Original Research Article

Clinical profile and etiology of craniocerebral trauma patients

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Abstract

Background: Traumatic brain injury has a high mortality and morbidity especially in developing nations. Head injury following trauma is the cause of death in about one-third of patients that die after accidents**. Objectives:** To study the clinical profile and etiology of craniocerebral trauma cases. **Material and Methods:** A prospective follow up study conducted in Postgraduate Department of surgery and the Department of Neurosurgery, Govt. medical college and hospital Jammu on consecutive 937 cases admitted for head trauma. Detailed history was taken, data was entered in to excel and analyzed using SPSS version 20. **Results:** Out of total 937 cases, 731 (78.01%) were males and 206 (21.99%) were females. Road traffic accidents was the most common cause(49.55%). 148 patients had vomiting as most common symptom. 97 (10.35%) cases had a score of 3-7 at the time of admission. Out of 937 cases 103 (10.99%) cases died in this study. **Conclusions**: It is concluded that in Jammu region, with rapid urbanization and industrialization and ever increasing number of automobiles, head injuries have become a common occurrence and a serious health hazard.

Keywords: Craniocerebral Trauma, Road Traffic Accidents, Glasgow Coma Scale

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INTRODUCTION

Ever since the advent of mankind, trauma to various parts of the body in a variety of ways has been encountered by man, injury to the head being one of those. The recorded history of the diagnosis and treatment of head injury goes back to ancient Egypt, as was deciphered from 1700 BC. "Edwin Smith papyrus" scroll by James Brested in 1930.[1] In modern times, with increasing industrialization and introduction of more rapid methods of transport, the incidence and severity of head injuries have increased.[2] According to World Health Organization (WHO), road traffic injuries are the sixth leading cause of death in India with a greater share of hospitalization, deaths, disabilities and socio-economic losses in young and middle aged populations. Road traffic injuries are the leading cause of death among young people aged 15-29 and cost the countries 1-3% of Gross Domestic Product (GDP).[3] It is important to appreciate that severe brain damage can occur in the absence of external injury. Conversely severe external laceration and even skull fractures do not necessarily indicate injury to the underlying brain.[4] In clinical practice the brain is damaged by trauma of three main types. Firstly the impacting force producing a head injury may strike either on a stationary head with an accelerating injury. Secondly head in motion may strike against a stationary or a mobile object - a decelerating injury. The third form of head injury results from transmitted forces or indirect trauma.[5] The commonest sites of laceration and contusion in acceleration and deceleration injuries are the inferior surfaces of the frontal lobes and the anterior aspects of the temporal lobes, in the region of the lesser wing of the sphenoid.[6] With the development of computed tomography by Hounsfield in 1972, care of the patients with acute craniocerebral trauma got revolutionized.[7] Inspite of all the advances made, head injuries have become one of the major cause of death in the

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developing countries of the world.[1] India is no exception to the world scenario. The vastness of its land, difficult terrain, varying climate, faulty roads, non observance and poor enforcement of traffic rules and poor education of the people make the picture look even grim.[8] There is less data available regarding etiology of craniocerebral trauma in this region. Therefore in order to evaluate clinical profile and etiology of craniocerebral injuries we carried out this study in Postgraduate Department of Surgery and Department of Neurosurgery, Govt. Medical college and hospital Jammu.

MATERIAL AND METHODS

The present study was conducted in Postgraduate Department of Surgery and Department of Neurosurgery, Govt. Medical college and hospital Jammu for a period of one year from November 2016 to November 2017. All 937 patients admitted in neurosurgery department formed the sample size. All those with isolated moderate to severe traumatic head injury and head injuries associated with other injuries formed Group-I, while all those with mild head injury who showed neurological deteoriation subsequently during the mandatory period of observation was included in the study group Group-II. The patients of head injuries who had associated trauma to other organ systems or had significant comorbid medical conditions was categorized separately as Group III. After informed consent from patient or their attendants was taken a detailed history was obtained from the patient or from the attendants of the patient. General physical examination and examination of central nervous system was done. This included serial recording of the level of consciousness (GCS Score), pupillary reflexes, and gross examination of motor and sensory system. All the necessary blood test, X rays and plane CT were done on all patients. The neurological or functional outcome of patients were assessed by using Glasgow outcome score (GOS, fig. 1) at the end of 3 months. Treatment protocol was well defined before the start of the study. The study included only the standard and established investigative workup and management protocol.

