

# Comparative Evaluation of Clinical and Autopsy Findings in Head Injury Cases

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## Abstract

**Background:** Head injury is the commonest phenomenon on road resulting from high velocity automobiles and these injuries account for about one fourth of all deaths due to violence and are responsible for 70% of fatal road accidents. The application of computed tomography to the early diagnosis of head injured patient offered great promise. So this study is aimed to compare the CT (Head) scan with autopsy findings in head injury cases.

**Material & Methods:** Post-mortem examination was conducted in 50 fatal cases of head trauma, which were admitted and died while on treatment in the department of surgery at A.N.M.M.C.H GAYA.

**Results:** In the present study CT scan and autopsy would detect skull fractures 44%, intracranial hemorrhages 76% and brain lesions 95% of cases.

**Conclusion:** This study showed that CT scan is a very useful investigation in head injury cases to detect brain lesions, intracranial hemorrhages and to some extent skull fractures.

**Keywords:** Autopsy; CT scan; Head injury

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## I. INTRODUCTION

A head injury is any injury that results in trauma to the skull or brain. The terms traumatic brain injury and head injury are often used interchangeably in the medical literature. Because head injuries cover such a broad scope of injuries, there are many causes- including accidents, falls, physical assault, or traffic accidents- that can cause head injuries. Head injuries are a very common cause of deaths all over the world. As a part of routine clinical investigations, now a day's CT scan is done in most of the cases of head injuries. The application of CT scan to the early diagnosis of head injury is of great value. The patients who do not survive are subjected to further investigation in the form of autopsy examination. Autopsy is the final procedure of choice for finding out the exact cause of death. In head injuries, diagnosis by clinical and radiological assessment may not reveal the full extent of injuries. In patients who succumb to their illness, autopsy may detect the lacunae in clinical diagnosis and investigation. These autopsy findings are a valuable source of information. This is a unique opportunity to identify the exact cause of death. It may be possible to modify the protocol for care of neurotrauma patients in the prehospital and emergency hospital setting following this study..

## II. MATERIAL & METHOD

### This Source of data

All fatal head injury cases subjected for medico-legal autopsy to the Dept of Forensic Medicine, A.N.M.M.C.H Gaya, where prior CT Head scan was taken during hospitalization.

**Study period:** January to December 2020

### Method of collection of data

All fatal cases of head injury subjected for post mortem examination where ante mortem CT scan reports were available were taken up for study. Post mortem examination of each case was carried out as per the standard procedure mentioned in the "Autopsy diagnosis and technique". Further a comparative evaluation of post mortem findings of the head injuries with that of the CT scan report were analyzed.

### Inclusion criteria

Fatal head injury cases with ante mortem CT Head scan reports were included in the study.

### Exclusion criteria

Cases where surgical intervention had led to a gross discrepancy.

**Table 1:** Age and Sex distribution of the cases.

| SI. NO. | Age Group   | No. Of Cases | Male | Female | Total |
|---------|-------------|--------------|------|--------|-------|
| 1       | <20 Years   | 08           | 06   | 02     | 08    |
| 2       | 21-30 Years | 18           | 12   | 06     | 18    |
| 3       | 31-40 Years | 07           | 04   | 03     | 07    |
| 4       | 41-50 Years | 07           | 05   | 02     | 07    |

The vulnerable age group was those in the 21-30 years (18 cases) followed by age group of < 20 years (8 cases).

**Table 2:** Etiology of head injury.

| Etiology                | Number of Cases |
|-------------------------|-----------------|
| <b>RTA</b>              | <b>22</b>       |
| <b>Fall from Height</b> | <b>04</b>       |
| <b>Assault</b>          | <b>04</b>       |
| <b>Total</b>            | <b>30</b>       |

26 cases were due to RTA injury and remaining 4 cases were due to fall and assault respectively.

