

Traumatic brain injury management can improve in primary care centre in remote area with minimum health assistance by proper training

Sir,

Traumatic Brain Injury (TBI) is a major cause of mortality and disability, both in High, Low and Middle Income Countries.^[1] TBI is an increasing health problem globally and especially in South-East Asia and outcome largely depends on promptness and quality of management.^[2] One of the most significant therapeutic modalities that need to be applied broadly worldwide is the minimization of secondary brain injury through the maintenance of cerebral perfusion and oxygenation.^[3] This practical problem face by chief author during working in Remote Area with Minimum Health Assistance (RAMHA) that's why we did this study to establish an idea about necessity of baseline training for emergency doctor and allied personnel regarding TBI management in primary care center. The present study was conducted in Emergency department (ED) among TBI patient, where patient or their legal guardian accepts to enroll in this study. From July to December 2008 Sadar Hospital, Bagerhat (SHB) located in a district town where patient from nearby locality comes for treatment. We enrolled 50 cases. This was a descriptive epidemiological hospital based study. We receive patient in ED, proceed with standard trauma care, and correct hypovolemia, anemia and examine thoroughly. We check clinical evidence like panda sign [Figure 1a], battle's sign [Figure 1b], double ring sign for CSF otorrhoea [Figure 2], external

evidence of fracture [Figure 3]. Statistical analysis was performed using statistical package for the social science (SPSS.13). Chi square test used for cross tabulation. We permitted from head of the institution for this study. Referral criteria to higher centre for specific neurosurgical management if-GCS 8 or less or deterioration following admission, skull fracture, focal neurological deficit, seizure.^[4] We did radiological test for identifying the trauma that includes X-ray, but CT scan was not available in that centre. We administered structured questionnaire to the patients. We evaluated patient's outcome based on Glasgow outcome scoring system (GOS) during discharged from hospital. Finding included (Age, sex, x-ray findings, pattern of injury, GCS and outcome) are discussed in multivariate Table 1(*n* = 50). Cross tabulation between type of TBI and Outcome (GOS) illustrated in Table 2.

The present study though very small focuses on an exceptional field, the TBI management in a remote centre and its outcome. This study reveal classification and outcome showed a significant co-relation (*P* < 0.001). So, it is clear that this clinical classification is very indicative of a need to transfer patients. By this prospective study we have tried to estimate how many patients that can safely be treated in our primary care centre without any

neurosurgical specialized care. Moreover, if the primary care giver physicians are well trained they will also be able to refer the patients to specialized centre without any delay, after primary resuscitation. The patients we treated in our primary centre showed good recovery without experiencing any significant disability. In the management of TBI, the standardization of treatment strategies is of particular concern in resource poor environments. Following potential benefit is deserved by proper retraining for TBI management in RAMHA:



Figure 1: (a) Panda sign, (b) Battles sign

Table 1: Study group traumatic brain injury patient and there finding

Variables	Count (n=50) %
Age Group	Commonest 10-29 years
Sex	Male predominant (39)
X-Ray finding	7
Depressed fracture	2
Linear fracture	4
C2 fracture	3
GCS	2
Mild	5
Moderate	2
Severe	4
Pattern of injury	4
Close	2
Minor	2
Severe	14
Coma	4
Open	
Minor	5
Severe	2
Coma	6
Outcome	
Good recovery	29
Moderate disability	4
Severe disability	2
Death	2
Referred	13

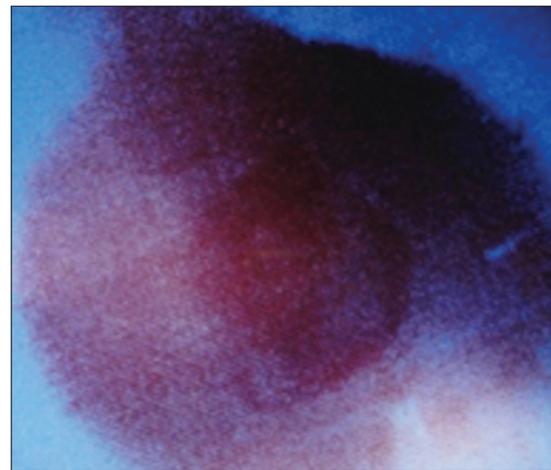


Figure 2: Double ring sign in CSF otorrhoea



Figure 3: A Baby with a large depressed fracture in skull

Table 2: Distribution of patients by type of injury and outcome

Type and Outcome	Outcome (GOS)					Total
	Good recovery	Moderate disability	Severe disability	Death	Referred	
Close						
Close minor	18	0	0	0	1	19
Close severe	7	4	1	0	2	14
Close minor with Coma	2	0	0	0	2	4
Open						
Open minor	0	0	0	0	5	5
Open severe	0	0	0	0	2	2
Open with coma	2	0	1	2	1	6
Total	29	4	2	2	13	50

- Higher centre will be free from extra workload.
- Sufferer can escape from extra expenditure of transport and other cost like stay in a large city.
- Secondary brain assault will minimized due to prompt management.

Limitation of this study: This small scale study where outcome evaluated by various authorities in different centre and elapsed time before primary management was not considered.

Conclusion

This study reveals that the TBI in this study group, most of them were mild they can manage in a primary care centre if it is equipped with a primary surgical setup and personnel having a basic training on the management of TBI patients. We strongly recommend that a short course of training (at least six month in neurotrauma unit) for non neurosurgeon doctors who work in primary centres. Larger multicenter studies may be necessary in RAMHA to clarify clinical importance of training.

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