Outcome of "DESTITUTE" Head Injury Patients at a Tertiary Care Neurosurgical Centre: A KGMU Experience of 10 Years

Rohan Dilip Digarse[1] Bal Krishna Ojha[1] Anil Chandra[1] Chhitij Srivastava[1] Sunil Kumar Singh[1]

[1]Department of Neurosurgery, King George Medical University, Lucknow, Uttar Pradesh, India

Address for correspondence Rohan Dilip Digarse, MS, Department of Neurosurgery, King George Medical University, Lucknow, Uttar Pradesh, India (e-mail: drohan420420@gmail.com).

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Abstract

Introduction Many patients are admitted to hospitals as destitute or unknown, after having met with accidents. What happens to these patients after admission is not much reported in world literature. With the ever increasing number of road traffic accidents (RTAs), a significant number of such patients are reported worldwide.

Material and Methods We conducted a retrospective analysis of the departmental case records of destitute patients from January 2009 till December 2018 in our institute. The mode of presentation, demographic profile, computed tomography scan findings, hospital course, and outcome at discharge were analyzed.

Results Out of 128 patients, there were 114 (89.1%) male patients, maximum being in the 21 to 30 years age group. The mean age was 36.4 years with ages ranging from 10 to 70 years. The average length of stay in hospital was of approximately 6 days with maximum being 37 days. The main cause of head injury was RTA in 66 patients (51.5%). Majority, that is, 84 patients, had a Glasgow Coma Scale score of < 8 at admission. Forty-two head injury patients were operated in all, while the rest were managed conservatively. Forty-nine (38.2%) patients died in hospital, and 44 (34.3%) patients had good recovery. During treatment, 16 (12.5%) patients took discharge against medical advice, while identity of 63 (49.2%) patients could be established out of which 5 (3.9%) patients were either discharged to home while 51 (39.8%) patients were referred to their district hospital. Two patients (1.5%) remained unknown and were sent to destitute homes for rehabilitation.

Conclusion Unknown head injury patients are usually neglected and their outcome is poorer in comparison to other patients. Their management is fraught with challenges. They need special care for which staff should be well trained and hospital must have economic resources and a good network of social workers.

Keywords
- unknown
- destitute
- head injury
- GCS
- rehabilitation

Introduction

The incidence of road traffic injury-related deaths was 19 per 100,000 population per year worldwide (WHO 2002).[1] The incidence varies in urban and rural population. The overall incidence in U.S. is around 200 per 100,000 per year.[2,3] Some of the epidemiological studies are hospital based.[4,5] In India, majority of the studies are from traffic police or from the hospital records.[6,7] Nearly 5 million people lost their life due to head injury in 2002.[8–10] In India, the incidence of head injury is steadily increasing with urbanization and increasing number of vehicular population.[11] Among the road traffic accidents, 70% have head injury, and among road accident deaths 70% are due to head injury. Majority of deaths occur during the first 72 hours after trauma. Recently, number of fatal as well as nonfatal accidents have increased in India. Total number of

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vehicles in India is only 1% of world's total vehicles and 7th in the world in terms of area; however, total number of accidents in India as reported in 2017 was 4.6 million, thus making it highest incidence of accident rate in the world. Currently, annual road accidents in India are over 12 million. Every minute there is an accident and every 8 eight minutes there is a death.[12] As per the latest data, in 2017, a total of 464,910 road accidents were reported in India, claiming 147,913 lives and causing injuries to 470,975 persons, which translates into 405 deaths and 1,290 injuries each day from 1,274 accidents. Becker et al reported that over 8% of total deaths in U.S. were due to injury.[13] We work at a tertiary care trauma center of a developing country and a lot of severe head injury patients are referred to us.

Many such patients are brought by bystanders, policemen, and ambulance drivers and their identities are not known at the time of admission. These patients present a unique challenge in management. In this context, we tried to analyze data pertaining to this group of patients for understanding their mode of injury, presentation, treatment, and outcome after head injury.

