

Original Article

Etiological Factors of Extradural Haematoma: Experience of 80 Cases in Bangladesh

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Abstract

Background: Extradural haematoma is due to different etiologies. **Objectives:** The purpose of the present study was to see the etiological factors of extradural haematoma. **Methodology:** This cross sectional study was conducted in the Department of Neurosurgery at Dhaka Medical College Hospital, Dhaka, Bangladesh from January 2010 to June 2011 for a period of one year and half months. All patients who underwent surgery with traumatic head injury having extradural haematoma were included in the study. At admission, a detailed history of the illness was taken from the patients/patient's attendants by face-to-face interview with the help of a preformed questionnaire. Questionnaire was prepared with key variables like age, sex and mode of injury. **Result:** Eighty (80) patients of traumatic head injury within and after 24 hours of head injury were enrolled in this study. 20(25.1%) patients were present in age group of 11 to 20 years. 19(23.8%) patients were in age group of 21-30 years. 20(25.1%) patients were present in age group of 31 to 40 years. Male was predominant than female which was 60(75.0%) cases and 20(25.0%) cases respectively. The most common mode of injury was road traffic accident which was 51(63.7%) cases followed by fall from height and assault which were 16(20.0%) cases and 13(16.3%) cases respectively. **Conclusion:** In conclusion RTA is the most common cause of extradural haematoma. [*Journal of Science Foundation, July 2016;14(2):44-48*]

Keywords: Extradural haematoma; traumatic head injury; etiological factors

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Introduction

Extradural haematoma with cerebral compression is one of the most urgent of all surgical emergencies. Treated in time the patient can make full recovery. Failure to diagnose and delayed operation definitely lead to death. This is one of the direst of all neurosurgical emergencies (Ramamurthi 2005). Head injury, a serious health problem in all nations, is a significant factor for approximately half of all deaths related to trauma and the main cause of head trauma includes road traffic accident, assaults, fall from height, sports injuries and industrial accidents. The extradural haematoma is a collection of blood between the skull and the dura mater. It is caused by a ruptured artery or vein in the epidural space as a result of a fracture of the skull at the moment of the impact in 60 to 90% of cases. In children fractures are less common (Rengachary 2005). Extradural haematomas (EDH) develops in 1 to 3% of all major head injuries and are most common

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in the young male in the second and third decades of life (Netter 1986). Extradural haematomas (EDH) usually occurs in young adults and is rare before age 2 years or after age 60 perhaps because the dura is more adherent to the inner table in these groups (Greenberg 2010).

Extradural haematoma can result from injury to the middle meningeal artery, the middle meningeal vein, the diploic veins or the venous sinuses. Historically bleeding from the middle meningeal artery has been considered the main source for EDH (Bullock et al., 2006). Yong (2004) found extradural haematoma (EDH), in 2% of all serious head injuries, uncommon in infants and associated with skull fracture in 40-85%. Extradural haematoma which lies in between the inner surface of skull and strips of dural membrane are nearly always caused by and located near to a skull fracture. The collection takes several forms in terms of size, location, speed development and effects they exert on patient. Extradural haematoma (EDH) usually forms within an hour from the time of injury but sometimes run a more chronic course. Extradural haematoma is more common in some areas, temporal and temporo-parietal areas are involved in 70% cases approximately. The rest occur in the frontal, occipital and posterior fossa (5-10% each) (Greenberg 2010). Therefore, the purpose of the present study was to see the etiological factors of extradural haematoma.

Methodology

This cross sectional study was carried out from January 2010 to June 2011. This study was carried out in the Department of Neurosurgery at Dhaka Medical College Hospital, Dhaka, Bangladesh. All patients who underwent surgery with traumatic head injury having extradural haematoma were included in the study. Purposive sampling technique was done. Patients with traumatic extradural haematoma diagnosed clinically by classical presentation of EDI-I and radiologically by non-contrast CT scan of brain all of whom underwent surgery. In all cases traumatic extradural haematoma were supratentorial. Non-traumatic extradural haematoma, patients with bilateral extradural haematoma, posterior fossa extradural haematoma and patients on anticoagulant therapy were excluded from this study. At admission, a detailed history of the illness was taken from the patients/patient's attendants by face-to-face interview with the help of a pre-formed questionnaire. Questionnaire was prepared with key variables like age, sex and mode of injury. All the data were checked and edited after collection. Then the data were entered into computer and statistical analysis of the results was obtained by using window based computer software devised with Statistical Packages for Social Sciences (SPSS-16) (SPSS Inc, Chicago, IL, USA). Prior to the commencement of this study, the ethical committee of Dhaka Medical College, Dhaka, approved the thesis protocol. The aims and objectives of the study along with its procedure, risks and benefits of this study were explained to the respondents in easily understandable language and then written consent was taken from each. It was assured that all information and records would be kept confidential and the procedure would be helpful for the neurosurgeon and the patients in subsequent management.