RESULTS

Table 1: Age and Sex wise incidence of Head Injuries

Age (Years)	Male	Female	Total	Percentage
0-10	103	62	165	17.6%
11-20	125	32	157	16.8%
21-30	202	35	237	25.3%
31-40	161	22	183	19.5%
41-50	75	30	105	11.2%
51-60	39	16	55	5.9%
61 and above	26	9	35	3.7%
Total	**731**	**206**	**937**	**100%**
Percentage	**78.01%**	**21.99%**	**100%**	**-**

The analysis of 937 cases as depicted in Table-1 revealed that 731 (78.01%) were males and 206 (21.99%) were females, thus giving an over all male to female ratio of 3.5:1. The co-efficient of variation (cv-56.8) was significantly higher in males as compared to females (cv-53.8) implying that males are at greater risk of sustaining head injury.

Table 2: Distribution of subjects as per GCS at the time of admission

GCS	Total	Percentage
3-7(severe H.I)	97	10.3%
8-12(Moderate H.I)	496	52.6%
13-15 (Mild H.I)	344	37.0%

97 (10.35%) cases had a score of 3-7 at the time of admission, 496 (52.6%) cases were having a score of 8-12 while as 344 (37.05%) had a score of 13-15.

Table 3: Distribution of study population as per outcome at the end of 3 month

Status	Score	No. of Patients
Good Recovery	5	450
Moderate Disability	4	200
Severe Disability	3	119
Vegetative	2	65
Death	1	103

103 (10.99%) cases in this study died, 53 (51.45%) of these deaths occured within 12 hours after head injury and 19 (18.45%) deaths took place between 12 and 24 hours, while 31 (30.10%) deaths were found to occur after 24 hours, while 31 (30.10%) deaths were found to occur after 24 hours.

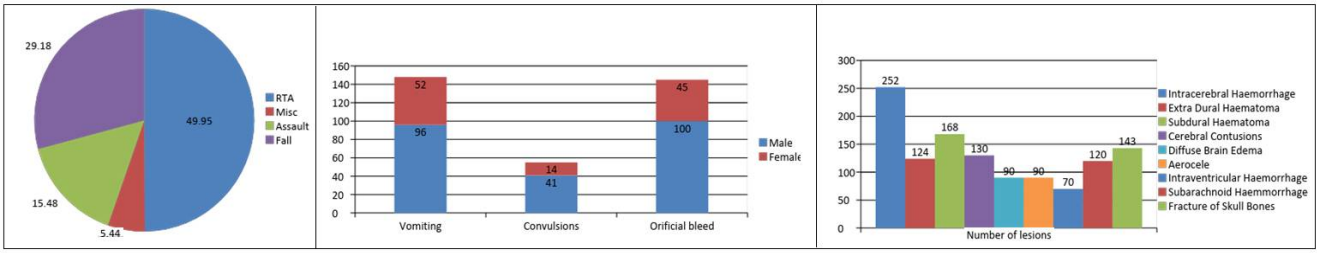

Diagram 1 **Diagram 2** **Diagram 3**

Diagram 1: Pie chart showing causes of head injury; **Diagram 2:** Distribution of subjects as per symptoms in gender; **Diagram 3:** Distribution as per lesion detected in study population

In Diagram 1, Road traffic accidents was the most common cause 49.55%, next was falls with 29.18%.

In Diagram 2, Total of 148 patients who had history of vomiting following head injury. Of these 96 (62%) cases were males and 52 (38%) were females. Only 55 cases had convulsions, 14 (33%) were females and 41 (67%) were males. 145 cases in this series had bleeding from the nose, mouth or ear or all the three together. 100 (72%) cases were males and 45 (28%) cases were females.

