

CT IMAGING IN MODERATE BRAIN INJURY

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Introduction

Traumatic brain injury(TBI) is an insult to the brain from an external mechanical force leading to temporary or permanent impairment of physical ,cognitive, and psychological functions, which may lead to altered or diminished state of consciousness.

Traumatic brain injuries are the leading cause of morbidity, mortality and disability.¹

The CT scan of patient is useful, not only in demonstrating the underlying neuro parenchymal injury but can also play a predictive role in traumatic brain injury ¹

TBIs are the commonest cause of morbidity, mortality, disability and socioeconomic losses .

Severity of TBI is classified as mild, moderate and severe according to the traumatic brain injury patients the level of consciousness is measured by Glasgow coma scale (GCS). Most of the traumatic brain injury patients who arrive to the hospital are already intubated or undergoes immediate intubation, ventilated and paralyzed .So accurate estimation of the GCS score or changes in the GCS score after post trauma in the initial hours is therefore difficult to obtain.

Due to availability, affordability and shorter scan time along with bone fracture delineation, CT is preferred over MRI as a primary investigation of traumatic brain injury.

Computed Tomography scanning of head is routinely done in all severe brain injury patients which provides information for further management including surgical intervention or intracranial pressure (ICP) monitoring. It may also provide prognostic significance information.

Objective

To assess the imaging characteristic of primary brain injury on the first CT scan

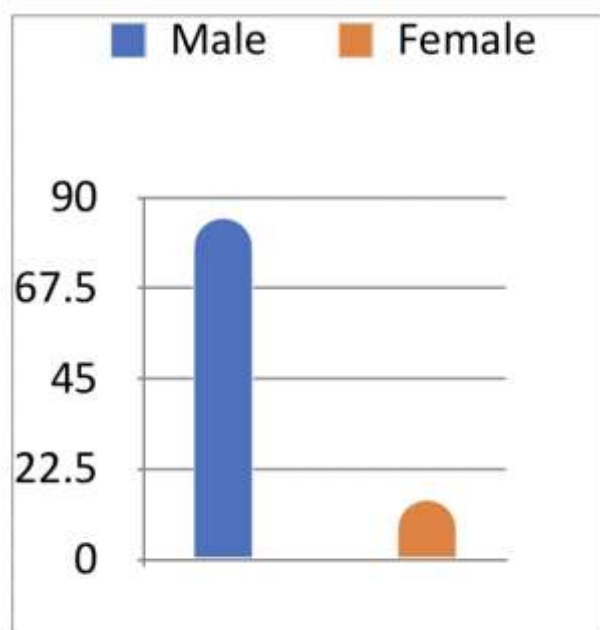
Methodology

In our prospective cohort study, which includes 35 patients with moderate head injury(<12), with positive neuro parenchymal findings on first CT scan of post trauma patients were included. Individual imaging characteristic and their effect on patients mortality were assessed by statistical methods like chi square test and multivariate logistic regression analysis

Head injury Head injury patients with positive neuroparenchyma—> CT finding with GCS less than 12—>.assess the imaging characteristics of brain injury.

Results

In this study , patients age were ranging from 16 to 70years. Out of 35 patients, 20-40yrs age group contributes maximum.



The mean GCS was 8 plus or minus 2.

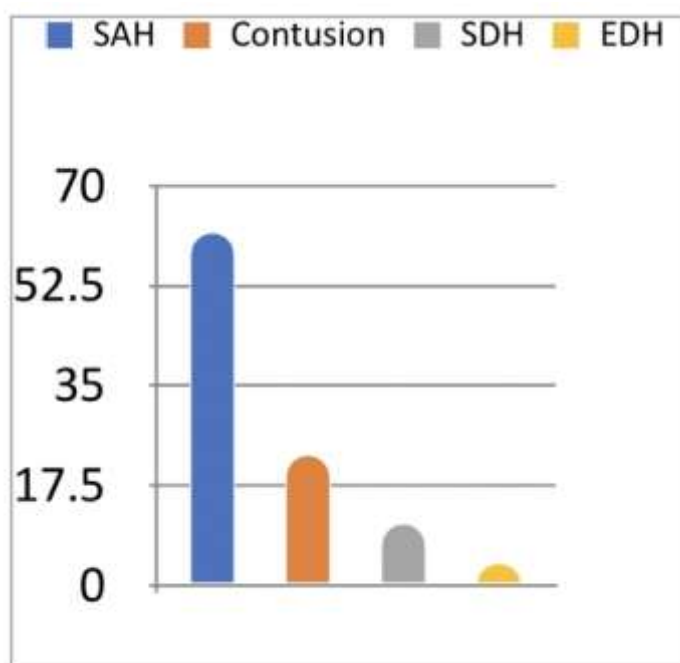


Figure 1: CT findings in moderate brain injury

Discussion:

India has 1% of the world's vehicles, but 6% of total global RTA deaths. Economic loss amounts to Rs 550 crores (most of the RTAs affect the brain).

Assessment of prognosis of traumatic brain injury is one of the neglected areas in research barring a few attempts to create a scoring system.

First CT scan of traumatic brain injury patient is used not only in diagnosing neuroparenchymal injury but also plays a predictive role.

Various classification systems like one given by Marshall et al 1991 to the recent Rotterdam scoring system 2005 have been applied to assess prognosis of the patients.

Study was compared with Marshall and Rotterdam CT scoring systems, individual findings of CT which are included in these analysis systems to predict the early mortality of patients having traumatic brain injury.

According to the Marshall et al CT findings and type of hemorrhagic mass management, patients with involvement of high or mixed density lesions with a brain volume >25cc not surgically removed have a bad prognosis and a high mortality score is near to 6 (P value < 0.0001).

Conclusion

Based on the study the individual multivariate parameters assessment is helpful in predicting the mortality rate and outcome of the patients. So here we conclude that initial CT imaging and its multivariate regression analysis can assess the features of brain trauma.

References

1. Burry TS, Vander Kolk WE. Clinical efficacy of serial computed tomographic scanning in severe closed head injury patients. *J Trauma* 55: 1061–1064, 2003.
2. Chieregato A, Antonelli V, Fagioli L, Servadei F. Time course of CT evolution in traumatic subarachnoid haemorrhage: a study of 141 patients. *Acta Neurochir (Wien)* 146: 257–263, 2004.
3. Sekino H, Uzura M, Sakamoto T, Taguchi Y, Yamaguchi Y, et al. Comparative study of magnetic resonance and CT scan imaging in cases of severe head injury. *Acta Neurochir Suppl (Wien)* 55: 8–10, 1992.
4. L, Haynor DR, Longstreth WT Jr, Larson EB. The clinical efficacy of magnetic resonance imaging in neuroimaging. *Ann Intern Med* 120: 856–871, 1994.
5. Ashikaga R, Araki Y, Ishida O. MRI of head injury using FLAIR. *Neuroradiology* 39: 239–242, 1997.
6. C, Yang JH, Plotkin RC, Grossman RI, Umile EM, Cecil KM, et al. Magnetization transfer imaging in the detection of injury associated with mild head trauma. *AJNR Am J Neuroradiol* 21: 875–880, 2000.