

Research Article

Clinical profile and management of head injury at tertiary health care center in rural area, India

Nandkishor Narwade^{1*}, Pradnya Narwade², Mithilesh Ghosalkar¹, Tanveer Parvez Shaikh¹,
Yashashvi Sharma¹, Naseem Khan¹, Sharique Ansari¹

¹Department of General Surgery, D Y Patil School of Medicine, Nerul, Navi Mumbai, Maharashtra, India

²Industrial Health Consultant, Dhirubhai Ambani Knowledge city, Koparkhirane, Navi Mumbai, Maharashtra, India

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*Correspondence:

Dr. Nandkishor Narwade,

E-mail: nandkishorn54@gmail.com

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ABSTRACT

Background: Trauma is a major public health issue and head injury is a frequent cause of morbidity and mortality worldwide. Head injury is the injury on head with alteration in the level of consciousness with or without vomiting. Alcohol is the major contributing factor causing majority of cases.

Methods: This study analyzes the increasing occurrence of head injury in the developing rural area in India. Because of increasing trend of head injury, a total of 100 cases were studied from a period of March 2012 to July 2015.

Results: Most of the cases were due to road traffic accident, assault and fall from height with maximum cases in young age group. In our study CT scan was decisive in 43% cases which were operated. The role of paramedical staff taking care at the site of accident and on the way up to hospital causing reduction in the death and disability. For the improvement of outcome there should be easily recognition and prevention of secondary insults and for this CT scan has a decisive and important role.

Conclusions: By studying the common causes of head injury, identifying the preventable factors causing mortality and morbidity and explaining the important role of pre hospital management, we would like to conclude how we can prevent the morbidity and mortality and improving the overall outcome of head injury from road traffic accident by early treatment in the tertiary hospital.

Keywords: Head injury, CT scan, Road traffic accident, Pre hospital management

INTRODUCTION

Trauma is the most common cause of death in the individual of young age group. It is the third most common cause of death for all ages. Due to increase in the vehicular traffic with high speed vehicles, increasing industrialization trauma has become major health hazard. Head injury is the major factor in all trauma cases causing mortality. Because of lack of timely treatment at the site of accident in cases of reversible trauma chances of recovery is lower. Level of unconsciousness is the most important sign in the assessment of severity of head

injury. Glasgow coma scale score defines the level of consciousness and correlates with recovery. The final neurological status of patient of head injury is the sum of irreversible injury to brain acquired at the time of accident and damage due to secondary insults like: hypoxia, hypertension, expanding intracranial hematoma, raised ICT. So early recognition and prevention of these secondary insults results in improvement in neurological status of patient of head injury and outcome also. So investigation like CT scan is having major role in outcome of head injury cases. Keeping all this in mind clinicopathological studies were carried out to correlate

the diagnostic and prognostic factor with pathological findings. We have studied the common factors causing and affecting clinical progress in head injury cases, the incidence of head injury in the rural area and distribution of head injury according nature of causes (injuries) like vehicular, assault and fall from height etc.

METHODS

A total of 100 cases of head injury having Glasgow coma scale 13 or less than it was admitted during the period of March 2012 to July 2015. As per the proforma all the selected patient were examined initially as primary survey in which the patient's airway, breathing, circulation and major injuries along with bleeding sites were taken care of. After this primary lifesaving survey was done where patients were thoroughly examined, proper history was taken as it is a secondary survey for assessment of diagnosis. After stabilizing the patient were subjected to x-ray skull, CT scan of brain. Patient having minor type of injuries were subjected to conservative management. Patient who presented as flaccid, apneic, without brain stem injuries where reflexes did not respond to initial resuscitative measures which was designed to lower intracranial pressure, without any improvement in their neurological status. This was an unsatisfactory results and such patients were not considered as operative candidates. Rest of the patients which had positive finding of brain injury on CT scan of brain were subjected to operative treatment. Based on the nature of injury various procedures were performed like burr hole, craniotomy, excision of fracture segment, evacuation of hematoma. Postoperatively the patient were kept in intensive care unit for observation and then shifted to wards with antibiotics, antiepileptic, diuretic and steroids. Some patient gradually recovered in the wards while other succumbed to their injuries.

RESULTS

Maximum no of cases of head injury were noted in age group of 21 to 30 years with average age being 23.7 (Figure 1 & Table 1).

