

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

Srinivasa Reddy P \*, Manjunatha B\*\*

---

### 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 60% 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 65 fatal cases of head trauma, which were admitted and died while on treatment in the department of neurosurgery at JSS hospital Mysore.

**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; C T scan; Head injury.

---

### Introduction

Head injuries are a very common cause of deaths all over the world. As a part of routine clinical investigations, now a day's C T scan is done in most of the cases of head injuries. The application of C T 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. In most of the cases a comparison can be established between the reported C T scan findings and autopsy findings [1].

### Aim & Objectives

1. To compare C T scan (Head) with autopsy findings in head injury cases.
2. To identify the lesions caused by head injuries, this may be misdiagnosed or may remain undiagnosed by C T scan and can be diagnosed by post mortem examination and vice versa.

### Methodology

The present study was retrospective and prospective study of 65 fatal cases of head trauma (admitted to Neurosurgery department of J.S.S. Medical College and Hospital Mysore. who died while on treatment) on whom post-mortem examination was performed in the Department of Forensic Medicine, J.S.S. Medical College. The cases, which were admitted to the hospital, but died before any investigations and those associated with any medical illness would be excluded from the study. The information was obtained from in-

---

**Authors affiliation:** \*Associate Professor, Department of Forensic Medicine & Toxicology, Sri Siddhartha Medical College & Hospital, Sri Siddhartha University, Tumkur, \*\*Professor, Department of Forensic Medicine & Toxicology, J. S. S. Medical College & Hospital, J.S.S University, Mysore.

**Reprints requests:** Dr. Srinivasa Reddy P., Associate Professor, Department of Forensic Medicine & Toxicology, Sri Siddhartha Medical College & Hospital, Tumkur.

Email: drreddyfm1976@yahoo.co.in

(Received on 05.01.2012, accepted on 28.01.2012)

patient case sheets of J.S.S. Medical College and Hospital and postmortem reports in the department of Forensic Medicine. A detailed history pertaining to time, manner, and manifestations of head injury and investigations such as C T scan (Head) findings were recorded in the proforma. Details of injuries to skull and its contents as noted during post-mortem examination were also recorded.

**Table 1: Skull fractures: Comparison between CT scan and autopsy findings**

S1.No	Comparison	No. of Cases (No.= 65)
1.	C T and autopsy findings concurred	25
2.	Findings only at autopsy	31
3.	No findings	9

**Table 2: Meningeal haemorrhages: Showing comparison of CT scan and autopsy findings**

Sl. No	Comparison	No. of Cases (No.=65)
1.	C T and autopsy findings concurred	47
2.	Findings only at autopsy	15
3.	No findings	3

**Table 3: Brain lesions: showing comparison between CT scan and autopsy findings**

SL. No	Comparison	No. of cases (No = 65)
1.	C T scan & autopsy findings concurred	57
2.	Findings only at autopsy	3
3.	No findings	5

## Results

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.

Table No 2 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 hemorrhages than autopsy alone.

Table No 3 showed the comparison between CT scan and autopsy findings in brain lesions. Both autopsy and CT scan would detect brain lesions in 57 cases and autopsy can detect only in 3 cases. So brain lesions are better detected by CT scan and autopsy rather than autopsy alone.

## Discussion

In the present study, there is a concurrence of C T scan & autopsy findings among 44% of cases with respect to skull fractures were noted.

According to R Sharma & A Murari, comparative evaluation of C T scan & autopsy findings in 50 head injury cases, he observed that 76.3% of them were diagnosed in both C T scan & autopsy, where as 23.7% of them remained undiagnosed by C T scan in respect to skull fractures [1]. But in our study skull fractures (majority fissured fractures) are better detected by autopsy rather than CT scan.

Goyal M. et al (2003) studied 140 cases of head trauma those had been treated in the department of Neurosurgery. X - Ray skull gives better information on the fractures of the skull than the C T scan. When the fractures of the skull is depressed variety, or had a depressed component of with the linear fracture

of the vault of the skull, the C T scan can detect the displaced tables of the skull bones. The C T scan could not detect the fractures of the top of the vault of the skull as well as the fractures of the base of the skull particularly the fractures of middle and posterior cranial fossa [2].

Fractures are, in most instances, best diagnosed by a combination of clinical features and radiodiagnosis. However, the chief value of the C T scan is in the assessment of underlying brain damage and haematoma formation [3].

In present study both C T scan & autopsy findings were concurred in 76% of cases with respect to meningeal haemorrhages which is in accordance with the Akang EEU (2000) who studied in 529 fatal head injury cases [4]. In his study, radiological investigations were carried out only in 11.3% of cases but CT scan was done only in 50% of the patients that had radiological studies. Interestingly, among 50% of the patients the intracranial hemorrhages was the most common finding (36%). Therefore he concluded that CT scan is an essential investigation which should be available for all cases of head injury. The documentation and localization of intracranial hemorrhages guides neurological intervention and critical management of these patients.

In the present study, there is concurrence of CT scan & autopsy findings in 95% of cases with respect to brain lesions. Our study is in accordance with A Murari & R Sharma who observed that 82% of cases diagnosed both by CT scan and autopsy findings with respect to brain lesions. Federal et al also showed that there is 100% accuracy in diagnosis of extra and intra cerebral collection of blood [5]. So according to this study CT scan can be used as a tool to detect the brain lesions in head injury cases.

## Conclusion

In this study C T scan could detect 44% of skull fractures. But in case of intracranial haemorrhages & brain lesions the C T scan could detect up to 75% & 95% cases respectively. This suggests that C T scan is very useful investigation in head injury cases to detect the brain lesions, intracranial haemorrhages & to some extent skull fractures. Autopsy being a direct visual examination of the lesions can detect more pathological findings compared to C T scan, which is essentially an interpretation of images. C T scan if done early can guide the treating doctors in the management of patients.

## References

1. Murari A, Sharma R. Comparative Evaluation of C T scan findings and Post mortem findings in head injuries. *IJFMT* 2006; 4(2): 1-3.
2. Goyal M, Kocher S, and Goel MR. The Correlation of CT scan (Head) vis-à-vis Operative as well as Postmortem Findings in Cases of Head Trauma (A Prospective Study). *JKAMLS* 2003; 12(1): 16-20.
3. Sutton D. *A Textbook of Radiology and Imaging*. 5<sup>th</sup> ed. Churchill living stone: Edinburgh, 1992: 1537-1550.
4. Akang EEU, Kuti MA O and Osunkoya. Pattern of Fatal Head Injuries in Ibadan - A 10 years review. *Med. Sci. Law* 2002; 42(2): 160-166.
5. Federle MP, Zawadzki MB. *Computed Tomography in the Evaluation of Trauma*. 1<sup>st</sup> ed. Baltimore: Williams and Wilkins, 1982:1-2.