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A COMPARISON OF GLASGOW COMA SCORE WITH COMPUTED TOMOGRAPHIC FINDINGS IN CASES OF TRAUMATIC BRAIN INJURY AT TERIATRY CARE HOSPITAL BIKANER

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Abstract

Background: Our present study aimed at correlation of GCS score with computed tomographic findings in cases of head injury and to evaluate that GCS scoring can be used as an alternate tool in clinical management of head injuries in settings where CT scans are not available or contraindicated.

Methods: The present study was conducted in Department of Neurosurgery, Trauma center of S. P. Medical College and A.G. of Hospitals, Bikaner. The study group consisted of a total of 100 head injury patients presenting to the Trauma center and admitted in neurosurgery ward.

Results: Contusion was the most frequent finding in cases with positive CT scan findings. All (100%) subjects with severe head injury had positive CT scan findings.

Conclusions: Careful clinical selection based on GCS score before ordering CT scan can help reduce radiation exposure patients and pressure on limited resources. Studies with larger sample size would be warranted

Keywords: CT scan, head injury, Glasgow Coma Scale Score

Introduction

Traumatic brain injury is an alteration in Brain function or anatomic structure due to blunt or penetrating force to the head with associated confusion, altered level of consciousness or focal sensory, motor or other neurologic deficits. Traumatic head injuries are one of the leading causes of disability, morbidity and mortality around the world in all age groups. The incidence of these is variable from one country to another, studies and reports globally state that it is most common in young adults.[1]

Head trauma in young adults and children is one of the main reasons for partial or permanent disability in more than half of the affected individuals making the affected individuals social life miserable. The fatality and disability rates following head trauma vary by severity of the head injury and the time period of diagnosis of the severity and management options with proper care. Following a head injury the unfavourable outcomes like death, disability can be higher than 20%.[2]

Epidemiological studies state that globally 5 million admissions occur because of head injury and with considerable mortality in developing countries. The severity of the head injuries and management is clinically based on Glasgow coma scale (GCS) which was developed to describe the level of consciousness in patients with head injuries. The GCS tool has been widely used since 1974 after the development by Teasdale and Jennet, as triage tool and also as a prognostic indicator in cases with TBI. The advantage of GCS is it comprises a set of very simple and easy to perform physical examinations. Based on GCS scoring system, head injuries are categorised as Mild (with score 13-15), moderate (8-13) and severe (3-8). The ability to predict patient outcome after TBI has an important role in clinical practice and research.[3]

Our present study aimed at correlation of GCS score with computed tomographic findings in cases of head injury and to evaluate that GCS scoring can be used as an alternate tool in clinical management of head injuries in settings where CT scans are not available or contraindicated.

Material and Methods

The present study was conducted in Department of Neurosurgery, Trauma center of S. P. Medical College and A.G. of Hospitals, Bikaner. The study group consisted of a total of 100 head injury patients presenting to the Trauma center and admitted in neurosurgery ward. A written informed consent was obtained from all the cases in the study or from the accompanying person of cases if not possible from the cases included in the study. All the patients with history of traumatic head injury by any means referred from the emergency and fulfilling the inclusion criteria of the study were taken as study cases. The Glasgow coma scale of all the cases was noted on arrival at the emergency by emergency doctor for all the cases.

In case of wound examination, the type of wound, depth, size shape of the wound was noted. Thorough physical and

clinical examination of the cases including presence of bleeding, swelling in any part of the scalp, orientation of the case, responsiveness all were noted.

The patient's demographic features such as age, sex, clinical data such as type of injury, time duration, risk factors like nausea, vomiting, syncope etc were noted and unrelated risk factors like coagulopathy, drugs or alcohol use, epilepsy, previous neurological surgery all were noted in a separate predesigned structured questionnaire sheet. Patient's neurological assessment was done by a neurologist and all the answers for the questions were collected from the patient itself or if not possible from the accompanying person or companion or by witness report. Inclusion criteria Patients >18 years of age History of traumatic brain injury not less than 12 hours to exclude any delayed effects of development after injury.

Exclusion criteria: History of coagulation disorders, seizures, previous history of neurosurgery. Known hypertensives Patients with known history of Cerebro vascular accidents.

Statistical analysis

For continuous variables, mean± standard deviation was used and frequency (Percentage) was used for categorical variables.

Results

Table 1: Socio-demographic profile

Mean age	31.23±7.20 Yrs
Male : Female	41 : 9
Rural : Urban	29:21

Mean age of patients was 31.23±7.20 Yrs.

Table 2: GCS score

GCS	No of patients
<9	4(8.00%)
9-12	20(40.00%)
13-15	26(52.00%)
Total	50(100.00%)

8.00% patients GCS was <9.