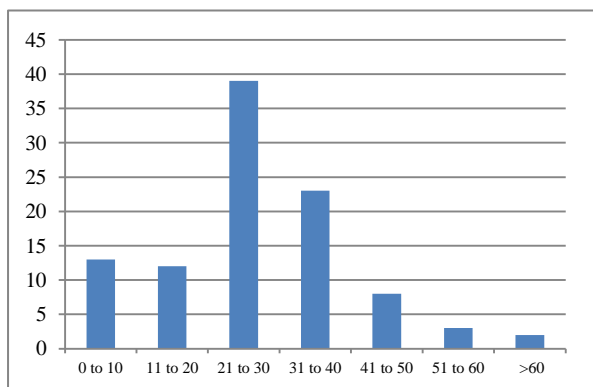


Figure 1: Shows No. of cases of head injury in various age group.

Table 1: Showing ages vs. number of cases.

Age in years	No. of cases	Percentage
0-10	13	13%
11-20	12	12%
21-30	39	39%
31-40	23	23%
41-50	8	8%
51-60	3	3%
>60	2	2%

Male patients were 6 times more than female (Figure 2).

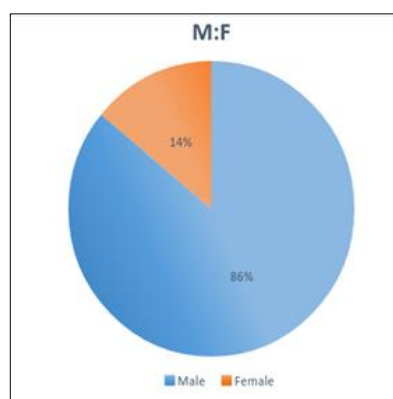


Figure 2: Male:Female ratio in head injury patients.

The commonest mode of injury was the road traffic accident in 57% of cases followed by fall from height 26% (Table 2).

Table 2: Showing commonest mode of injury.

Mode of injury	No. of cases	Percentage
Road traffic accident	57	57
Fall from height	6	26
Hit by heavy object	4	4
Assault	12	12
Railway accident	1	1

Road traffic accident is also commonest cause in expired cases 22.75%. In 42% of head injury cases there was history of alcohol consumption. 62.4% patients having head injury due to road traffic accidents there was history of alcohol consumption. In other cases this was 10.4% S/O that alcohol may be the cause of increased incidence of road traffic accident. Maximum cases of death occurred in 1st 12 hours spot death weren't included in this study.

Thus out of 16 deaths 14 deaths occurred in those cases having GCS score less than 8. Comparatively more deaths (66.66%) occurred in the group having GCS score less than 4. Maximum skull fracture on x-ray was seen in the age group of 21-30 years (82.56%) (Table 3).

Site of fracture: common site - parietal region (30.35%).

Table 3: GCS of various patients associated with death.

GCS(T)	Cases	Death	Percentage (%)
3-4	6	4	66.66%
5-7	19	10	52.6%
8-13	75	2	2.66%

Commonest hematoma, subdural hematoma (16.83%), intracerebral (15.3%), extradural (12.24%) (Table 4).

Table 4: CT scan findings.

CT scan findings	Percentage (%)
Subdural hematoma	16.83%
Intracerebral hematoma	15.3%
Extradural hematoma	12.24

SDH:EDH ratio 2:1. Thus in majority of dead patients the lesion found was multiple hematoma (31.25%) followed by subdural hematoma (25%) (Table 5) (Figure 3).

Table 5: Type of lesion and death association.

Type of lesion	No. of deaths	Percentage of mortality
SDH	4	25%
EDH	2	12.5%
ICH	3	18.75%
Pontine	2	12.5%
More than 1 lesion	5	31.25%

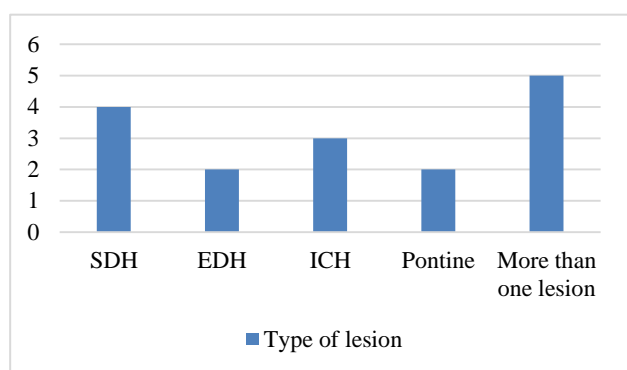


Figure 3: Type of lesion due to head injury and association with deaths.

In our present series cases reached to the hospital within 12 hours from the time of accident. The mortality was 14.4% in cases who reached hospital within 12 hours, those cases which reached late or after 12 hours to our hospital the mortality rate was 33.33% (Table 6).

Out of 43 operated cases the most common complication was headache.

Table 6: Time period for patient reaching hospital.

