

ETIOLOGY, PRESENTATION AND OUTCOME OF HEAD INJURY PATIENTS ADMITTED IN AYUB TEACHING HOSPITAL, ABBOTTABAD

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ABSTRACT

Objective: To study the etiological factors, severity according to Glasgow coma scale, management and outcome of the head injury patients admitted in Neurosurgery Unit of Ayub Teaching Hospital, Abbottabad.

Material and Methods: This descriptive cross sectional survey was conducted in Department of Neurosurgery Ayub Teaching Hospital, Abbottabad from 1st January to 30th June 2008, including all patients admitted with head injury. Demographic profile, etiology, GCS at presentation, surgical procedure if performed, complication and hospital stay in days were recorded. Data was entered in specially designed proforma and analyzed by SPSS version 12.

Results: Out of 197 patients, 155(78.68%) were male while 42 (21.32%) were females, with a mean age of 21.2 years. The most common cause of head injury was road traffic accidents accounting for 107 (54.31%) patients followed by fall from height in 74 (37.56%) cases. On CT scan head, 51(25.89%) patients had concussion injury, 47 (23.86%) patients had extradural haematoma, 44 (22.33%) patients had cerebral contusion, 28 (14.21) patients had diffuse axonal injury, 14 (7.11%) patients had acute subdural haematoma. Out of 197 patients, 103 (52.28%) patients had mild head injury and 35 (17.77%) had severe head injury. Forty one (20.81%) patients required surgery while 156 (79.19%) patients were managed conservatively. Mortality rate was 17.26% (n=34/197). Mean hospital stay was 7.30 days.

Conclusion: Head injury frequently affects young males. Most frequent cause is road traffic accidents. Majority of cases had mild head injury and managed conservatively. Severe head injury is associated with significant morbidity and mortality.

Key Words: Head Injury, Extradural Haematoma, Subdural Haematoma, Cerebral Contusion, Concussion, Road Traffic Accident.

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INTRODUCTION

Head injury is a frequent cause of emergency attendance, accounting for approximately 3.4% of all presentations.¹ It is one of the major causes of morbidity and mortality worldwide. The incidence varies from 67 to 317 per 1,00,000² and mortality rate is approximately 7 per 1,00,000³. It is the most common cause of death in young adults (age 15 to 24 years).¹ Predominantly males in their most productive years of life are affected.⁴ Road

traffic accidents (RTA) is the most common cause followed by falls and assault.^{1,5}

Identification of pattern of head injury in different age groups has significance in clinical practice, as it provides a reference point for future clinical and neuropathological studies.⁶ Outcome of head injury mainly depends on the severity of head injury, number of surgical operations and type of lesion.⁷ Head injury is usually classified upon the patient's presenting level of consciousness according to Glasgow Coma Scale (GCS) score in to minor, moderate or severe head injury. Patients with complicated minor head injury usually get good functional recovery although the postconcussive symptoms may persist for some times.⁸ Patients with severe head injury specially with GCS scores of 3 or 4 and those with age of more than 65 years, have a poor prognosis.⁹ Although there is a considerable decline in mortality due to severe traumatic head injury from 1970 to 1990, at a rate of 9% per decade, there is no significant progress since 1990.¹⁰

Comprehensive data about head injury is available in western world, but in our setup it is scanty. In

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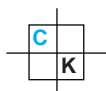
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order to plan preventive measures for head trauma it is essential to know the exact demographic profile and etiology⁵. This study was planned to know the etiological factors, severity according to GCS, management and outcome of the head injury patients admitted in Neurosurgery Unit of Ayub Teaching Hospital Abbottabad.

MATERIAL AND METHODS

All the patients of either sex and any age who were admitted in neurosurgery ward or neurosurgical ICU during January to June 2008 over a period of six months were included in the study. The patients referred from other hospital after management, patients having polytrauma along head injury or the patients who left the hospital against medical advice without completion of treatment were excluded from study. Data was collected on specially designed proforma. The demographic profile, cause of head injury and Glasgow Coma Scale at presentation were recorded. Patients were divided into three groups according to severity of head injury on the basis of Glasgow Coma Scale (GCS) at presentation. Mild injury when GCS in 13 or above, moderate injury when GCS is 9 to 12 and severe head injury when GCS is 8 or less. The findings on computerized tomography (CT) scan if done and any surgical procedure if performed were noted. Any operative or post operative complications, and hospital stay in days were recorded. Data was analyzed by SPSS version 12.

RESULTS

Total number of admissions due to head injury during the study period was 197. Of total patients 155(78.68%) were male while 42(21.32%) were females. Male to female ratio was 3.7:1. The age of patients varied from 1 to 70 years with a mean age of 21.2 years. Most of the patients were in young age group (Table I). Patients were divided into three groups according to severity of head injury on the basis of Glasgow Coma Scale (GCS) at presentation. Mild injury when GCS in 13 or above, moderate injury when GCS is 9 to 12 and severe head injury when GCS is 8 or less. The frequency of the various groups is given in Table II.

