



ROLE OF COMPUTED TOMOGRAPHY IN EVALUATION OF TRAUMATIC HEAD INJURY.

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ABSTRACT

- Head injury is trauma resulting injury to the scalp, skull or brain. Immediate and instantaneous death following cranial trauma occurs due to unpreventable primary brain injuries
- CT is the single most informative diagnostic modality in the evaluation of a patient with a head injury.
- Besides facilitating rapid implementation it can demonstrate significant primary traumatic injuries including extradural, subdural, intracerebral haematomas, subarachnoid and intraventricular haemorrhages, skull fractures, cerebral oedema, contusions and cerebral herniations.

KEYWORDS : Contusions, Intracerebral Hematomas & Skull Fractures.

INTRODUCTION:

- Head injuries due to road traffic accidents (RTA) have become a daily occurrence taking an increased toll on human lives and limbs.
- Most of these patients are in their prime (third & fourth decade of life) and therefore have a direct social and economic effect besides the emotional burden of suffering a lifelong debilitating loss of function.
- Prompt recognition of treatable injuries is critical to reduce mortality and CT head is the cornerstone for rapid diagnosis.
- CT is frequently necessary to detect progression and stability of lesions and evidence of delayed complications and sequelae of cerebral injury, which can determine whether surgical intervention is necessary

AIMS&OBJECTIVES:

- The aim of the present study was to evaluate and assess the role of CT in patients sustaining head trauma and to study the various cranio-cerebral changes that occur in trauma to head with aid of CT.

MATERIALS & METHODS:

- The prospective study was conducted for the period of one year. It comprised a total number of eighty patients presenting to the emergency room(ER) with head injury and were evaluated by CT scan of head using 16 slice CT machine in Great eastern medical college.

Inclusion Criteria:

- Patients of all age groups with head trauma.
- Head trauma that has occurred within 24 hours.
- Patients with head trauma treated as in-patients.

Exclusion Criteria:

- Cranial trauma during childbirth.
- Patients with non traumatic intracranial bleed.
- Known hypertensives.
- Patients receiving anti-coagulant drugs.
- Patients with history of previous cerebrovascular accidents and
- Patients with known bleeding disorders

II. RESULTS

- A total of eighty patients who sustained head injury presenting in emergency room were analysed. Fifty eight (72.5%) patients were male and 22(27.5 %) were female (Sex ratio M: F = 2.6:1).
- Ages ranged from one year to seventy year. The highest frequency of head trauma occurred in the 31-50 year group (39%).The most common causes of head injury were RTA

(65%), fall injuries (20%) and physical assaults(15%)

Table 1: Clinical presentations in study of eighty cases of head injury

Clinical presentations	Frequency	Percentage
LOC	46	57.5
Vomiting	35	43.8
Seizure	15	18.8
Alcohol consumption	15	18.8
Black eyes	13	16.2
Headache	13	16.2
ENT bleeding	8	10
CSF rhinorrhoea	6	7.5

Loss of consciousness and vomiting were the commonest clinical features in head injury patients brought to emergency. Clinical picture of patients enrolled in study were as described (Table1)

Table 2: Severity of head injury (GCS) based on mode of head injury

GCS	Mode of injury			Total
	RTA	Fall	Assault	
Mild (13 -15)	34	12	9	55
Moderate (9 - 12)	8	3	1	12
Severe (3 - 8)	10	1	2	13

Out of eighty cases, 55 cases (68.8%) sustained mild head injury, 12(15%) cases sustained moderate head injury and 13(16.2%) had severe head injury. RTA was the prime etiological factor in all types of severity of head injury. There were 61.8% patients in mild, 66.6% in moderate and 77% patients in severe head injury who sustained RTA as above (Table2)

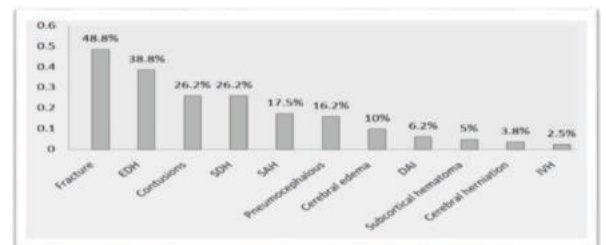


Figure 1: Various lesions in patients with craniocerebral trauma

Twenty five patients (31.2%) had normal CT findings and 55(68.8%) had abnormal CT findings. As shown in figure 1 above, skull fractures were the most common noted in 39 cases (48.8%), followed by EDH 31 cases (38.8%), contusion 22 cases

