

MOTORISED TWO-WHEELER TRAUMATIC HEAD INJURY- A PROFILE OF PATIENTS WITHIN 14 TO 18 YEARS OF AGE, ADMITTED IN TRAUMA CENTRE OF MEDICAL UNIVERSITY IN LUCKNOW

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ABSTRACT

BACKGROUND

Traumatic brain injury is one of the leading causes of death in children. Although, no age-specific division of road traffic accident mortality data is available in India, according to National Crime Records Bureau, maximum fatalities in traffic accidents was reported by Uttar Pradesh in the country.

MATERIALS AND METHODS

The descriptive study was conducted in the Trauma Centre of King George's Medical University, a tertiary care centre in Lucknow. The admitted traumatic patient's profile, detailed data of injury, general physical and neurological examination, radiological findings, management details and outcome were noted. All patients were managed according to protocols laid down by standards and departmental protocols. Patients were grouped under minor head injury (GCS 13 - 15), moderate head injury (GCS 9 - 12) and severe head injury (GCS 8 or less). Post resuscitation GCS was considered as baseline and outcome was assessed at 3 months by Glasgow Outcome Scale (GOS).

RESULTS

Road traffic accident was one of the major causes of paediatric head injury accounting for 470 children being admitted/observed by Neurosurgeon in Trauma Centre of University College of Lucknow. On further analysis, we found that there were 303 patients between 14 and 18 years, which account for approximately 65 percent. It was noticed that out of these 303 head injury cases, about 80% (243 patients) were those, who were either driving or riding a pillion on two-wheeler. Out of these, 172 patients were driving a two-wheeler and it was shocking to notice that 96% (165 patients) were those who were not wearing the helmet with mortality of 14.5% (24 patients).

CONCLUSION

Unauthorised driving at adolescent age group makes them vulnerable to accidental head injury, that too of increased severity when the majority of these can be prevented. The present data may provide the inside to the policy makers for implementation of various policies to ensure the traffic rules are strictly followed. Parents should be acting responsible enough not to give two wheelers before the appropriate age and also be vigilant that their child follows traffic rules strictly.

KEY WORDS

Road Traffic Accident, Head Injury, Paediatric Head Injury, Adolescent Head Injury, Helmet, Motorised, Two-Wheeler, 14 to 18 Years.

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BACKGROUND

Road Traffic Accident (RTA) is the leading cause of death worldwide and this also holds true for India. Loss of productive life and burden to the society is enormous, especially due to accidents in paediatric population.¹⁻³ Though, there is no age-specific division of RTA deaths in India, but according to National Crime Records Bureau (NCRB) 2015, total no. of road accident deaths is increasing per year with 5.1% increase seen during 2015 compared to 2014. State of Uttar Pradesh (UP) reported maximum fatalities in traffic accidents in the country. NCRB 2015 also

reported that in UP and Punjab, two wheelers have accounted for maximum fatal road accidents.⁴ Traumatic Brain Injury (TBI) accounts for majority of deaths and disability in children, adolescents and young adults. Children driving the two wheelers is one of the major causes of TBI.¹⁻³ No study has been done in Eastern part of Uttar Pradesh regarding profile of adolescent head injury. Therefore, this study will provide the profile of adolescent head injury due to road traffic accidents. It may also provide the data that may show the traffic rules followed by older children.

Objective of the Study- Profile of head injury in Road Traffic Accidents in adolescents, between 14 and 18 years of age, admitted or observed in Neurosurgery Department of Medical University in Lucknow.

MATERIALS AND METHODS

The descriptive study was conducted in the Trauma Centre of King George's Medical University, a tertiary care centre in Lucknow. Study include patients who presented with head

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injury, giving valid consent and admitted in Neurosurgery Department in trauma centre of the University from October 2016 to December 2017.

On admission detail of each of the patient was noted, which included patient’s profile, type and mode of injury, time period from the time of accident to the time when attended by first doctor and then the corresponding time to reach the trauma centre, general physical and neurological examination, radiological findings, management details and outcome. TBI severity was scored according to Glasgow Coma Score (GCS). In all the patients, Computed Tomography (CT) scan of the head was done and in some cases as indicated CT Spine was also done as early as possible. All patients were managed as per laid down standard and departmental protocols. Patients were grouped under minor head injury (GCS 13 - 15), moderate head injury (GCS 9 - 12) and severe head injury (GCS 8 or less). Post resuscitation GCS was considered as baseline and outcome was assessed at 3 months by Glasgow Outcome Scale (GOS). The data was analysed using Microsoft Excel 2013 software. Categorical data of the sample was summarised as proportion or percentage.

RESULTS

Road traffic accident was one of the major causes of paediatric head injury accounting for 470 children being admitted/ observed by Neurosurgeon in Trauma Centre of Medical University of Lucknow. On further analysis, we found there were 303 patients between 14 and 18 years which accounted for approximately 65 percentage. Out of these 303, there were 243 patients who were travelling by two wheelers accounting for about 80% of injury in paediatric population between 14 and 18 years. We noticed 172 (56%) patients were those who were driving and out of these 165 were not wearing helmet.

