

Extradural Hematoma: A Case Series of Patients Presenting To A Tertiary Care Center of Bihar

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Abstract

Introduction: India is undergoing major economic and demographic transition coupled with increasing urbanization and motorization. Among the top ten causes of mortality in the country, head injury was the tenth cause two decades back. The aim of this study was to analyze various causes, clinical presentations, factors influencing presentations and to evaluate the postoperative outcome in patients with head injury with an extradural hematoma before surgery and to formulate recommendations for improvement of therapy and suggestions for the future. **Methodology:** This is a prospective observational Study which included 50 patients admitted at Patna Medical College & Hospital, Patna, Bihar over the past one year that was January 2022 to December 2022 with head injury, diagnosed to have traumatic extradural hemorrhage. Prior ethical approval was obtained from the institutional Ethics Committee. The study included all patients between age groups of 5 to 70 years. The study evaluated initial outcome, excluding long term outcome. Collected data were entered into and analyzed using Statistical Package for Social Sciences (SPSS) Version 21.0 (IBM, Chicago). **Results:** A total of 50 cases were included in the study. Maximum patients suffering from EDH were in the age group of 21-30 years. The mean age was 29.3 years with a standard deviation of 8.2 years. There was a male preponderance with a male to female ratio of 5.25:1. The most common mode of injury among the patients was road traffic accident (78%) and 64% of cases of RTA occurred under the influence of alcohol. **Conclusion:** The present study concludes that, road traffic accident was the commonest mode of causative agent for EDH. Alcohol influence had a significant contribution in the causation, revealed by present study series and proved a social evil. So, early presentation to hospital with mild to moderate GCS has good clinical outcome with minimal disability.

Key Words: Extradural Hematoma, Traumatic, patient.

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Introduction

India is undergoing major economic and demographic transition coupled with increasing urbanization and motorization. Among the top ten causes of mortality in the country, head injury was the tenth cause two decades back. But with the increasing urban expansion and life style changes, trauma will occupy the fifth position in the list of major killers and third position among causes of disease burden in 2020. In India 11% of deaths due to non-communicable diseases are due to trauma and 78% of injury deaths are due to head injury. It is the leading cause of mortality for young adults of less than 45 years and a major disease burden across all age groups. Some of the factors that increase the risk of road crashes in India are unsafe traffic environment, poor road infrastructure and encroachments that restrict safe area for pedestrian's lack of safety engineering measures, traffic mix and an increasing number of motorized vehicles. Unsafe driving behavior and lack of valid driving licenses or fake driving licenses. Head injury is one of the leading causes of severe disability and death in the modern world among individuals under 45[1]. Traumatic brain injury (TBI) accounts for approximately 70% of these traumatic deaths and most of the persisting disabilities in accident survivors[2]. Traumatic extradural hematomas (EDH) comprise 1 to 3% of all head trauma admissions[3]. The peak incidence of extradural haematoma (EDH) is in the second decade of life and mean age of patient with EDH in different series is between 20 and 30 years of age[4, 5]. Mortality rate vary from 10-40% and is an index of alertness and efficiency of health care and hospital setup in a country[6].

The integrated disease surveillance project of the ministry of health and family welfare recognizing this problem proposes to include the injury module as an additional component. There is, however, a need to develop and test a model for surveillance of trauma for inclusion in the health information systems. Risk factors for patients with EDH are advanced age, intradural lesions, temporal location, increased hematoma volume, rapid clinical progression, pupillary abnormalities, increased intracranial pressure (ICP) and low Glasgow coma scale (GCS)[7]. But others found the most significant factors associated with unfavorable outcome were higher age, lower GCS, and higher EDH volume. Surgical mortality has rapidly decreased since Hutchinson described extradural hemorrhage as an emergency situation in 1867. 100 years ago, the mortality rate of EDH was as much as 86% and traumatic EDH remains a true neurosurgical emergency[8]. With the introduction and wide availability of cranial CT, early diagnosis and timely surgical intervention for EDH is an attainable gold standard[9, 10]. Indeed, the treatable nature of EDH has led some authors to suggest that "towards zero mortality" is an achievable target with respect to this condition[11, 12]. While zero mortality is common in non-comatose patients, 25% to 71% of comatose patients undergoing surgery have a fatal outcome[13]. Many reports on extradural hematoma have drawn attention to avoidable factors implicated in preoperative deterioration, such as delayed transportation to the hospital and delayed diagnosis, but less consideration has been given to the specific factors that influence the outcome of patients who arrive comatose in the operating room[14]. EDH remains even now a serious neurological condition[15, 16]. The aim of this study was to analyze various causes, clinical presentations, factors influencing presentations and to evaluate the postoperative outcome in patients with head injury with an extradural hematoma before surgery and to formulate recommendations for improvement of therapy and suggestions for the future.