(26.2%), SDH 21 cases (26.2%), SAH 14 cases (17.5%), pneumocephalous 13 cases (16.2%), cerebral edema 8 cases (10%), DAI 5 cases (6.2%), subcortical hematoma 4 cases (5%) cerebral herniations 3 cases (3.8%) and IVH 2 cases (2.5%)

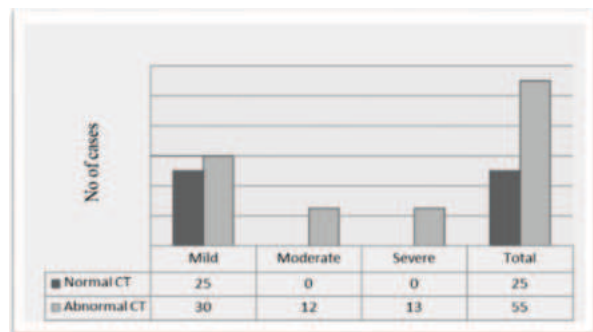


Figure 2: Correlation of CT findings with severity of head injury

Linear skull fracture was predominant seen in 30% cases followed by basilar (17.5%), comminuted (8.8%), depressed (6.2%) and diastatic fractures (2.5%). Abnormal CT findings were seen in 54.5% patients sustaining mild head injury and in all the patients with moderate and severe head injury (Figure 2). The p value=0.01 which was statistically significant.

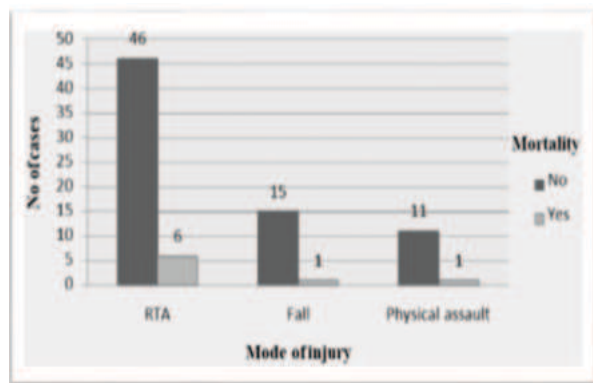
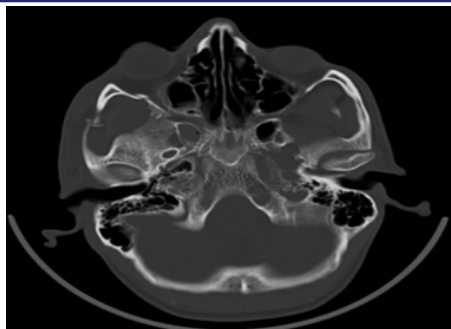


Figure 3: Mortality based on mode of injury

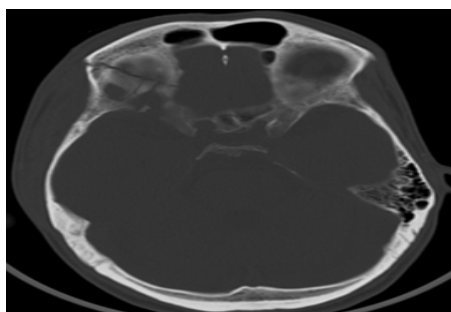
Eight out of 13 patients with severe head injury had mortality which was statistically highly significant (p value<0.001). RTA was the most common mode of injury.

III. DISCUSSION

- Head injury is an increasing health problem globally. It is a leading cause of death and disability in children and adults in their most productive years.
- Precise assessment of the patients presenting with head injury will be very useful in the management of the patients
- In our study the age of patients varied from 1 year to 70 years. Majority of patients found to be in third and fourth decade of life.
- This age group is the most active groups of society who spend most of their time out of their houses for work and to earn the livelihood are more prone to accidents.
- The reason for male predominance is that males move out of their homes more frequently and are more actively working outdoors than females.
- CT is very sensitive in detecting acute hematomas and depressed fractures that require emergency surgery.
- CT is currently the procedure of choice over MRI because it is faster and more readily available. CT is a cost-effective, non-invasive method to assess the time and extent of cerebral injury.
- This study attempts to determine the utility of CT in the diagnosis, management and prognosis of patients with cerebral trauma



Fracture line noted at right zygomatic arch and lateral wall of right orbit.



Fracture line noted at medial and lateral walls of orbit.



A relatively well defined hyperdense area of hemorrhagic attenuation noted in right anterior temporal region - Acute EDH.

IV. CONCLUSION

- CT is the most comprehensive diagnostic modality for accurate localization of the site of injury in Traumatic brain injury.
- The early and timely diagnosis of the precise lesion by CT not only had the substantial impact over instituting appropriate treatment and timely surgical intervention but also helped in predicting the ultimate outcome

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