Table 3: Association between GCS score and CT scan finding.

GCS	No of patients	Positive case
<9	4	4
9-12	20	16
13-15	26	1
Total	50	21

100.00% positive CT scan finding was recorded in <9GCS patients.

Table 4: CT scan finding

CT scan finding	No of patients
SDH	5
EDH	6
Contusion	8
Brain edema	5
Depressed fracture	6
Subarachnoid Hemorrhage	1
Intra cranial hemorrhage	1

8 patients were present with contusion in CT scan finding.

Discussion

Head injury is a major health problem and a frequent cause of death and disability. In developing countries, the incidence of TBI is increasing as traffic increases, besides other confounding factors such as industrialization, falls, and ballistic trauma. Radiographic examination of the skull is an essential part of the management of head trauma, but its limitations in plain radiographs are now recognized even in the diagnosis of skull fractures. CT facilitates a comprehensive diagnosis and permits early and targeted intervention.[4,5]

The reported incidence varies from place to place and so are the management guidelines. The variable management practices could be attributable to availability of resources and neurosurgical care. CT examination has become a standard tool in the investigation of head injury owing to its better sensitivity over skull radiographs and lower cost compared to magnetic resonance imaging. Although CT has almost revolutionized the diagnostic workup of head injury, its applicability in all cases is now debatable. Careful patient selection based on clinical parameters and selective ordering of CT scan without jeopardizing patient care would not only reduce the cost of hospital stay but also undue radiation exposure in many.[6,7]

In a study by Joseph et al.,[8] a mild GCS score (GCS 13-15) in patients with an intracranial injury does not preclude progression on repeat head CT and the need for neurosurgical intervention. Melo et al.[9] also indicated that of patients with mild brain injury, neurosurgery was performed in 6.7% and 9.2% had neurological disabilities. In fact, mild brain injury based on GCS score may be associated with significant abnormalities in CT scan, require of neurosurgical procedure and intensive care unit admission. Moreover, Chieregato et al. [10] showed that the GCS scoring system was not enough for assessing brain injury, and therefore, it should be combined with other systems such as TBI classification.

Conclusion

CT scanning is the primary modality of choice in the diagnostic workup of patients with acute TBI for identification of various intracranial consequences,

especially within 48 h, which helps in the initial assessment, treatment planning, and follow-up and long-term management of patients.

References

1. Link TM, Schuierer G, Hufendiek A, Horch C, Peters PE. Substantial head trauma: Value of routine CT examination of the cervicocranium. Radiology 1995;196:741-5.
2. Smits M, Dippel DW, de Haan GG, Dekker HM, Vos PE, Kool DR, et al. Minor head injury: Guidelines for the use of CT - A multicenter validation study. Radiology 2007;245:831-8.
3. Miller EC, Holmes JF, Derlet RW. Utilizing clinical factors to reduce head CT scan ordering for minor head trauma patients. J Emerg Med 1997;15:453-7.
4. Ghebrehiwet M, Quan LH, Andebirhan T. The profile of CT scan findings in acute head trauma in Orotta Hospital, Asmara, Eritrea. J Eriterean Med Assoc 2009;4:5-8.
5. Nakahara K, Shimizu S, Utsuki S, Oka H, Kitahara T, Kan S, et al. Linear fractures occult on skull radiographs: A pitfall at radiological screening for mild head injury. J Trauma 2011;70:180-2.
6. Ohaegbulam SC, Mezue WC, Ndubuisi CA, Erechukwu UA, Ani CO. Cranial computed tomography scan findings in head trauma patients in Enugu, Nigeria. Surg Neurol Int 2011;2:182.
7. Jain AK, Charokar K, Agrawal P. Co-relation of CT scan findings with Glasgow coma scale scores in pediatric head injury. Int Surg J 2015;2:676-9.
8. Joseph B, Pandit V, Aziz H, Kulvatunyou N, Zangbar B, Green DJ, et al. Mild traumatic brain injury defined by Glasgow Coma Scale: S Is it really mild? Brain Inj 2015;29:11-6.
9. Melo JR, Lemos-Júnior LP, Reis RC, Araújo AO, Menezes CW, Santos GP, et al. Do children with Glasgow 13/14 could be identified as mild traumatic brain injury? Arq Neuropsiquiatr 2010;68:381-4.
10. Chieregato A, Martino C, Pransani V, Nori G, Russo E, Noto A, et al. Classification of a traumatic brain injury: The Glasgow Coma scale is not enough. Acta Anaesthesiol Scand 2010;54:696-702.