A COMPARATIVE STUDY ON COMPUTED TOMOGRAPHY AND AUTOPSY FINDINGS IN DIFFERENT INJURY PATIENTS

Dr. Kanwal Kamboj[1], Dr. Shalini Arora[2], Dr. Sanjeev Mehrotra[3], Dr. Amrita Sinha[4]

[1] Assistant Professor, Department of Forensic Medicine, Dr. B. S. Kushwah Institute of Medical Sciences. Associate Professor, department of Biochemistry, Dr. B. S. Kushwah Institute of Medical Sciences.

[2] Associate Professor, Department of Pathology, Dr. B. S. Kushwah Institute of Medical Sciences.

[3] Assistant Professor, Department of Pathology, Dr. B. S. Kushwah Institute of Medical Sciences.

Abstract

Introduction: Injury is defined as a physiological damage of living tissue caused due to physical stress. It can intentionally or unintentionally, caused by blunt and penetrating trauma, burning, toxic exposure or overexertion. This injury can occurs in any parts of the body with different symptoms related with different injuries. Computed tomography (CT) most commonly used diagnostic technique specifically used for organ and tissue damage, whole-body CT is used as a standard diagnostic technique. An autopsy is the final diagnostic examination and considered as a standard diagnostic methods in medicine. The aim of the study was to compare CT scan results, with autopsy results by forensic purposes.

Material and method: Present study was retrospective–prospective study carried on 500 injured patients attending OPD of Dr. B.S. Kushwah hospital Kanpur. Patients inform consent was taken. Their age, gender, cause of injury, different area of injury, conciseness, unconciseness, death, complication in conciseness patients was noted.

Results: as per the study majority of the patients were mail with the age group of 40 – 60 years. Majority of the patients were conscious having vertigo and bleeding , injured due to transport accident. 84 patients having head injury among them brain death was observed in most of the patients having positive results over CT and autopsy technique.

Conclusion: CT scan compared to autopsy is a good method for detecting gunshot injury of head and bone fractures. Were as autopsy is better for detecting minor injuries to organs and soft tissues. Both CT and Autopsy are the best technique for most of the injury cases.

Keywords: Autopsy, Computed tomography, Forensic medicine.

Introduction

Major injury is typically health care problem professional and varies greatly depending on the nature of the injury [1]. Traffic collisions are the most common cause of accidental injury and injury-related death among humans. Injuries are distinct from chronic conditions, psychological trauma, infections, or medical procedures, though injury can be a contributing factor to any of these. Injuries may be intentional or unintentional. Intentional injuries may be acts of violence against others or self-harm against one's own person. Accidental injuries may be unforeseeable or they may be caused by negligence the most common types of unintentional injuries in order are traffic accidents, falls, drowning, burns, and accidental poisoning. Certain types of injuries are more common in developed countries or developing countries. Traffic injuries are more likely to kill pedestrians than drivers in developing countries. Scalding burns are more common in developed countries, while open-flame injuries are more common in developing countries.[2]

As of 2021, approximately 4.4 million people are killed due to injuries each year worldwide,

constituting nearly 8% of all deaths. 3.16 million of these injuries are unintentional and 1.25 million are intentional. Traffic accidents are the most common form of deadly injury, causing about one-third of injury-related deaths. One-sixth is caused by suicide, and one-tenth is caused by homicide. Tens of millions of individuals require medical treatment for nonfatal injuries each year, and injuries are responsible for about 10% of all years lived with disability. Men are twice as likely to be killed through injury as women. [3, 4] Injury is most commonly seen in most of the patients it might be accidental or suicidal injury. Under this system, injuries are classified by mechanism of injury, objects/substances producing injury, place of occurrence, activity when injured, the role of human intent, and additional modules. These codes allow the identification of distributions of injuries in specific populations and case identification for more detailed research on causes and preventive efforts.[5] The main aim of our study is to observe injury at different sites and to compare computed tomography and Autopsy Findings in different Injured Patients at tertiary care hospital.

