

To Observe and Study the Clinical Features, Radiological Findings of Traumatic Temporal Contusion in Brain Injury

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Conflict of interest: Nil

Abstract

Background & Method: The aim of the study is to observe and study the clinical features, radiological findings of Traumatic Temporal contusion in brain injury. A detailed history about the patients diagnosed to have temporal contusion following head injury and admitted at Gandhi Medical College, Hamidia Hospital, Bhopal were taken. The variable factors like age, sex, mode of injury, time interval between injury and admission, LOC, Seizures, vomiting, ENT bleed were noted. Then a detailed clinical including Neurological examination was done and the status of the pupillary reaction to light, size, extra ocular movements/Doll's eye movement and GCS were noted. Speech assessment was not included in this observational study.

Result: In our study there was deformity in x ray skull - FRACTURE in- 30.0% and NORMAL in - 70%. In our study there was following other findings in CT- DEPRESSED FRACTURE OF Lt parietal region 4.0%, displaced fracture Rt temporal 3.0%, linear undisplaced fracture 9.5%, undisplaced fracture 7.0%, NAD 76.5%.

Conclusion: Temporal lobe contusion occur usually in RTA. Severe contusion with low GCS resultant mortality in such patient. Contusion associated with TBI are the most commonly seen in frontal and temporal lobes as a result of impact with head .but may be seen all over the brain . Patient with head injury presenting with seizure, abnormal pupillary response to light, abnormal occulocephalic reflex, bradycardia must need intensive neurosurgical care.

Keywords: Clinical, radiological, Traumatic brain injury, G.C.S& LOC (Loss of Consciousness).

Study Designed: Observational Study.

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Introduction

Traumatic brain injury (TBI) is viewed as the most debilitating of horrendous peculiarities, quite often including deep rooted profound, conduct, and long-lasting actual hindrance. [1] Almost 50% of hospitalized patients overcome of TBI experience long haul inabilities. TBI incorporates a few kinds of put-downs to

the mind. One of the most extreme harm systems is the hemorrhagic cerebral injury. TBI related with cerebral wounds expands the dangers for handicap and demise in TBI patients [2].

Cerebral injuries make long-lasting damage to the tissues of the frontal cortex. The seriousness of the damage is

connected with the essential injury that is begun by the active energy consumed by the crash and the fountain of auxiliary injury reactions that fuel the essential harm [3]. The hemorrhagic sore is delivered in the prompt minutes after the head influence [4].

Wounds can advance and extend, and much of the time, other hemorrhagic injuries are available. Hemorrhagic injuries overlie the cerebrum parenchyma with loss of capability [5]. It is realized that blood is exceptionally harmful to sound mind tissue; subsequently cerebrum wounds are among the most destroying optional injury structures found in TBI's. Brain parenchyma have been credited to draining from the constant progression of injured microvessels during the underlying horrible episode. This idea has proposed that the development of an injury may be because of a basic or obvious coagulopathy.

Road traffic accidents (RTA) are the major cause of head trauma and most commonly head injuries occurs in adult population. Challenge due to high morbidity and mortality in young and productive age group [6]

The temporal lobes are highly associated with memory skills, left temporal contusion result in impaired memory for verbal commands.

Primary head injuries are classified as following - diffuse brain injuries, focal brain injuries and skull fractures. Contact injuries and head motion injuries, they are the basic type of head injuries. The mechanical impact may be static or dynamic [7]. Traumatic brain injury impact numerous sorts of put-downs to the cerebrum, with one of the most serious being a hemorrhagic cerebral wound. ie contusion, laceration and / haematoma.

Material & Method

This study is a prospective observational study conducted in the Neurosurgery unit

of hamidia hospital & Gandhi Medical Collage Bhopal India. In this study the epidemiological features, clinical findings and radiological findings that are routinely used to assess and to decide about the management of patients with posttraumatic temporal contusion patients are analyzed. This study was conducted on the patients admitted in the general surgery ward and diagnosed as having temporal lobe contusion from January 2021 to December 2022.