Road traffic accidents (RTA), was most common cause of head injury accounting for 107 (54.31%) patients. Seventy four (37.56%) patients sustained head injury due to fall from height, 12 (6.10%) had assault while 4(2.03%) had firearm injury. On CT scan head, 51(25.89%) patients had concussion injury, 47 (23.86%) patients had extradural haematoma, 44(22.33%) patients had cerebral contusion and 28(14.21) patients had diffuse axonal injury. The detailed frequencies of these are given in Figure I.

Regarding management, 41 (20.81%) patients required surgery while 156 (79.19%) patients were managed conservatively. Of total 197 patients 34 patients died thus yielding a mortality rate of 17.26%. Mean hospital stay was 7.30 days.

DISTRIBUTION OF PATIENTS AMONG VARIOUS AGE GROUPS

Age group	No. of patients	Percentage
Less than 10 years	53	26.90 %
11 to 20 years	43	21.83 %
21 to 30 years	39	19.78 %
31 to 40 years	21	10.66 %
41 to 50 years	19	9.65 %
51 to 60 years	12	6.10 %
Above 60 years	10	5.08%
Total	197	100 %

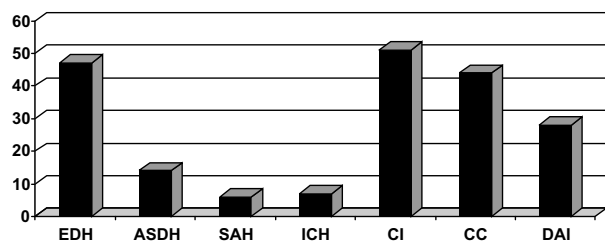
TABLE I

SEVERITY OF HEAD INJURY

Severity	Frequency	Percentage
Mild head injury	103	52.28 %
Moderate head injury	59	29.95 %
Severe head injury	35	17.77 %
Total	197	100%

TABLE II

TYPES OF HEAD INJURY



- EDH = Extradural haematoma
- ASDH = Acute subdural haematoma
- SAH = Subarachnoid haematoma
- ICH = intracerebral haemorage
- CI = Concussion injury
- CC = Cerebral contusion
- DAI = Diffuse axonal injury

Fig. I

DISCUSSION

Modern trauma care is increasing in its complexity and management and, despite measures to reduce the incidence of trauma world wide, it looks like to re-

main the 'unsolved epidemic' of the future.¹¹ Head injury is major contributor to trauma related morbidity and mortality. Severe head injury accounts for more than 50% of trauma related deaths. Many of these deaths can be reduced by good pre-hospital care, prompt availability of neuro-imaging, intensive care units and ventilators in hospital.¹²

Most common affected age was below ten years in current study. Our figure is 26.90%. It is comparable to 27% reported by Javaid et al¹³ and 29% reported in a study by Jawaid et al⁵. In another study⁴ first decade of life is most common age to be affected but frequency is almost double (56%) than ours. Second and third decade of life are most productive age regarding economic issues and these two decade are more vulnerable period regarding head injury. They contributed to about 40% of the cases in our series, a fact supported by others.^{5,14} Males are affected more than females. This finding is in consistent with data reported elsewhere.^{5,13-15}

Grading the head injury according to GCS at presentation showed that most of the patient sustained mild injury. While only 20% of the patients had severe head injury. Most of literature from national source support this findings.^{5,15} Severe head injury is reported in 79% of the patient in another study.¹⁶ In yet another study comprising of 3000 cases of head injury only 102 had severe head injury.¹⁷ Road Traffic Accident is the most common cause of head injury in current study accounting for 54.31% of the cases. Our finding is comparable with reported figures of 49.9%⁵ and 66%¹⁴. While in a study from Swat⁴, out of 636 patients admitted with history of head injury, 80% of the patient sustained head injury due to fall; a figure significantly higher than the current series.

Road traffic injuries are the leading cause of injury related deaths world wide. More than 90% of world deaths from injuries occur in low- and middle-income countries¹¹. The motor vehicle crash fatality rate in Karachi has been estimated at 11.3/10,000 registered vehicles compared to 1.4 deaths in Tokyo and 2.8 deaths in Manchester for the same number of vehicles.¹⁸ Increasingly traffic injuries are being viewed as a possible health problem for which prevention strategies can be developed and effectively applied¹⁹. Use of seatbelt is thought to reduce the risk of death or serious injury by approximately 45%, while air bag provide a reduced risk of fatality of approximately 30%.¹¹

Fall is the second most common cause of head injury in our study. Globally, an estimated 39100 people died as a result of falls in 2002, making it the second leading cause of unintentional injury death worldwide after road traffic accidents.¹¹ This feature is concluded by many studies but it is ranked as most frequent cause of head injury in a study of 636 cases of head injury presented to General Surgery Unit.⁴

Extradural haematoma was most common injury in this study. It occurred in about 24% of the patients. It

usually occurs on the same side of the impact.²⁰ The incidence described else where range between 1-3%.²¹ The reported incidence from within the country is 7.3%²². The mortality rate in current study was 17.26%. The mortality rate reported in international literature range from 10 to 30%,²³ while it is reported 5%¹⁴ and 10.5%⁵ in local studies.

