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Original Research

Retrospective Study of Outcomes of Traumatic Brain Injuries at a General Surgical Unit

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ABSTRACT

Background: Management of head trauma has evolved from the period of Edwin smith papyrus description of trephination, through the period of Hippocrates to Alexandrian school and Galen to the development of modern Neurosurgical Centers. However, in a country like India, a large number of the traumatic head injuries are still being primarily managed at level I and Level II General Surgical Units. We wish to share different perspectives of managing head injuries in a General Surgical unit, based on demographics, injury characteristics, and outcome as determinants for management strategies.

Methods: A retrospective study conducted at K R Hospital MMC & RI Mysore, a total of 67 patients were enrolled who are admitted at K. R. Hospital, during the preceding 2years. The cases were assessed clinically with thorough history taking, assessment of vital parameters, and neurological examination based on Glasgow Coma Score (GCS), pupillary signs, and clinical monitoring of ICP based on careful watch for any tendency of falling pulse rates or increasing BP.

Results The gender distribution showed a male predominance. The adult head trauma victims more common. The mechanism of trauma road traffic accidents accounted for maximum cases in 48 cases. 11 occurred due to fall from height. Clinical findings at admission varied from a large number of patients having a GCS of 9–15. 22 patients presented with GCS of 5–8, and 9 patients had severe head injury and moribund state, having GCS range 3–5. The Six patients died, and varying degree of residual neurological morbidity was seen in 19 cases. Follow-up period 3 months to 2 years.

Conclusion

It has been our experience that in spite of limitations of management at the level of a general surgical unit if a customized protocol is adhered to head trauma patients can be well managed with a favorable outcome.

Keywords: Head Trauma, GCS, ICP, Pupils

INTRODUCTION

Head trauma is not known to occur in predetermined geographical relationship or proximity to a Neurosurgical Center. Quite frequently it is managed in general surgical units at Level I and Level II Trauma centers. Traumatic head injury in a general surgical unit can be viewed in different perspectives as enumerated below:

Facilities for Diagnosis

These are mostly limited to clinical assessment and skull X-rays. CT scans are available at the hospital and require to be interpreted ourselves.

Facilities for Critical Care

he care is few and limited with only few hospitals having facilities of ventilator. Facilities for monitoring are mostly limited to clinical monitoring. ICP monitoring is virtually non-existent in such setups.

Facilities for Neurosurgical Intervention

Depends on surgical skills of general surgeon, and availability of a qualified neurosurgeon in the immediate environment.

An obvious inference would be to develop suitable An obvious inference would be to develop suitable management protocols to ensure best results. We wish to present a retrospective study of 67 cases of head

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injury managed at our general surgery department during the past 2 years.

MATERIALS AND METHODS

A total of 67 patients were admitted and managed at K. R. Hospital, MMC and RI Mysuru during the preceding 2years. The cases were assessed clinically with thorough history taking, general assessment of vital parameters, and neurological examination based on Glasgow Coma Score (GCS), pupillary signs, and clinical monitoring of ICP based on careful watch for any tendency of falling pulse rates or increasing blood pressure. Depending on the presentation and findings as well as clinical evidence of deteriorating head injury, CT examination was ordered for 48 cases.

The management protocol was customized as per the condition and severity of injury. Most of the cases were managed on intravenous fluids (mainly isotonic crystalloids), with a broad spectrum antibiotic, H2-receptor antagonist, and anti-edema measures such as mannitol depending on the severity of injury where indicated. No patient in the study was given steroids.

Neurosurgical intervention was carried out in cases where pressure effects were seen on CT scan. No monitoring of ICP was done as the facility was not available.

RESULTS

The gender distribution of cases showed a male predominance with 58 males as compared to nine female patients [Table 1]. The adult head trauma victims were again more common with an incidence of 54 as compared to 13 child victims of head trauma. As regards, the mechanism of trauma road traffic accidents accounted for maximum cases being causative agents in 48 cases. Eleven cases occurred due to fall from height out of which five were children. Three victims were brought to hospital without any definite eye witness account, having been picked up in an unconscious state [Table 2]. Clinical findings at admission varied from a large number of patients (36) more or less conscious or having a GCS of 9–15. Twenty-two patients presented with GCS of 5–8, and nine patients had severe head injury and moribund state, having GCS in range of 3–5 [Table 3]. The Outcome: Six patients died, and varying degree of residual neurological morbidity was seen in 19 cases. Follow-up period ranged from 3 months to 2 years. Table 4 correlates the different factors with management and outcome.

Male	Female	Children	Adults
58	9	13	54

Table 1: Age and sex determinants

Mode of injury	Number of patients
Road traffic accidents	48
Fall from heights	11
Assault	3
Sports injury	2
Found unconscious	3
Total	

Table 2: Mechanism of injury as a determinant

Findings	Number of patients
GCS 3–5	8
GCS 6–8	23
GCS 9–15	36
Positive CT scan	38
Clinical signs of raised ICP	9

Table 3: Clinicoradiological determinants

Number of patients				Management		Outcome		
GCS	No.	Eye signs	CT scan	Conservative	Operative	Mortality	Residual morbidity	Functional recovery
3–5	9	9	9	2	7	4	5	0
6–8	22	6	22	18	4	2	10	12
9–15	36	2	33	33	3	0	4	32

Table 4: Factors as determinants of management and outcome

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DISCUSSION

Head trauma remains a significant cause of mortality and morbidity. The management has evolved since ancient times with Hippocrates giving first classification of skull fractures. Alexandrian school provided further insights in monitoring, and Galen giving his own classification of skull fractures and refining trephining.[1,2] Different studies have been carried out establishing relationship between GCS scoring and outcome.[3,4] It has been observed that GCS at admission and its improvement or deterioration compare well with an improving or deteriorating head injury and can well be used to modulate the management options in the absence of facilities for ICP monitoring. It has been observed in another study that different injury patterns do correlate with mortality.[5] CT Scan was found to be definitive in as far as assessment of head trauma was concerned. Moreover it correlated well with management options and outcome prediction as well. Although there are reports in literature of repeat CT scan showing up hematomas, residual or recurrent bleed following craniotomy,[6] it was not feasible for the simple reason that there was no facility available at the hospital and patients were not in a state to be transported. There has been no unanimous opinion on the best IV Fluid therapy as regard management. However, use of isotonic saline has found favor in the literature[7] and has been used in this study.

CONCLUSION

It has been our experience that in spite of limitations of management at the level of a general surgical unit if a customized protocol is adhered to head trauma patients can be well managed with a favorable outcome.

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