The most common symptoms in road traffic accident in 14 - 18 years patients who were riding a 2-wheeler were vomiting followed by loss of consciousness within less than 30 minutes (Table 1). On analysing the 14 - 18 years patients riding a 2-wheeler and not wearing helmet (Total 165) in accordance with post resuscitation GCS 54 (33%) were having severe head injury, 42 (25%) were having moderate head injury and 69 (42%) were having mild head injury. The most common CT scan head finding in these patients were skull fractures (88 patients) followed by contusion (53 patients) (Table 2). Out of the 24 (14.5%) patients who expired, 21 patients had severe head injury.

Symptoms	Number of Patients
Headache	24
Vomiting	112
Seizures	3
Amnesia	9
LOC* less than 30 mins	95
LOC 30 mins to 6 hrs.	36
LOC more than 6 hrs.	21
Bleeding from ear/ nose	36
CSF+ Otorrhoea	10
CSF Rhinorrhoea	22

Table 1. Number of patients of Road Traffic Accident between 14 and 18 years, who were driving a Two-Wheeler

Abbreviation- *Loss of Consciousness, +Cerebrospinal Fluid.

Findings on CT* Scan Head	Number of Patients
Skull Fractures	88
Extradural Haematoma (EDH)	38
Subdural Haematoma (SDH)	24
Contusion	53
Intraventricular Haemorrhage	25
EDH with SDH	4
EDH with Contusion	6
SDH with Contusion	12
EDH with SDH with Contusion	1
Cerebral Infarction	4

Table 2. Number of patients of Road Traffic Accident between 14 and 18 years who were driving a Two-Wheeler. CT Scan head Finding

Abbreviation- *Computed Tomography

DISCUSSION

Road traffic accidents in adolescence is a matter of great concern in our society. Most of the deaths occur due to traumatic brain injury. This can be explained as there may be permanent functional loss of that brain area, which is damaged in head injury.^{1-3,5}

One of the commonest causes of paediatric head injury is road traffic accidents with 470 cases. Out of these 303, that is 65 percentage is within 14 to 18 years of age, which is similar to the report by Garg et al that motor vehicle accidents were the leading cause of trauma in older children.³ In our study, we observe that two wheeler forms bulk with about 80% (243 patients) of injury in paediatric population between 14 and 18 years and out of these 56% (172 patients) were driving the two wheeler. Moreover, it was shocking to notice that out of 172, nearly 96% (165 patients) were not wearing helmet. Hence, adolescents are more seen driving a two-wheeler without wearing helmet. We specifically focus on this age group as unauthorised driving at this age group makes them vulnerable for accidental head injury, that too of increased severity when the majority of these can be preventable. This also increase the socio-economic burden to the country.⁵⁻⁶

The most common symptoms seen is vomiting followed by loss of consciousness for less than 30 minutes, while Dara et al reported ear bleed as the most common and vomiting as the second most common symptoms. This difference may be there because of difference in age distribution.^{2,3}

It is noticed that 33% of this population accounts for severe head injury, while Garg et al reported 47% as severe one, while Dara et al reported it to be about 22%. The CT scan finding clearly points that skull fractures (88 patients) are far more common than contusion (53 patients). This is contrary to few previous studies, which shows that contusion is the commonest. Focusing on mortality the data shows that 24 patients expired, out of which 21 had severe head injury. It again signals that GCS as a predictor of outcome, similarly shown by study from Dara et al.²

CONCLUSION

Paediatric age group, especially between 14 and 18 years is vulnerable to road traffic accidents, as they are unauthorised to drive, and they even drive two wheelers without following most of the traffic rules such as wearing helmet. Its high

priority to ensure that kids do not succumb to RTA mishaps. Hence, the present data may provide the inside to the policy makers for implementation of various policies to ensure the traffic rules are strictly followed. It is also the responsibility of parents not to give two wheelers before the appropriate age and be vigilant that their child follows traffic rules. Losing a healthy young child not only cause immense burden to society, but it is also very disturbing and guilty for parents. Strict enforcement of traffic rules and educating the children regarding safety measures at school may prove boon to reduce such fatalities.⁷

Limitations

Although, the current study was performed in the biggest tertiary trauma centre of Uttar Pradesh, a few patients may have not been referred to this centre and therefore missed in the data presented here. Besides those with very severe injuries who died during transport to the hospital were also not included. Furthermore, children with mild head injuries who may not have sought clinical care and therefore may leave biased the observations were not included. This study also missed analysis of children with TBI, who were never admitted to neurosurgery wards or who do not give consent to be the part of the study (e.g. observe or admitted and discharge from casualty, trauma surgery or paediatrics).

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