Limitation of study

This study is based only on the patients admitted in Neurosurgery ward or Neurosurgical Intensive Care Unit. It does not consider data of the patients who are observed in casualty or die before arrival or admission in the hospital.

CONCLUSION

Head injury frequently affects young male patients in their productive age group. Most frequent cause in road traffic accidents. Majority of cases had mild head injury and managed conservatively. Severe head injury is associated with significant morbidity and mortality.

REFERENCES

1. Stacey R, Leach J, Head Injury. In: Williams NS, Bulstrode CJK, Connrl PRO. *Bailey and Love's Short practice of surgery*, 25th ed. London: Hodder Arnold 2008; 299-308.
2. Basso A, Previgilino I, Durate JM, Ferrari N. Advances in management of neurological trauma in different continents. *World J Surg* 2001; 25(9): 1174-8.
3. Finfer SR, Cohen J. Severe traumatic brain injury. *Resuscitation* 2001; 48(1): 77-90.
4. Ali M. An audit of 636 cases of head injuries admitted to general surgery unit of District Swat. *Med Channel* 2005; 11(2): 39-42.
5. Jawaid M, Wardug GM, Ashraf J. Pattern of head injury at Civil Hospital, Karachi. *Pak J Surg* 2006; 22(2): 91-5.
6. Graham DI. Paediatric head injury (Editorial). *Brain* 2001; 124(7): 1261-2.
7. Jionn-Jong W, Che-Chiao H, Song-Yu L, Yin-Kin W. Surgical Outcome of Traumatic Intracranial Hematoma at a Regional Hospital in Taiwan. *J Trauma Injury Infect Crit Care* 1999; 47(1): 39-43.
8. Smits M, Hunink MGM, van Rijssel DA, Dekker HM, Vos PE, Kool DR, et al. Outcome after Complicated Minor Head Injury. *Am J Neuroradiol* 2008; 29: 506-513.
9. Brazinova A, Mauritz W, Leitgeb J, Wilbacher I, Majdan M, Janciak I, et al. Outcomes of Patients with Severe Traumatic Brain Injury Who Have Glasgow Coma Scale Scores of 3 or 4 and are over 65 years old. *J Neurotrauma* 2010; 27(9): 1549-1555.
10. Stein SC, Georgoff P, Meghan S, Mizra K, Sonnad SS. 150 Years of Treating Severe Traumatic Brain Injury: A Systematic Review of Progress in Mortality. *J Neurotrauma* 2010; 27(7): 1343-53.

11. Nathwani DK. Early assessment and management of trauma In: Williams NS, Bulstrode CJK, Connrl PRO. Bailay and Love's Short Practice of Surgery, 25th ed. London: Hodder Arnold 2008; 284-98.
12. Matta BF, Menon DK. Initial management of acute head injury. Surgery 1998; 40: 13-6.
13. Javaid MA, Butt RM, Bhatti HA, Niaz A. Head Injury: One year experience at Services Hospital, Lahore. Pak Postgrad Med J 2001; 12(1): 9-11.
14. Jooma R, Ahmed S, Zardan AM. Comparison of two surveys of head injured patients presenting during a calendar year to an urban medical center 32 years apart. J Pak Med Assoc 2005; 55(12): 530-2.
15. Siddique AA, Zaffar H, Bashir SH. An audit of Head trauma care and mortality. J Coll Physicians Surg Pak 2004; 14(3): 173-7.
16. Akang EE, Kutti MA, Osunkoya AO, Komolafe EO, Malomo AO, Shokunbi MT, et al. Pattren of fatal head injuries in Ibadan- A ten year review. Med Sci Law 2002; 42(2): 160-6.
17. Thornhill S, Teasdale GM, Murray GD, McEwen J, Roy CW, Kenny KI. Disability in young people and adults one year after head injury: Prospective cohort study. Br Med J 2000; 320: 1631-5.
18. Razzak JA, Luby SP. Estimating deaths and injuries due to road traffic accidents in Karachi through capture-recapture method. Int J Epidem 1998; 27: 866-70.
19. Peden MM, Krug E, Mohan D. A 5-year WHO strategy for road traffic injury prevention. Geneva: WHO 2001.
20. Asthana S, Mohanty S, Tandon SC. Extradural haematoma: Pattern in rural India. Indian J Surg 1992; 54: 189-93.
21. Mishra A, Mohanty S. Contre-coup Extradural Haematoma: A short report. Neurol India 2001; 49: 94.
22. Javed MA. Pattern of Head Injuries in Southern Punjab. 2nd Neurotrauma Confrence. Lahore: May 13, 2005.
23. Phenpathom N, Tiensuwan M, Ratanalert S, Saeheng S, Sripairojkul B. The changing pattern of Head injury in Thiland. J Clin Neurosci 2000; 7(3): 223-5.

CONFLICT OF INTEREST
Authors declare no conflict of interest

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