A detailed history about the patients diagnosed to have temporal contusion following head injury and admitted at Gandhi Medical College, Hamidia Hospital, Bhopal were taken. The variable factors like age, sex, mode of injury, time interval between injury and admission, LOC, Seizures, vomiting, ENT bleed were noted. Then a detailed clinical & neurological examination was done and the status of the pupils reaction to light, size, extra ocular movements/Doll s eye movement and GCS were noted. Speech assessment was not included in this observational study. All the patients underwent routine investigations that include, complete blood count, blood sugar, urea,

creatinine, electrolytes, bleeding time, clotting time, blood grouping typing, urine albumin, sugar, deposits, X-Ray chest PA view and CT Scan brain plain with bone window and MRI occasionally.

Inclusion Criteria

- Adults with unilateral temporal contusion following traumatic brain injury

Exclusion Criteria

1. Patients with history of any previous intra cranial procedures
2. Patients with other associated parenchymal injuries
3. Patients with bleeding diathesis
4. Patients taking anticoagulant drugs

Results

Table 1: Age wise distribution of study participants

Age Group	19-30 Years	67	33.5%
	31-40 Years	33	16.5%
	41-50 Years	55	27.5%
	51-60 Years	35	17.5%
	>60 Years	10	5.0%
	Total	200	100.0%

Maximum cases of patient were in age range 19-30, i.e. 33.5%. Minimum cases of patient were in age range >60, i.e. 5.0%.

Table 2: Distribution of study participants according to site of wound

Site Of Wounds	B/L Frontal Lobe	15	7.5%
	B/L Parietal Region	13	6.5%
	B/L Temporal Region	9	4.5%
	Frontal Region	20	10.0%
	Frontal Temporal	20	10.0%
	LFT Parietal Region	22	11.0%
	LFT Temporal	6	3.0%
	No	46	23.0%
	Occipital Region	33	16.5%
	Rt Parietal	3	1.5%
	Rt Temporal	7	3.5%
	Temporal Parietal Region	6	3.0%
	Total	200	100.0%

In our study there was following site of wounds over head - B/L Frontal Lobe – 7.5%, B/L Parietal Region- 6.5%, B/L Temporal Region- 4.5%, Frontal Region- 10.0%, Fronto Temporal- 10.0%, Lt

Parietal Region – 11.0%, Lt Temporal - 3.0%, Not Any Wounds- 23.0%, Occipital Region- 16.5%, Rt Parietal 1.5%, Rt Temporal- 3.5%, Temporal Parietal Region- 3.0%.

Table 3: Distribution of study participants according to X-ray investigation

X-ray Skull	Fracture	60	30.0%
	Normal	140	70%
	Total	200	100.0%

In our study there was deformity in x ray skull - FRACTURE- 30.0%, NORMAL- 70%.

Table 4: Other Findings

	NAD	153	76.5%
	Depressed Fracture of L Parietal Region	8	3.0%%
	Displaced Fracture R Eporal	6	3.0%
Other Findings			
	Linear Undisplaced Fracture	19	9.5%
	Undisplaced Fracture	14	7.0%
	Total	200	100.0%

In our study there was following other findings in CT-Scan DEPRESSED FRACTURE OF Lt parietal region 4.0%, displaced fracture Rt temporal 3.0%, linear undisplaced fracture 9.5%, undisplaced fracture 7.0%, NAD 76.5%.

Discussion

In this study we saw that RTA was the familiar method of injury. The greater part of patients in RTA was guys in age gatherings of long term in this review. The Govt. of India Ministry of street transport and parkways transport research wing 2020, referenced that the majority of the casualties in RTA were in the age bunch 25-60 years [7]. This concentrate on post horrible worldly injury under contre overthrow transient wound was on the higher prevalence. The concentrate by ligament PN 1978, at AIIMS likewise referenced that contrecoup wound were tracked down in most extreme head injury patient.

