December/2018.

Result: Maximum (93.3%) of RTA patients were managed conservatively and only a few number (6.7%) of patients needed surgery. Recovery was 83% and death was in 17% cases.

Conclusion: Head injuries remain the most common and serious type of trauma in RTA and demand good neurosurgical care for such patients. Immediate attention is needed to reduce preventable deaths and morbidities in rural Bangladesh.

Key words: Road traffic accident (RTA), Head injury, CT scan head.

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Introduction:

Neurosurgery is a highly specialized department of Rangpur Medical College Hospital and has to face huge number of road traffic accident (RTA) patients on emergency basis. It is one of the leading causes of death in Bangladesh; the World Health Organization estimated that it kills over 21,000 people in the country annually. Over five million people die due to head injury around the world each year despite no longer being perceived as unavoidable but largely preventable events¹. Out of this huge number, 1.2 million are due to road traffic accidents (RTA), 90 per cent of which take place in low and middle income countries^{2, 3}. It is predicted that by 2020, RTA will become a major culprit in the total disease burden^{2,4}. In India there is an accident every minute and death every 8 minute and significant variations also arise between different states of India^{5,6,9}.

The burden of RTA patients in the neurosurgery department in Rangpur medical college hospital is increasing day by day. In the different years the RTA patients were 1480 (2012), 1668 (2014), 2040 (2016) and 2276 (2018). So time has to eminent to categorize and manage the RTA patients in various department like casualty, general surgery, orthopedic surgery, ENT, faciomaxillary and neurosurgery department having head injury, spine injury and Polytrauma (face injury, soft tissue injury, chest injury, abdominal injury, limbs injury, and vascular injury). Sometimes patients present with shock due to huge blood loss in fractures, great vessel injury or visceral injury and patients are managed as severe head injury as patients were unconscious having history of RTA and ultimately patients die. Sometimes patients are admitted into neurosurgery department with history of RTA having only skin abrasion or skin cut near head or with limbs fracture or abrasion but no sign of head injury or spine

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injury that could be managed in general surgery or orthopedic surgery department. And also some RTA patients feel secure to take treatment under neurosurgery department. We have to face troubles to manage such type of patients by ignoring the critical head injury or spine injury patients.

This study is aimed at to give special attention to manage the head injury and spine injury patients separating the other patients into other specific department in multi disciplinary hospital to reduce morbidity and mortality.

Materials and Method:

This is a prospective study conducted in the neurosurgery department of Rangpur medical college hospital from January/2018- December/2018. The alive admitted (direct and referred) patients with history of RTA were included in this study.

The detailed history regarding age, sex, types of vehicle, types of victims; examination regarding Glasgow coma scale (GCS), other associated injury; relevant investigation like CT scan were done (Fig-1 CT scan shows depressed fracture with hemorrhagic contusion and Fig-2 shows normal CT scan of head

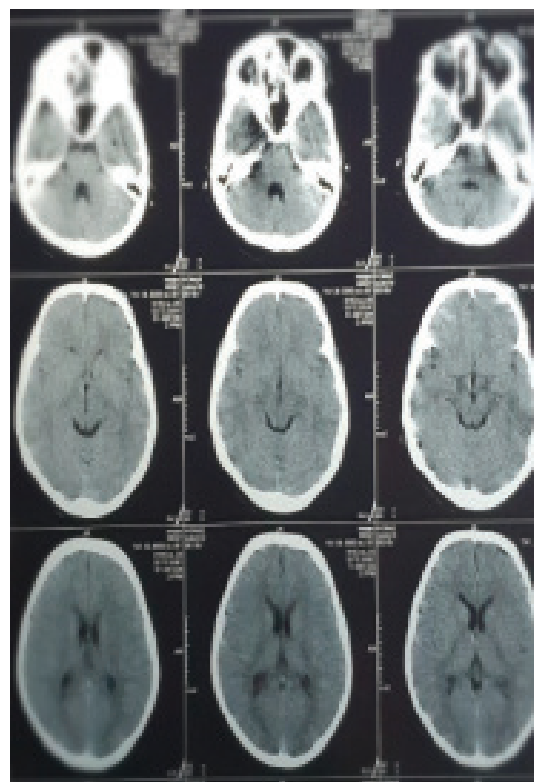


Fig.-2: Normal CT scan of head injury patient.