In Diagram 3, Intracranial bleed seen 252 cases was the most common lesion in this study

DISCUSSION

The profile of 937 head injury patients was studied for a period one year to evaluated to see clinical profile and etiology of head injuries. The mean age of the patients in this study was 27.8 years with a standard deviation of 15.44 years. The youngest patient in our study was eight months old and the oldest 90 years old. Although 79.2% (742) cases belonged to the first four decades of life, the maximum number of patients were in the age group of 21 to 30 years (25.3%). Similar observations have also been made by Tandon *et al.*[9] who reported the mean age of 25.87 years in a series of 681 patients, whereas the mean age of the patients studied by Turazzi; *et al*[10] was 34 years. Most of the patients in our study were males constituting 78.01% cases while females accounted for the remaining 22.99%, this giving the male to female ratio of 3.5:1. In the experience of most of the authors males were injured more frequently than females. In a series of 532 cases reviewed by Barr JB *et al*[11] there were 79.1% males and male to female ratio was 3.8:1. Barber JB *et al*[12] reported the male to female ratio of 3:1 in their series of 150 cases. The commonest mode of injury observed by us was the road traffic accident and it was responsible for 49.95% cases while falls and assaults caused 29.13% and 15.48% injuries respectively. Mode of injury depended to some extent upon the age of the patient, while in children below 12 years of age falls were the cause of 68.72% injuries, road traffic accidents resulted in most (55.79%) of the adult head injuries. In a study of 2000 cases Kalyanaraman *et al*[13] found that road traffic accidents contributed 42% of the cases while as falls were responsible for 38.7% cases, this was in accordance with our study. Anderson *et al*[14] observed that motor vehicle accidents were responsible for 49% head injuries and falls caused only 28% of them, this finding was in support of our study. Vomiting caused either by sharp increase in intracranial pressure following injury[15] or because of irritation of the gastric mucosa following ingestion of blood Rowbotham GF *et al*[16] was seen in 15.8% (148) cases and of these 76 (51.3%) patients were below the age of 12 years. Swann IJ *et al.*[17] on the other hand observed vomiting in only 7% cases. Similar was seen with our study. Kalyanaraman *et al.*[13] have also reported a higher incidence of convulsions in children. In their study 12.1% children and 4.2% of adults had convulsions following head injury, this was in accordance with our study. Orificial bleeding, which occurs either because of direct injury to the mouth, nose and ear or because of fracture of the base of skull, was seen in 15.5% (145) cases in our study. While 37 patients had bleeding from ear alone, 22 cases had it from two or more than two orifices. 3 cases in this series had cerebrospinal fluid otorrhoea. Devadiga KV *et al*[18] reported a higher incidence of bleeding from ear, nose and mouth (21.8%) and bleeding from ear alone in 5.67% cases while only 2 patients had cerebrospinal fluid otorrhoea in their series of 1500 cases. Intracranial hemorrhages was found to be most common lesion in this study similar was seen with Adeyekun AA *et al*[19] study. Mittal B *et al*[20] observed 47.5% mortality in patients with the score of 3-7 and 10.7% deaths in those having the score ranging from 8 to 13 while only 7% cases with the score of 14-15 died. Mishra HB *et al*[2] found mortality figures of 62% in those having score of 3-7 while 12.8% and 2.2% died who had Glasgow Coma Score of 8-14 and 15 respectively. Present study confirms the prognostic value of Glasgow Coma Score. In this series 69.07% (67) died who had a score of 3-7 and 7.265 (36) was the mortality rate in patients having score of 8-14 while no death was observed in those having

the score of 15. Of all the head injury patients 103 died giving a mortality rate of 10.99% this is comparable with the rates of 14.90% observed by Rowbotham GF *et al*[16] 7.3% by Devadiga KV *et al*[18] and 7.2% by Servadel F *et al.*[21]

CONCLUSION

This clearly indicates that proper education of people with regard to traffic rules, use of helmet and abuse of alcohol along with scientific designing of roads will go a long way in controlling the ever-rising morbidity and mortality due to head injuries. Majority of the patients effected being those belonging to the productive age group of life resulting in a considerable strain on the economy of the society and a continuous burden on the family. The death and disability caused by head injuries need to be considered and emphasis needs to be laid on the prevention of such mishaps.