Methodology

This was a retrospective study, conducted at the Department of Neurosurgery, King George Medical University, Lucknow, Uttar Pradesh, India. Hospital records of 128 unidentified patients, admitted at our center, between January 2009 and December 2018 was taken out. Data was collected about demography, mode of injury, clinical presentation, status at admission, treatment given, hospital stay, and outcome of these patients. Data analysis was done using Microsoft Excel (Microsoft Corp.) software. All these patients were clinically evaluated by a team comprising doctors from multiple specialties in the emergency department and subsequently admitted and treated at neurosurgery. Plain computed tomography (CT) scan of head along with X-ray of cervical, dorsolumbar spine, long bones and pelvis, as well as chest along with ultrasonography abdomen (FAST) were performed to rule out other injuries. Whenever necessary, CT scan of spine, magnetic resonance imaging spine, or contrast CT (abdomen, chest) were performed to rule out other injuries.

Results

Out of 128 patients, 114 (89%) were male, and only 14 (11%) were female. Only 12 (9.3%) patients were less than 20 years of age, most, that is, 100 (78%) patients were between 21 to 50 years of age (►**Table 1**).

Road traffic accident was the most common cause of injury in 66 (51.5%) cases. In 52 (40.6%) cases, cause of injury was not known and these unconscious patients were brought from roadside by policemen. At the time of admission, Glasgow Coma Scale (GCS) score of less than 8 was seen in 84 (64.6%) cases. GCS between 8 and 12 was seen in 18 (14.1%) cases. Plain CT scan of head revealed cerebral contusion in 56 (43.75%) patients, subdural hematoma (SDH) in 31 (24.2%) patients, extradural hematoma (EDH) in 18 (14.1%), and DAI in 22 (17.2%) patients (►**Table 2**). Many patients had an overlap of 2 or more injuries.

Eighty-six (67.2%) patients were managed conservatively using antiepileptics, diuretics, and osmotic agents. Forty-two (32.8%) patients needed surgical intervention; among them decompressive craniectomy was performed in 15 (35.7%), craniotomy in 18 (42.9%), depressed fracture elevation in 10 (23.8%), and burrhole evacuation in 1 (2.3%) patient (►**Table 3**).

Among associated injuries, 2 (1.5%) had chest injuries (managed conservatively), 1 (0.7%) had abdominal injuries (managed conservatively with general surgery advice), 14 (10.9%) had limb fracture (out of which 5 were transferred to department of orthopaedics and the rest were discharged with advice to attend orthopaedic OPD regularly), and 1 patient (0.7%) had spinal injuries (managed conservatively) (►**Table 4**).

Table 1 Age distribution

Age	Number	Percentage
< 10	2	1.5%
11–20	10	7.8%
21–30	43	33.5%
31–40	35	27.3%
41–50	22	17.2%
51–60	13	10.1%
> 60	3	2.3%
Total	128	100%

Table 2 Various injuries quantified (clinico-radiological)

Type of injury	Number	Percentage
EDH	18	14.1%
Acute SDH	31	24.2%
Chronic SDH	1	0.7%
Contusions	56	43.75%
Compound fractures with BM/CSF leak	19	14.84%
DAI	22	17.2%
SAH	16	12.5%
IVH	10	7.8%

Abbreviations: CSF, cerebrospinal fluid; DAI, diffuse axonal injury; EDH, extradural hematoma; IVH, intraventricular hemorrhage; SAH, subarachnoid hemorrhage; SDH, subdural hematoma.

Table 3 Types of surgeries

Type of surgery	Number	Percentage
Decompressive craniectomy	15	35.7%
Craniotomy	18	42.9%
Depressed fracture elevation	10	23.8%
Burr hole	1	2.3%

Out of the admitted patients, 16 patients had taken leave against medical advice. At the time of discharge/transfer, 45 patients (71.4%) had GCS of 13 to 15 and 7 (11.1%) had GCS score of less than 8. According to Glasgow Outcome Scale (GOS) of these patients, 45 (35.15%) had good recovery, 18 (14.1%) were in vegetative state, that is, with a GCS of < 13 with absence of awareness of self and environment, and 49 (38.3%) succumbed to their injuries during treatment. During the course of treatment, identity of 61 (47.7%) patients could be established. Five of these (3.9%) were discharged to home, and 51 patients were referred to the district hospital in their locality for nursing care and further treatment (►**Table 5**).

Out of the alive patients, identity of 2 patients (1.5%) could not be established and they were rehabilitated by the social worker and provided shelter in home for the destitute run by nongovernmental organization (NGO). On comparing the mean GCS values of eye, verbal, and motor scores at admission and at discharge, higher values were seen at discharge but no significant difference between them was seen.

