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# OUTCOME OF THE UNIDENTIFIED/UNACCOMPANIED PATIENT OF TRAUMATIC BRAIN INJURY IN TRAUMA UNIT OF GANDHI MEDICAL COLLEGE AND ASSOCIATED HAMIDIA HOSPITAL BHOPAL (INDIA)

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**Abstract:**
All unidentified / unaccompanied & unknown TBI patients admitted in department of neurosurgery, Gandhi Medical College Bhopal from June 2016 to May 2019 were enrolled in this study. Management of unidentified and unaccompanied patients is difficult in any health care setup due to challenges in managing their day to day care. Traumatic brain injury is the most common cause of death in trauma patients. We analyzed demography, mode of injury, clinical presentation & condition at admission, treatment given, hospital stay, outcome & factors affecting outcome of the patients. Very few studies in world literature are available on this subgroup of patients. We analyzed data pertaining to 100 consecutive patients at our hospital.

**Aim and Objectives:** The aim and objective of this study is to determine the outcome of traumatic Brain Injury in patients who were admitted in trauma unit/ Neurosurgery unit of Gandhi medical College Bhopal India from June 2016 to May 2019. As unaccompanied / unknown/ unidentified. In this study we collected the data of unknown/ unidentified patients of TBI to analyze the outcome.

**Material and Methods:** It was a prospective study of all unaccompanied/ unknown patients who were admitted in the trauma unit/ Neurosurgery unit of surgery department of Gandhi Medical College & Associated Hamidia Hospital Bhopal India from June 2016 to May 2019 a total number of 100 unidentified /unaccompanied patients were admitted whose data were collected and analyzed Departmental staff, social workers, police and media persons help were take in for relocation of unknown patients to their home or non government organization shelter homes .

**Results:** There were total 100 consecutive patient enrolment in this study, 87% of the patients were male. Most common age group was 40-59 years, 48% patients falls in this age group.
Most common cause of trauma was road traffic accident (48%), followed by Cause Unknown (36%). Overall mortality was 39%. Others clinical characteristic and type of lesion in traumatic brain injury of unidentified and unaccompanied patients is given in detail in.
Out of 100 patients, 43 (43%) patients were managed conservatively based on CT head findings and neurological status & 57 (57%) were operated. Decompressive Craniectomy was most common operative procedure depending on the clinical & neurological status. Overall complication rate during hospital stay was 26%.
**Keywords:** TBI, Unidentified Patient & Unaccompanied & Decompressive Craniectomy, Rehabilitation.

## Introduction:

Traumatic brain injury (TBI) is a leading cause of death and disability in trauma patients. As the primary injury cannot be undone, management strategies must therefore focus on preventing secondary injury by avoiding hypotension and hypoxia and maintaining appropriate cerebral perfusion pressure (CPP), which is a surrogate for cerebral blood flow (CBF). Elevated intracranial pressure can be treated through an algorithmic approach utilization simple bedside maneuvers, hyperosmolar therapy, cerebral spinal fluid (CSF) drainage as well as pentobarbital coma and decompressive craniectomy in refractory cases. Mass lesions may require operative evacuation depending on size, exam findings, and ICP measurements. Although CPP may not be an ideal surrogate for cerebral blood flow and metabolic delivery, other modalities have not gained widespread use due to paucity of strong data. Other factors that deserve important consideration in the acute management of TBI patients are venous thromboembolism, stress

ulcer, and seizure prophylaxis as well as nutritional and metabolic optimization.

Consistent with all phases of TBI management, prehospital strategies should focus on preventing secondary brain injury. In one study, patients with moderate to severe TBI transferred to level I trauma centers via helicopter who had secondary insults (either SBP <90 mmHg or SpO2 <92%) were found to have a 28% mortality, compared to 20% of patients without such insults. Prehospital hypoxia in these same patients was associated with a significant increase in mortality, and there was no difference in hypoxic episodes between patients intubated vs. those not intubated in the field.10 Similarly, prehospital rapid sequence intubation performed by paramedics in head injured patients with GCS <9 was associated with an increase in mortality. This result may be associated with the transient hypoxia during the prehospital procedures, excessive over-ventilation causing hypocarbia, vasoconstriction, and impaired CBF, and longer scene times.11 this body of work implies a need for rapid transfer to definitive care and a focus on more basic airway strategies to maintain oxygenation in head injured patients.