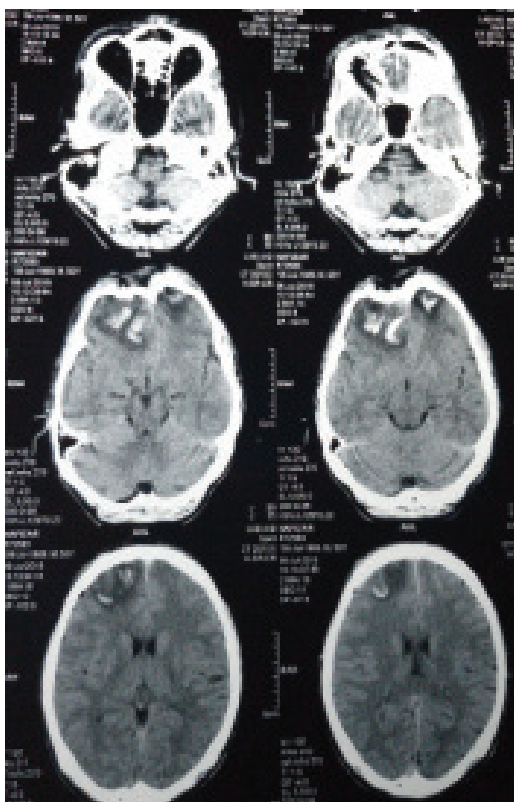


Fig.-1: CT scan shows frontal depressed fracture with hemorrhagic contusion.

injury patient). Data were collected everyday by using structured questionnaires. The purpose of the study was explained clearly to each respondent during interviewing for collecting data. Total 2276 emergency patients were admitted in emergency basis in neurosurgery ward. The collected data and variable (age, sex, types of vehicle, types of victims, associated injury, CT scan findings, GCS, treatment and outcome) were tabulated and analyzed with SPSS, version-16. The results were as follow:

Results:

Table-I
Distribution by age (n-2276)

Age groups in years	Frequency	Percent
1-15	290	12.7
16-30	883	38.8
31-45	579	25.5
46-60	276	12.1
61-75	221	9.7
76-90	27	1.2
Total	2276	100.0

Table-1 Shows that 38.3% RTA patients were between the ages of 15-30 years followed by 25.5% between the ages of 31-45 years.

Table-II
Distribution by sex (n-2276)

Sex	Frequency	Percent
Male	1407	61.8
Female	869	38.2
Total	2276	100.0

Table-II Showed that 61.8% patients were male and 28.2% patients were female and male female ratio were 1.6:1.

Table-III
Distribution by vehicles (n-2276)

Vehicles	Frequency	Percent	p-value
Motor bike	1048	46.1	<.05
Auto	773	33.9	
Bus/Truck	455	20.0	
Total	2276	100.0	

Table-III Showed that motor bike induced RTA patients were 46.1% cases followed by auto induced RTA in 33.9% in cases value <.05.

Table-IV
Distribution by types of victims (n-2276)

Victims	Frequency	Percent	p-value
Traveler	1117	49.1	<.05
Pedestrian	717	31.5	
Driver	442	19.4	
Total	2276	100.0	

Table-IV Showed that maximum RTA patients were traveler (49.1%) followed by pedestrian (31.5%) and p value <.05.

Table-V
Distribution of associated injures in RTA victims (n-2276)

Associated Injury	Frequency	Percent	P value
spine injury	14	.6	<.05
limb injury	207	9.1	
None	2055	90.3	
Total	2276	100.0	

Table-5 Shows other injury associated with head injury in .6% cases in spine, 9.1% cases in limb and no injury in 90.3% cases, p<.05.

Table-VI
Distribution by CT scan findings (n-2276)

CT findings	Frequency	Percent	P value
Normal	1076	47.3	<.05
Skull fracture	152	6.7	
Brain injury	938	41.2	
Brain +skull injury	110	4.8	
Total	2276	100.0	

Table-6 Shows in RTA causing head injury patients, CT scan shows normal in 47.3% cases, brain injury in 41.2% cases, skull fracture in 6.7% cases and combined brain-skull injury in 4.8% cases , p<0.05.