Material and methods:
Ethical Approval: This retrospective–prospective study was conducted after taking permission from institutional ethics committee at Dr.B.S.Kushwah Institute of Medical Sciences., Kanpur.
Inclusion criteria
- Age group more than 18 years.
- Both sexes
- Patients/patients attainder to involve in the study.
- Patients with all the type of accidents, suicides etc
Exclusion criteria
- Age below 18 years
- Injury due to organ complications
- Patients/patients attainder not willing to involve in the study.

Study Design:
The study was conducted on 500 injured patients attending Dr.B.S.Kushwah Institute of Medical Sciences. Patients age, gender, cause of injury, different area of injury, conciseness, un conciseness, death, complication in conciseness patients was noted. The patients with head injury the different area of head injury were noted and taken for CT scan and autopsy was done in patients. the patients with positive and negative with CT scan and autopsy was noted and marked as positive results (CT scan and autopsy showing positive to particular injury) and negative results (CT scan and autopsy showing negative to particular injury). The numbers of patients showing positive and negative results were noted. All the data was interpreted, statical analysis was done. The study

Data Analysis:
Analysis was performed to observe mean average number of patients.

Results:

Table No 01: Tabular column represents the gender with injuries

Genders	No of patients	Percentage no of patients
Males	394	78.8%
Females	106	21.2%
Total no of patients	500	100%

Table No 02: Tabular column represents the age group distribution in injury patients.

Age groups	No of patients	Percentage no of patients
15 – 20 years	09	1.80%
21 – 30 years	47	9.40%
31 – 40 years	141	28.2%
41 – 50 years	107	21.40%
51 – 60 years	68	13.60%
61 - 70 years	93	18.60%
71 – 80 years	35	7.00%
Total No of patients	500	100.00%

Table N0 03: Tabular column represents the mode of injuries.

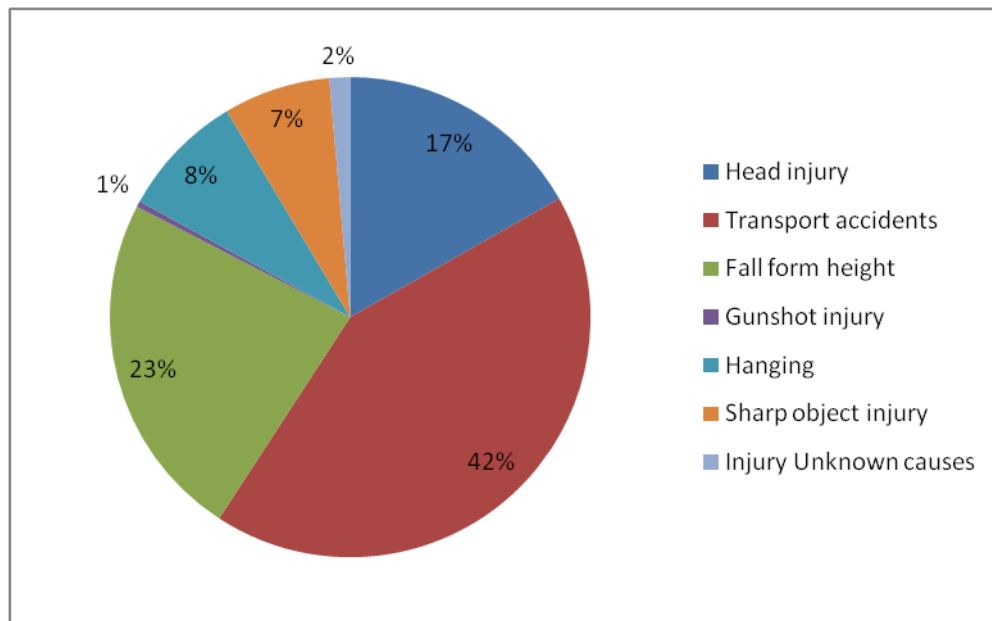| Injured area	No of patients	Percentage no of patients
Head injury	84	16.80%
Transport accidents	212	42.40%
Fall form height	117	23.40%
Gunshot injury	02	0.40%
Hanging	42	8.40%
Sharp object injury	36	7.20%
Injury Unknown causes	07	1.40%
Total no of patients	500	100.00%