**Material & Method**

All unidentified & unaccompanied TBI patients admitted in department of neurosurgery, GMC, Bhopal from June 2016 to May 2019 were enrolled in this study. We analyzed demography, mode of injury, clinical presentation & condition at admission, treatment given, hospital stay, outcome & factors affecting outcome of the patients.

All patients were clinically evaluated by a team comprising of doctors from surgical, medical and orthopaedics specialties in the emergency department and subsequently admitted and treated at Neurosurgery. Complete primary evaluation was done. NCCT brain and whenever necessary, X-rays, CT scan of spine, USG abdomen, MRI spine or contrast CT (abdomen/chest) were carried out to rule out other injuries.

We have devised strategies to utilize the available infrastructure in hospital and neurosurgery ward like reserving few beds adjacent to nursing staff station in ward for keen watch on vitals and nutritional feeds monitoring and other nursing cares, daily morning and evening round by senior faculty members, regular update of any information given by patients to search their home to speed up the identification process through intense web based search of information available in Voter list, Aadhaar card and biometrics.

Allocation of designated fund for consumables was done as per need. Steps were taken to facilitate the relocation of such patients to their home or shelter homes with the help of departmental staff, social workers and media personal even though it may not be the prime job of the hospital. A special sanction was taken to pay for the travel arrangements of these patients.

**Results:**

At the time of admission all patients were clinically examined in the casualty department primary information tried to recipe from the ambulance personal/ Police man/ chokidar or other person accompanied with patients and initial on resuscitation was done and subsequently patients was admitted in trauma unit neurosurgery unit.

**Table 1:** Demographic of Traumatic Brain Injury in Unidentified and Unaccompanied patients

| S. No. | Demographic | No. of Patient | Percentage |
|---|---|---|---|
| **1** | **Gender** | | |
| | Male | 87 | 87 |
| | Female | 13 | 13 |
| | | | |
| **2** | **Mean Age (Years)** | | |
| | Age Group | | |
| | <20 | 02 | 02 |
| | 20-39 | 41 | 41 |
| | 40-59 | 48 | 48 |
| | 60 & above | 09 | 09 |

**Table 2:** Clinical Characteristic and type of lesion in Traumatic Brain Injury of Unidentified and Unaccompanied patients

| S. No. | Characteristics | No. of Patient | Percentage |
|---|---|---|---|
| | **Cause of trauma** | | |
| **1** | Road Traffic Accident | 48 | 48 |
| **2** | Train Accident | 09 | 09 |
| **3** | Fall from height | 07 | 07 |
| **4** | Cause Unknown | 36 | 36 |
| | **Type of Brain Injury** | | |
| **5** | Extradural Hematoma | 16 | 16 |
| **6** | Subdural Hematoma | 28 | 28 |
| **7** | Cerebral contusion | 47 | 47 |
| **8** | Diffuse Axonal Injury | 29 | 29 |

| | | | |
|---|---|---|---|
| **9** | Subarachnoid Haemorrhage | 39 | 39 |
| **10** | Intraventricular Haemorrhage | 12 | 12 |
| **11** | Depressed Fracture | 09 | 09 |
| **12** | Scalp Avulsion Injury | 03 | 03 |
| **13** | Pneumocephalus | 13 | 13 |
| | **Other Injury** | | |
| **14** | Maxillofacial Injury | 29 | 29 |
| **15** | Chest Injury | 08 | 08 |
| **16** | Blunt Trauma Abdomen | 04 | 04 |
| **17** | Spine Injury | 06 | 06 |
| **18** | Long Bone Fracture | 24 | 24 |

**Table 3:** Treatment given at hospital

| S. No. | Management | No. of Patient | Percentage |
|---|---|---|---|
| **1** | **Conservative Management** | 43 | 43 |
| **2** | **Surgical Intervention** | 57 | 57 |
| **2a** | Decompressive Crainectomy | 23 | |
| **2b** | Crainotomy | 19 | |
| **2c** | Depressed Fracture Elevation | 09 | |
| **2d** | Burr Hole Evacuation | 06 | |