Discussion

In a previous study conducted at All India Institute of Medical Sciences, New Delhi, India, out of 325 destitute patients, there were 9 (3%) patients in the pediatric age group and 16 (5%) patients were above 60 years of age. Of these, 193 (65%) could be identified during the hospital stay. An additional 40 (13%) patients were sent home after they regained memory of their addresses. Forty-seven patients (15%) died without their identities being established. Seventeen (6%) patients remained unknown and were sent to rehabilitation/poor homes with the help of medical social workers.[14] In study of Wagner et al, they reported approximately one-third of patients with moderate head injury and half of patients with severe head injury being operated, most of them being for cerebral contusions and/or SDHs.[15] Mortality following head injury has been reported to be in the range of 39 to 51%.[16,17] Previous study showed both known and unknown head injury patients, among 72 patients of head injury 11 (15%) died during hospitalization. There were only 61 (85%) patients discharged from hospital, whereby 29 (40%) with good outcome (GOS 4 and 5) while the remaining 32 (44%) patients were with either severe disability or in vegetative state. Only one patient continued to suffer severe disability, while the rest had moderate or good recovery.[18] Compared with this, our study had 12 (9.3%) patients under the age of 20 years. Forty-two patients (32.8%) were treated by surgery, most often for EDH (18 patients, 42.8%). These groups of patients with unknown identities present a lot of challenges in their management. They are usually found lying on the road in unconscious state and brought to hospital by policemen/ambulance drivers who are ill equipped and often do not know how to handle patients with severe injuries. Their prehospital management is usually improper and lack of proper transfer facilities in ambulances, further aggravates their condition. We receive many such patients from peripheral hospitals, because of lack of proper facilities there. Very often such patients are destitutes and their injuries are compounded by presence of debility because of poor nutrition, and other medical conditions like diabetes, hypertension, tuberculosis, and mental illnesses which remain unknown or are accidentally detected. Therefore, it is necessary that these patients be evaluated with a very high index of suspicion for above conditions. During their hospital stay, the role of paramedical staff is of utmost importance; their daily nursing care in absence of a relative is a challenging task. It needs a team of trained and empathetic paramedical staff along with a physiotherapist, dietician, psychologist, and social worker who can help and rehabilitate them; many a time due to scarce resources these trained personnel might not be available and the duty doctor has to play all these roles. Because of existing infrastructure and well-trained staff, many unidentified patients with severe head injury have been rehabilitated at our institute and there is a continued attempt on our part to improve facilities. It is highly gratifying for the treating team to see such patients return back to our outpatient department with their relatives.

There is an urgent need to sensitize the general public and police about the transportation and prehospital management of severe head injury patients. All hospitals need to be well equipped for treatment of such patients. Treatment of such unknown patients can entail a huge expenditure, and therefore, every hospital should allocate funds for such purpose and only those patients who are in need of higher medical care should be referred to higher center. We, in our setup, had some departmental funds allocated for the same which could be used at appropriate times for such patients; also the

Table 4 Types of associated injuries

Type of associated injury	Number	Percentage
Chest injury	2	1.5%
Limb fractures	14	10.9%
Abdominal injuries	1	0.7%
Facial injuries	6	4.6%
Spine injury	1	0.7%

Table 5 Status at discharge

Status at discharge	Number	Percentage
Discharged to home	5	3.9%
Transferred to other department for further management (Ortho/OMFS)	5	3.9%
Referred to district hospital	51	39.84%
Sent to destitute home	2	1.5%

Abbreviation: OMFS, oral and maxillofacial surgery.

active participation of paramedical staff, NGOs, social workers, media is actively enlisted to help further the cause of such patients.

Conclusion

Unknown/destitute head injury patients are usually the neglected part of patient community. Their management from prehospital to treatment and discharge from hospital is full of challenges. Though no definite data is available, it is logically considered that outcome of these patients is poorer in comparison to patients who are accompanied by their relatives because they need special care for which paramedical staff should be well trained and hospital must have economic resources at hand and preallocated for this purpose. A good network of social workers and NGOs also helps in rehabilitating these patients.

Conflict of Interest
None.

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