Interval in hours	Percentage of expired cases
Less than 12	14.04%
12 to 24	33.33%
24 to 48	0
More then 48	33.33%

DISCUSSION

Past few years have witnessed, several changes regarding the management of head injury has been occurred. The importance has been given to the early diagnosis and treatment of injuries with current trends. In our study 100 patient of head injury were studied during March 2013 to July 2015 in rural India.

In our series the youngest patient was 2.5 years of age and oldest was 75 years of old. The incidence of head injury was highest in age group 21-30 years i.e. 39 % (average age was 23.77 years). Male to female ratio was 6.1:1. In our present series the commonest mode of injury is road traffic accident in 57% cases followed by fall from height in 25%. Similar studies conducted by BJ Jennet et al.¹ showed road traffic accident in 54% cases. Another study conducted by Phonprasert et al.² had 58% cases of RTA.

Thus commonest mode of head injury was road traffic accident in all this series. It may due to less traffic sense, poor condition of road & not using helmet by riders. Alcohol consumption in driver is also a major cause contributing factor in road traffic accident cases. In Loh William³ study the percentage of alcohol consumption is 64% which is comparable to our study which was 62.4%.

In our study patient with GCS score was more than or equal to 8 and it had good prognosis with only 2 patient that had died. i.e. (12.5%) Study by BJ Jennet et al.¹ showed that GCS score less than 7 had a bad prognosis.

In our present series EDH was detected in 9% patient on CT scan of brain. Study done by Mckissock et al.⁴ had EDH at 8% of cases. Another study by Subramaniam & Rajendraprasad et al.⁵ showed EDH in 8.3% of cases. In our present study SDH was present in 15% of cases. In a similar study done by Lewis Weight et al.⁶ showed SDH in 23.96% of cases whereas study by Munro D (1942)⁷ showed SDH in 17% of cases. In our series we had ICH in 10% of cases. Study conducted by Jamieson & Yelland⁸ had ICH in 5.71% cases.

In our present study mortality was 16%. Compared with other studies done by Row Bothom⁹ which had mortality in 17.5% of cases. Rabe et al.¹⁰ study had mortality in

15% of cases. Similarly C. Phonprasert² showed in their study that 16% of cases had mortality. In our present series cases reached to the hospital within 12 hours from the time of accident. The mortality was 14.4% in cases who reached hospital within 12 hours, those cases which reached late or after 12 hours to our hospital the mortality rate was 33.33%. In our series majority of the patient who died were because of brain hypoxia, shock due to associated injuries and intracranial bleeding. These patients reached our hospital very late, due to lack of prehospital care and non-availability of trained paramedical staff, this is leading to increase in mortality rate in the patient of head injury who reached our hospital.

CONCLUSION

This study which was carried out on 100 patients from March 2013 to July 2015 with patient sustaining head injury. In this study patient of head injury with GCS less than or equal to 13 were admitted. Incidence was maximum in the age group predominantly 21-30yrs affected. Males were affected predominantly i.e. 86% and commonest mode of injury were road traffic accident i.e. 57%.

Alcohol was the major contributing factor in RTA in 42% cases. Majority of head injury patient having GC scale less than 8 were having bad prognosis. Out of 16 deaths 14 deaths occurred in this group. Those having GCS more than 8 having better prognosis. 56 patients were having fracture on X-ray skull. Most common site of fracture is parietal region (35.71%) followed by frontal (30.35%). 46 patients were having hematoma on CT scan. Most common was subdural hematoma i.e. 15 cases followed by ICH in 10 cases. Only 1 case of EDH. 37 patients were treated conservatively. 43 patients were operated. CT scan was decisive in 43% cases which were operated. In those cases decompression surgery was done & followed by elevation of fracture segment.

Thus we conclude, the incidence of head injury has been increased. In most of the cases the mode of injury was road traffic accident & in those more than 56% of patients were having history of alcohol consumption. So it is the major preventable factor causing head injury due to RTA. The next preventable factor is less traffic sense of people & bad condition of roads which can be improved to decrease the incidence. RTA is also in younger & working adults. Resuscitation facilities at the site of accident have to be introduced & improved with execution of rapid transportation to trauma care centers. Immediate and adequate resuscitation facilities should be available in emergency department in hospital. GCS

score is the best clinical indicator for assessment of head injury cases and their prognosis. CT scan is the best diagnostic method in cases of head injury to detect expanding hematoma, cerebral edema, fracture etc. CT done earlier will improve management and outcome. In expanding hematoma case early decompression surgery must be done in proper time and is the proper treatment. Thin SDH, cerebral edema can be treated conservatively. Most important part in trauma is to avoid brain hypoxia.

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Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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