**Table 4:** Complication during treatment of the patient

| S. No. | Complication | No. of Patient | Percentage |
|---|---|---|---|
| **1** | Pneumonia | 09 | 09 |
| **2** | Meningitis | 03 | 03 |
| **3** | Septicaemia | 04 | 04 |
| **4** | Wound infection | 06 | 06 |
| **5** | CSF leak | 03 | 03 |
| **6** | Hydrocephalus | 01 | 01 |
| | **Total** | 26 | 26 |

There were total 100 consecutive patient enrolment in this study, 87% of the patients were male. Most common age group was 40-59 years, 48% patients falls in this age group [Table 1].

Most common cause of trauma was road traffic accident (48%), followed by Cause Unknown (36%). Overall mortality was 39%. Others clinical characteristic and type of lesion in traumatic brain injury of unidentified and unaccompanied patients is given in detail in [Table 2].

Out of 100 patients, 43 (43%) patients were managed conservatively based on CT head findings and neurological status & 57 (57%) were operated. Decompressive Craniectomy was most common operative procedure depending on the clinical & neurological status [Table3].

Overall complication rate during hospital stay was 26% [Table 4).

**Discussion**

Incidence as well as severity of head injuries is rising in developing countries due to rapid industrialization with a lag in legal, healthcare and safety reforms. Delhi with a population of around 15 million has the dubious distinction of having the largest number of road traffic accidents of any city in India. The enormity of burden can be assessed by the fact that our study had 1090 severe head injured patients over 15 months and was conducted at only one hospital! One of the reasons for the step-motherly attitude by policy makers towards head injury prevention, management and rehabilitation is the lack of hard statistics of the actual burden of disease which head injuries carry. In spite of improvement in care for head injured patients, there has not been a marked decline in the mortality rates for severe head injuries. Kagan *et al.* found that mortality rates were between 26.7% and 41.4% for head injured patients in Level 1 trauma centers.[8] Fakhry *et al.* in their study found 28.8% mortality rate of severely head injured patients.[9] It has also been shown that developing (low and middle income) countries have a pooled mortality rate of 51% for severe head injuries as compared to 30% for high income countries.[3] The present study has an overall mortality of 22% with the mortality for severely head injured patients being is 36%.

This is very favorably comparable to other studies [Table 4]. However, this mortality does not reflect the outcome in other centers in India where optimum treatment cannot be provided due to lack of resources.

In our center we follow a policy of aggressive monitoring and management of severe head injuries as published by Stein *et al.*[10] This has helped us in having outcomes better than the national average and to continually improve upon them over the years. In our study only 26.2% of the severe head injuries were managed conservatively with an extremely high mortality of 72%. The remaining 809 patients (74.2%) of severe head injury underwent aggressive management with surgery with a mortality of only 23.7%. This brings out the fact that aggressive

monitoring and management has dramatically improved outcome in our hands.

Although minor head injuries constitute the largest group of head injuries, they do not reflect in this study as majority were kept under observation in the emergency department and not admitted. This also reflects on the immense pressure on in-hospital beds, thus keeping minor head injury admissions to the minimum. However, in spite of selective admission criteria for minor head injuries, our mortality rate is better than published.[3]

## Conclusion

Unidentified/Unaccompanied Patients are usually found lying on road in unconscious state and brought to hospital by policemen or bystanders who are ill equipped and often unaware in handling patients with severe injuries. During their hospital stay, the role of paramedical staff is of paramount importance, daily nursing care in absence of a relative is a difficult. It needs a team of trained and empathetic nursing staff along with a physiotherapist, dietician, psychologist, and social worker who can help and rehabilitate them. There is an urgent need to sensitize the general public and police about the transportation and pre-hospital management of such severe head injury patients.

Study shows that sensitized hospital, staff, society and media is need for better management of unidentified and unaccompanied head injury patients. Communal responsibility of sharing of these patients is must for early relocation/ rehabilitation for decongestion of overloaded hospital for other patients need. It is also imperative to increase general awareness regarding road safety measures, prehospital trauma patient care protocols, and improve our healthcare delivery system in the peripheral hospital.

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