**Table 3:** Comparison of scalp injury as in Autopsy and CT scan.

| Number of cases | Scalp injury detected at autopsy | Scalp injury detected in CT scan report |
|-----------------|----------------------------------|---|
| 30              | 22                               | 28                                      |

Of the 30 cases, scalp injuries were noted in 22 cases at autopsy where as CT reported scalp injury in only 28 cases.

**Table 4:** Comparison of Skull fractures as in Autopsy and CT scan.

| Number of cases | Skull fractures detected at autopsy | Skull fractures detected in CT scan report |
|-----------------|-------------------------------------|--|
| 30              | 28                                  | 30   |

Of the 30 cases, in 28 cases skull fractures were observed at autopsy but in 30 cases the same was commented upon in the CT scan.

between the CT scan findings and autopsy findings were excluded

### III. Result

Comparison of CT scan and autopsy findings in skull fractures were depicted in Table No1. Both CT scan and autopsy findings concurred in skull fractures in 25 cases, but only autopsy detected skull fractures in 31 cases. So skull fractures can be better picked up by autopsy rather than CT scan.

showed the comparison between CT scan and autopsy findings in intracranial hemorrhages. Here both CT scan and autopsy findings concurred in intracranial hemorrhages in 47 cases, but findings only autopsy is 15 cases. This shows that CT scan and autopsy were better tools to detect intracranial hemorrhage and autopsy alone.

Both autopsy and CT scan would detect brain lesion in 57 cases and autopsy can detect only in 3 cases. So brain lesion are better detected by CT scan and autopsy rather than autopsy alone.

### IV. Discussion

In the present study, the vulnerable age group was those in the 21-30 years (18 cases) followed by age group of < 20 years (8 cases).

According to a study by Mukesh K Goyal, Rajesh Verma, Shiv R Kochar, Shrikant S Asawa where the maximum number of cases i.e. 56 cases (40%) belonged to the age group 21-40 years, followed by below 10-year age group which were 30 cases (30.4%). Main cause of injury was Traffic accident (62%). Among males it is 66% and in females it is 33%. Leading cause of injury among females was fall from height. Males 122 (87.1%) outnumbered females 18 (12.8%) [4]. study that highest frequency of Head Trauma occurred in the 21-30 years (25.1%) age group, followed by the age groups 11-20 (21.6%) and 31-40 (17.5%) One thousand three hundred and six (67.3%) patients were male and 654 (32.7%) were female (sex ratio M: F=2:1) [5]. In the present study, 26 cases were due to RTA injury and remaining 4 cases were due to fall and assault respectively.

Observation was made by G Gururaj, Sastry Kolluri where RTA constituted 62%, fall constituted 22% and assault constituted 10% [6].

In the present study, Of the 30 cases, scalp injuries were noted in 22 cases at autopsy where as CT reported scalp injury in only 28 cases. Of the 30 cases, in 28 cases skull fractures were observed at autopsy but in 30 cases the same was commented upon in the CT scan.

In a study done by Mohammad Zafar Equabal, Shameem Jahan Rizvi, Munawwar Husain, V.K Srivastava, Scalp swelling or haematoma was observed in 86.3% of the cases and the CT Scan concurred in all cases. It was also the most common CT finding [7].

Sharma R, Murari A in their study observed that amongst skull fractures, 76.3% of them was diagnosed in both CT scan and Autopsy; whereas 23.7% of them remained undiagnosed by CT scan [8].

P. Srinivasa Reddy, B. Manjunatha, B.M. Balaraj observed skull fracture in 48% of the cases at autopsy whereas the same was observed in only 38 % of the cases in the CT scan [9].

Arvind Kumar et al in their study observed that 69.63 % cases of head injury had skull fractures [10].

## **V. Conclusion**

Total It was observed that combination of CT scan findings and autopsy findings is a useful tool for the diagnosis of various kinds of lesions of head injury and thus helps in formulating better policies.

## **Reference**

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