This study was done on 200 patient conceding long haul or all the more clinically clearly head injury who uncovered at Gandhi Medical College and Hamidia Hospital, Bhopal M.P., during the multi month of review period 2020 to 2022. Who were also investigated for CT analyze head. In which we bar the instances of extradural hematoma, subdural heamatoma, intra parenchymal bleed, and some other neurological horrible case [8].

In this audit we remember the instance of worldly wound for the premise of CT check (head) finding of patient. Decision of moderate and usable apparatus in wound which depend upon GCS score, volume of injury, midline shift, discoveries of and x beam skull and related injury.

As per Tandon PN, seen pupillary anomalies in the majority of the worked instance of transient wound, this concentrate additionally shows pupillary irregularities were available in the greater part of the patient carefully made due

[9].In CT check mind Basal reservoir destruction were seen in generally tolerant with volume all the more than 30 ml .the impact of intra cerebral hematoma and the gamble of cerebrum stem pressure. In awful quiet have GCS decay with wound volume between 11-20 ml. Choksey, in this review concentrate on that wound volume all the more then 16ml, pt have more inclined for decay. In our ongoing review there was 74.5% male and 25.5%feamle, concentrate on exclusively in both the gathering [10,11].

Conclusion

Temporal lobe contusion occur usually in RTA. Severe contusion with low GCS resultant mortality in such patient. Contusion associated with TBI are the most commonly seen in frontal and temporal lobes as a result of impact with head .but may be seen all over the brain. Patient with head injury presenting with seizure, abnormal pupillary response to light, abnormal occulocephalic reflex, bradycardia must need intensive neurosurgical care solitary temporal contusion needs careful examination and investigation.

References

1. Kumar S, Isakkirajan P. Epidemiological study of road traffic accidents and role of alcohol in road traffic accidents. *Indian J Forensic Med Toxicol.* 2017;11:77.
2. Silver JM, McAllister TW, Yodofsky SC, editors. *Textbook of Traumatic Brain Injury.* Arlington, VA: American Psychiatric Publishing; 2005; 27-39.
3. McDonald CM, Jaffe KM, Fay GC, Polissar NL, Martin KM, Liao S, *et al.* Comparison of indices of traumatic brain injury severity as predictors of neurobehavioral outcome in children. *Arch Phys Med Rehabil.* 1994;75:328-37.
4. Russell WR. Cerebral involvement in head injury. *Brain.* 1932;55:549-603.

5. Kim JJ, Gean AD. Imaging for the diagnosis and management of traumatic brain injury. *Neurotherapeutics*. 2011;8:39-53.
6. Accidental Deaths and Suicides in India. ADSI Reports; 2014. Available from:<http://www.ncrb.nic.in/StatPublications/ADSI/ADSI2014/adsi-2014%20full%20report.pdf>. [Last accessed on 2022 Jun 07].
7. Tandon PN, Prakash B, Banerji AK. Temporal lobe lesions in head injury. *Acta Neurochir (Wien)*. 1978;41:205-21.
8. Gangstad B., Norman P., and Barton J. Cognitive processing and posttraumatic growth after stroke. *Rehabil. Psychol*. 2009; 54:69–75.
9. Gracey F., and Owns Worth T. The experience of self in the world: the personal and social contexts of identity change after brain injury,” in *The Social Cure*, Eds A. Haslam, C. Haslam, and J. Jetten (Hove; East Sussex: Psychology), 2012; 273–295.
10. Gracey F., Palmer S., Rous B., Psaila K., Shaw K., O’Dell J., et al. Feeling part of things: personal construction of self after brain injury. *Neuropsychol. Rehabil*. 2008; 18:627–650.
11. I F., TM B., S D., OA T., AM K., B S., F C., L T., & J T. Eye health status and cause of visual impairment in survivors of Ebola virus disease in the Republic of Guinea: Etat de santé oculaireet cause de déficiencesvisuelles chez les survivants de la maladie à virus Ebola en République de Guinée. *Journal of Medical Research and Health Sciences*, 2022; 5(10): 2317–2323.