Results

Eighty (80) patients of traumatic head injury within and after 24 hours of head injury were enrolled in this study. 7(8.7%) patients were in the less than or equal to 10 years age group. 20(25.1%) patients were present in age group of 11 to 20 years. 19(23.8%) patients were in age group of 21-30 years. 20(25.1%) patients were present in age group of 31 to 40 years. 7(8.7%) patients were in the 41-50 years age group and more than 50 years in each. In this study the patient's age ranged from 3 years to 64 years irrespective to sex (Table 1).

Table 1: Age Distribution of the Study Population (n=80)

Age Group	Frequency	Percent
≤10 years	7	8.7
11-20 years	20	25.1
21-30 years	19	23.8
31-40 years	20	25.0
41-50 years	7	8.7
>50 years	7	8.7
Total	80	100.0

Male was predominant than female which was 60(75.0%) cases and 20(25.0%) cases respectively (Table 2).

Table 2: Sex Distribution of Study Population (n=80)

Sex	Frequency	Percent
Male	60	75.0
Female	20	25.0
Total	80	100.0

The mode of injury of the patients was recorded. The most common mode of injury was road traffic accident which was 51(63.7%) cases followed by fall from height and assault which were 16(20.0%) cases and 13(16.3%) cases respectively (Table 3).

Table 3: Distribution of the Study Population by Mode of Injury (n=80)

Mode of Injury	Frequency	Percent
RTA	51	63.7
Fall from height	16	20.0
Assault	13	16.3
Total	80	100.0

RTA=Road traffic accident

Discussion

Extradural haematoma (EDH) is considered among the most rewardingly responsive traumatic lesions treated by neurosurgeons. The prognosis is nevertheless influenced by: age, degree of coma, pupillary reaction to light, size and site of haematoma and the mechanism of injury (Baykaner et al., 1988; Lobato et al., 1988). Delayed operative treatment of EDH is recognized as a poor prognostic factor. With the availability of the CT scan, early diagnosis of EDH is easier.

In Bangladesh, excellent outcome in extradural haematoma at international level is difficult to achieve because health infrastructure is not at its best. Neurosurgical services are not available in all district hospitals even not in all medical college hospitals. Modern diagnostic tools like CT and MRI are not available at periphery. Neurosurgeons are not in enough numbers. So diagnosis becomes late. Usually patients from interior area of the country first touches the Upazilla health complex then is referred to district hospitals or to regional medical college hospitals then neurosurgical centre. By this time patients level of consciousness gradually deteriorates with the development of secondary brain damage. Patient with EDH reaches the neurosurgical centre when they are already in coma causing poor outcome although surgically managed. The aim of head injury management is twofold: to prevent mortality and to preserve the functioning of the neural tissue as far as possible. The management during the first hour following trauma is considered as golden hour, which will largely determine the degree of morbidity and the ultimate result (Scottish intercollegiate Guidelines Network [SIGN], 2000).

A total of eighty (80) patients of traumatic head injury, 40 with extradural haematoma operated within 24 hrs of head injury and 40 with extradural haematoma operated alter 24 hrs to 3 days ol` head injury were enrolled in this study. In study the patient's age ranged from 3 years to 64 years irrespective to sex. In group A, maximum 25.0% patients belonged to 21 to 30 years age range followed by 22.5% within (11-20) years and (31-40) years and in group B, maximum 27.5% belonged to (11-20) years and (31-40) years followed by 22.5% within (21-30) years. In Chowdhury et al., (2008) series patients' age ranged from 2.5 years to 83 years. Highest numbers of patientsi were in the third decade (29%) followed by second decade (27.55%). Only 4.92% were above the age of 50 years. Kalyanaraman (2001) found the maximum incidence was usually between the ages of 11-60 years.

Gut of all patients of group A, 77.5% were male and 22.5% were female and in group B, 72.5% were male and 27.5% were female. Over all male and female ratios was 3.4:1. In Chowdhury et al (2008) series male and female ratio was 6.27:1. Ayub and Ilyas (2005) found male to female ratio of 5:1. Male dominant is a reflection of the social culture and most of them are exposed to external works.

In this study out of patients in group A, 57.5% had history of RTA, 22.5% fall from height and 20.0% of physical assault. In group B, 70.0% had history of RTA, 12.5% of physical assault and 17.5% of fall from height. In Ramzan et al (2002) series the commonest mode of injury was RTA (50.0%) followed by fall from height (50.0%). Kelly and Becker (2001) found 50.0% were victims of motor vehicle accidents followed by falls, which account for 30.0% and the remainder was accounted for by acts of violence and sports-related injury 0.0%. From this study it can be said that the rate of RTA is more in our country. It is probably due to lack of traffic safety. So improvement of traffic safety can reduce the rate of RTA, which can ultimately decrease the mortality and morbidity following head injury.

Conclusion

In conclusion the most common age group of extradural haematoma is young age group with a predominance of male and RTA is the most common cause of it. Delay in management of EDH patients with poor level of consciousness has adverse effect on mortality and morbidity.

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