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Methodology

This is a prospective observational Study which included 50 patients admitted at Patna Medical College & Hospital, Patna, and Bihar over the past one year that was January 2022 to December 2022 with head injury, diagnosed to have traumatic extradural hemorrhage. Prior ethical approval was obtained from the institutional Ethics Committee. The study included all patients between age groups of 5 to 70 years. The researcher evaluated the patients of traumatic extradural hemorrhage. Exclusion criteria were non-traumatic causes, head injury patients without extradural hemorrhage, patients with long term outcome, patients bearing associated injury to chest, abdomen and extremities. All the selected patients were interviewed after obtaining informed consent forms from the patients or next of kin. A detailed history was taken with regards to time of incidence, alcohol influence, mode of injury and time of arrival to hospital. All patients were subjected to thorough initial clinical examination and emergency and follow up CT Scan- Brain. Patients were operated, operative finding noted, post operatively records were analyzed. The study evaluated initial outcome, excluding long term outcome. Collected data were entered into and analyzed using Statistical Package for Social Sciences (SPSS) Version 21.0 (IBM, Chicago).

Results

A total of 50 cases were included in the study. Maximum patients suffering from EDH were in the age group of 21-30 years. The mean age was 29.3 years with a standard deviation of 8.2 years. There was a male preponderance with a male to female ratio of 5.25:1. The most common mode of injury among the patients was road traffic accident (78%) and 64% of cases of RTA occurred under the influence of alcohol. Fall attributed to another 16% of cases and rest 6% were due to other causes including assault. Majority of cases (62%) reached hospital within 6 hours from time of injury. 18% of the patients took more than 12 hours to reach hospital due to negligence, lack of transport facility or other recourses. The clinical presentation of the cases has been noted in table 1. Out of 50 cases, 29 cases (58%) presented with mass effect over brain parenchyma and 26 cases (42%) presented as pure isolated EDH. Rest either had bone fracture or associated brain parenchymal injury. Majority of cases presented with equally reacting pupils at time of presentation to hospital. The dominant type of EDH observed in the study was frontal (22%) followed by temporal (14%) and temporo-parietal (8%). Posterior fossa EDH presentation was relatively least.

Table 1: various findings of patients at the time of presentation to the hospital

Clinical presentation	Number of cases
Loss of consciousness	43
Vomiting	37
Headache	19
ENT bleeding	18
Convulsion	7
Facial weakness	1
Hemiparesis	1
GCS at the time of presentation	
15	21
13-14	13
9-12	9
5-8	5
3-4	2

Out of 50 cases, surgical approach was considered in 29 patients while remaining 21 patients were managed conservatively. Outcome of patients has been shown in table 2.

Table 2: Initial outcome of the cases noted

Outcome noted	Number of cases
Good recovery	40
Moderate disability	5
Severe disability	1
Vegetative state	1
Death	3

Discussion

A total of 50 cases of extradural hemorrhage were registered during the period of study and out of these majority cases were of RTA, followed by fall from height and assault. Incidence of head injury was more in age range of 21 to 30 years as compared to both extremes of life. The study was compared with various other studies conducted across India, described [17, 18]. When compared with other studies, present results are similar in mode of injury i.e. RTA followed by falls and next is assaults [17, 18]. The dominant type of EDH observed in the study was frontal. Similar reports has been given by other studies [19, 20]. We observed in present study that in 42% cases of EDH presented as isolated finding, as per explanation by Charles Bell, that concussion injury causes stripping of dura aggravated further by negative intracranial pressure found at the antipode of compression force of skull.

In present study among 100 cases, 44% of cases could reach the treating hospital within 6 hours and 37 % cases between 6-12 hours of trauma and remaining 19% cases after 12 hours. The study throws light in the significance of golden period in the management of extradural hemorrhage [21-24]. Loss of consciousness was almost invariably present in all the participants except a few. The next prominent symptom being vomiting and headaches are better

indicators of raised intracranial pressure. Similar reports have been noted by some of the authors [17].

Conclusion

The present study concludes that, road traffic accident was the commonest mode of causative agent for EDH. Alcohol influence had a significant contribution in the causation, revealed by present study series and proved a social evil. History of loss of consciousness, "the hallmark symptom of extradural hemorrhage" which should be seriously considered while taking history. Majority of patients obtained medical attention more than six hours of incident, so the onset of trauma and delay in the treatment had greatly influenced the patient outcome. So, golden one hour concept should be made aware among all medical people. The degree of brain injury and the GCS difference were notable factors that were significant in determining the functional outcome of EDH. So, early presentation to hospital with mild to moderate GCS has good clinical outcome with minimal disability.

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