Table-VII
Distribution by GCS (n-2276)

GCS	Frequency	Percent	P value
1-7	428	18.8	<.05
8-13	538	23.6	
14-15	1310	57.6	
Total	165	100.0	

Table-VII Shows maximum (57.6%) cases were admitted with mild head injury, 23.6% cases with moderate head injury and only 18.8% cases with severe head injury p<0.05,

Table-VIII
Distribution by treatment (n-2276)

Treatment	Frequency	Percent	P value
Conservative	2124	93.3	<.05
Surgery	152	6.7	
Total	2276	100.0	

Table-8 Shows 93.3% cases were cured with conservative treatment and surgery needed only 6.7% cases, p<0.05.

Table-IX
Distribution by outcome (n-2276)

Outcome	Frequency	Percent	P value
Recovery	1890	83.0	<.05
Death	386	17.0	
Total	2276	100.0	

Table-9 Shows in head injury patients due to RTA recovery in 83% cases and death in 17% cases, p<0.05.

Discussion:

In the present study, the highest number of victims (38.8%) was between the age group of 16-30 years. The people of the third decade are more commonly involved in road traffic injuries as they have to move daily for study and daily work. In the present study, 64.3% of the victims were between 15 and 45 years age group. Similar observation was reported by the study of Supriya Satish Patil et al⁶. This showed that the people of the most active and productive age groups are involved in road traffic injuries, which add a serious economic loss to the community. The present study shows that below the age of 15 and above the age of 61 years, the proportion of victims was low, may be due to less activity and less movement of this age group. Corresponding findings were reported by Jha et al⁵.

In our study the male-to-female ratio was 1.6:1. It was observed that 61.8% of the victims were males and 38.2% victims were female. In the study of Supriya Satish Patil et al⁶ the male female ratio was 4.6:1 which is not similar to our study, this variation may be due to more mobility of female for their daily work in poor area of Bangladesh. The gender difference is probably related to both exposure and risk taking behavior.

In this study, the highest number of victims were traveler (49.1%) followed by pedestrians (31.5%) and driver (19.4%). Corresponding results were reported by Jha et al⁵.

Our study showed that RTA causing vehicles were motor bike (46.1%), auto (33.9%) and bus/truck (20.0%) which is almost similar to the study done by Supriya Satish Patil et al⁶. Motor bike is a popular two wheeler high speed, less stability vehicle in rural area like Rangpur division causing maximum occurrence of RTA.

RTA causing head injury may be associated with injury of the other parts of the body. In our study associated spine injury in .6% cases and limb injury in 9.1% cases and no associated injury in 90.3% cases. Similar study was reported by Jha et al⁵ but incidence of fracture is a bit high in that study. But in our study the incidence of spine fracture and limb fracture is low, may be due to less speed of vehicles like auto and motor bike in rural non brick road.

CT scan of head of RTA patients shows various findings. Our study showed normal CT scan in 47.3% cases, brain injury in 41.2% cases, skull fracture in 6.7% cases and combined skull-brain injury in 4.8% cases almost same result were reported by Verma PK, Tiwari KN⁷. Here maximum (47.3%) head injury patients showed normal CT scan; may be due to low speed vehicle like

auto as well as uses of helmet of motor bike driver.

RTA patients are admitted in neurosurgery ward with various conscious level. In this study 57.6% patients were admitted with GCS score 14-15, then 23.6% patients with GCS score 8-13 and only 18.8% patients with GCS score 3-7. Here maximum patients were mild to moderate head injury.

Regarding treatment our study showed that maximum patients (93.3%) were treated conservatively and surgery needed only in 6.7% cases. M. Srinivas et al⁸ shows conservative treatment in 20% case and surgical treatment in 69% cases and NA in 11% cases. This variation may be due to both direct and referral admission in our hospital but their study showed only on referral cases.

Our study showed recovery in 83% cases and death in 17% cases.

Conclusion:

Considering the results of the study screening of the head injury patients is essential to reduce the burden of the minor head injury patients in the neurosurgery department and increase the effort of neurosurgeons to manage the moderate and severe head injury patients.

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