Figure No: 01: Pie diagram represents the mode of injuries

Table N0 04: Tabular column represents the condition of the patients after having injuries

Condition of the patients	No of patients	Percentage number of patients
Unconscious patients	136	27.2%
Conscious patients	326	65.2%
Death	38	07.6%
Total no of patients	500	100.00%

Table No 05: Tabular column represents the complication observed in conscious patients.

Complications in conscious patients	Out of 326 patients no of patients having symptoms	Percentage number of patients having complications
Bleeding	243	74.53%
Vertigo	288	88.34%
Nausea & Vomiting	121	37.11%
Swelling	178	54.60%
Pain	188	57.66%
Tingling of hands or feet	113	34.66%
Shortness of breath	38	09.84%
Total number of patients in conscious.	326	100%

Table No 06: Tabular column represents the injury at different areas of head.

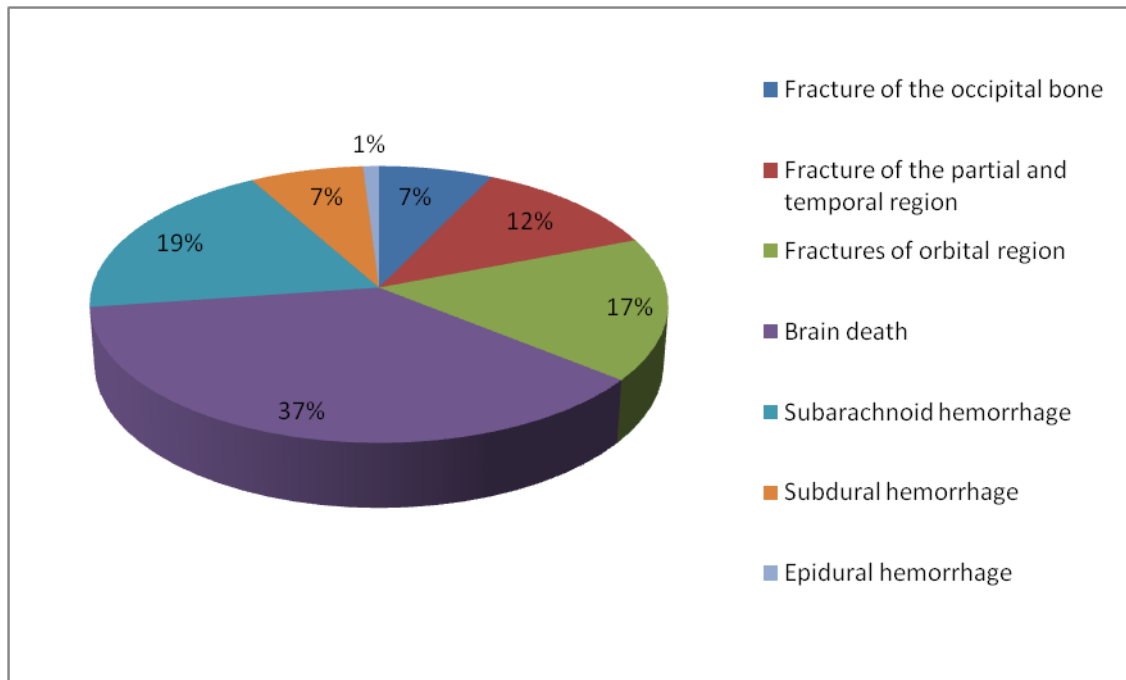| S.No	Different sites of head injury	No of patients	Percentage no of patients
1	Fracture of the occipital bone	06	7.14%
2	Fracture of the partial and temporal region	10	11.90%
3	Fractures of orbital region	14	16.66%
4	Brain death	31	36.90%
5	Subarachnoid hemorrhage	16	19.04%
6	Subdural hemorrhage	6	7.14%
7	Epidural hemorrhage	1	1.19%
	Total number of patients	84	100.00

Figure No 02: Pie diagram represent the different sites of injury in head.