REFERENCES

1. Bagchi AK. An introduction to Head Injuries. Oxford University Press, Calcutta, 1980.
2. Mishra HB, Shadangi TN. Predictability of prognosis in head injury using Glasgow Coma Scale as an index. Neurology India, 38; 177 - 182 : 1990.
3. Read JH *et al.* The epidemology and prevention of traffic accidents involving child pedestrians. Canadian Medical Association Journal, 89; 687-701: 1963.
4. Morris JH. The Nervous system: Trauma. In. Robbins Pathologic basis of Disease. Eds., Cotran, Rs., Kumar, V., Robbins, SL; W.B. Saunders International Edition, pp 1409 : 1989.
5. Walker AE. Mechanisms of cerebral trauma and impairment of consciousness. In Neurological surgery. Ed., Youmans, JR. WB. Saunders Company Vol:2 ; pp 936; 1973.
6. Gillinghan J. Types of head injury. Proceedings of the Royal Society of Medicine, Vol: 47, No: 10; 869-872: 1954.
7. Johnson HM, Lee HS. Computed Tomography of acute cerebral trauma. Radiology clinics of North America, 30; 2 : March, 1992.
8. Sambasivan M. Survey of the problems of head injuries in India. Neurology India. Vol: No.1 51- 59 March, 1977.
9. Tandon PN. Management of Head Injury: Fads, Fashions and Facts. Neurology India. 34; 1-20: 1986.
10. Turazzi S, Bricolo A, Pasut ML. Review of 1000 consecutive cases of severe head injury treated before the advent of CT Scanning. Acta Neurochirurgica. 72; 167 - 195 : 1984.
11. Barr JB, Ralston GJ. Head Injuries in a Peripheral Hospital, a five year survey. The Lancet, 2 ; 519 - 522; Sept, 1964.
12. Barber JB, Webster JC. Head Injuries, Review of 150 cases. Journal of The Natinal Medical Association. Vol. 66. No.3: 201-204 : May 1974.
13. Kalyanaraman S. Head injuries. In Test Book of Neurosurgery. Eds. Ramamurthi, B., Tandon. PN. National Book Trust, India, New Delhi, Vol: 215-217 : 1980.
14. Anderson, *et al.* Finding from a Major U.S. Survey of Persons Hospitalized with Head Injuries. Public Health Reports Vol : 98. No. 5 : 475; Sept – Oct : 1983.
15. Scott WW. Archieves of Neurology and Psychiatry. 43; 270: 1940.
16. Rowbotham GF, *et al.* Acute injuries of the head. Livingstone, London, IInd Ed., 1945.
17. Swann IJ, Millan R, Strong I. Head injuries at an inner city accident and emergency department. Injury: The British Journal of Accident Surgery. Vol: 12, No: 4; 274 - 278 : 1981.
18. Devadiga K V, Jain SP. An analytical study of acute head injury. Indian Journal of Surgery. 197 -204: May - June, 1969.
19. Adeyekun AA, Obi-Egbedi-Ejakpovi EB. Computerised tomographic patterns in patients with head injury at the university of Benin teaching hospital. Niger J Clin Pract. 2013;16:19–22.
20. Mittal B, Milosavljevic B, Rakas FS. Management of severe head injury in Eastern Libya. Neurology India 37: 341 - 348 : 1989.
21. Servadel F, *et al.* A prospective clinical and epidemiological study of head injuries in Northern Italy, the Commune of Ravenna. Italian Journal of Neurological Science. Vol.9: No. 5; 449-457, October 1988.

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