Table No 07: Tabular column represents head injury patients under went autopsy and CT scan with positive and negative results.

| S.No	Different sites of head injury	No of patients	Autopsy done out of 84 patients	CT scan done out of 84 patients	Both Positive different head injury	Both Negative with head injury
1	Fracture of the occipital bone	06	3	6	4	2
2	Fracture of the partial and temporal region	10	5	7	8	2
3	Fractures of orbital bone	14	3	12	9	5
4	Brain death	31	26	15	19	12
5	Subarachnoid hemorrhage	16	13	16	12	4
6	Subdural hemorrhage	6	2	1	1	1
7	Epidural hemorrhage	1	0	0	0	0
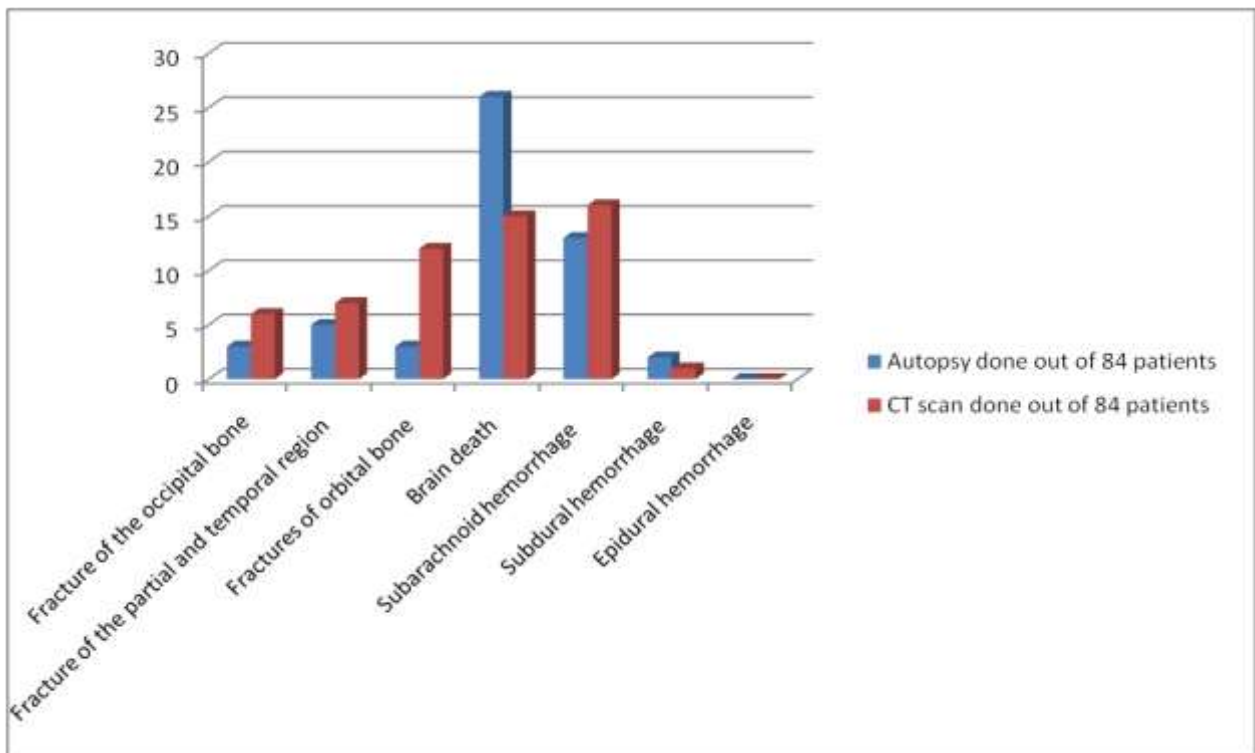
Figure No 03: Graphical representation of head injury patients under went autopsy and CT scan.

Discussion:

The present study was an observational study conducted on different injuries patients. as per this study majority of the patients were male 78.8% followed by female 21.2%. As per the age group of a patient's majority were under 31 – 40 years 28.2%, followed by 41 – 50 years 21.40 % with a mean average age group of 52.32±0.32. in a total of 500 patient's majority of them got injury due to transport accidents 42.40% followed by fall from height 23.40%, head injury 16.80%, hanging 8.40%, sharp object injury 7.20 %, injury due to unknown cause 1.40% and Gunshot injury 0.40% respectively. All this patients were brought to the hospital in different

conditions. But 65.2% conscious, 27.2% unconscious and 07.6% patients were death. Conscious patients were developed complications, the majority of the patients develops vertigo followed bleeding nausea & vomiting, swelling, pain, tingling of hands or feet and shortness of breath, a total of 1174 number of complication was observed in 326 patients. Head injury is a dangerous leading to death, injuries were observed in different area of head, majority of having brain death 36.90% followed by subarachnoid hemorrhage 19.04%, fractures of orbital region 16.66%, fracture of the partial and temporal region 11.90%, fracture of the partial and temporal region and subdural hemorrhage 7.14% and epidural hemorrhage 1.19% respectively. This head injury patients were under went autopsy and CT scan of head injuries. There are 06 patients having fracture of the occipital bone, out of 6, 3 patients under went autopsy and 6 patients under went CT scan. We're has positive response of fracture of occipital bone was 4 and negative were 2 patients. 10 patients having fracture of partial and temporal region fracture 5 patients underwent autopsy and 7 with CT scan, positive response of fracture of partial and temporal region was 8 and negative were 2 patients.14 patients having fracture of orbital bone 3 patients underwent autopsy and 12 with CT scan, positive response of fracture of orbital bone was 9 and negative were 5 patients.31 patients having brain death,26 patients underwent autopsy and 15 with CT scan, positive response of brain death was 19 and negative were 12 patients.16 patients having subarachnoid hemorrhage, 13 patients underwent autopsy and 16 patients with CT scan, positive response of subarachnoid hemorrhage was 12 and negative were 4 patients. 6 patients having subdural hemorrhage. 2 patients underwent autopsy and 1 with CT scan, positive response of fracture of partial and temporal region was 1 and negative were 1 patient. 1 patients having subdural hemorrhage. 0 patients underwent autopsy and 1 with CT scan, positive response of fracture of partial and temporal region was 1 and negative were 0 patients. As per the study total number of patients underwent autopsy was 52 patients and total number of patients under went CT scan was 58 patients. After comparing positive and negative result of autopsy and CT scan, the total number of positive results (autopsy and CT scan giving positive results of injury) was 54 and total number of negative results (autopsy and CT scan giving negative results about injury) was 26 respectively, majority of the patients underwent CT scan. Our study coincides study with the study of Kuruc, R et al (2022) in his study he observed that CT comparing to Autopsy is a good method for diagnosis gunshot wound to the head and bone fracture were as for cranial fractures autopsy is better. Mishra, et al (2019) he observed that postmortem CT scan reporting injuries in traumatic death can significantly complement to autopsy.

Conclusion:
The present study concludes that traffic accident was the major cause of injury. If the patients are both in a conscious condition they are having vertigo and bleeding as a complication. But in a head injury patients, brain death was seen in most of the patient.
CT scan compared to autopsy is a good method for detecting gunshot injury of head and bone fractures. Were as autopsy is better for detecting minor injuries to organs and soft tissues. Both CT and Autopsy are the best technique for most of the injury cases.

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