ORIGINAL ARTICLE

Functional outcome of Acute Subdural Hematoma managed Surgically

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ABSTRACT

Aim: To determine the functional outcome of acute subdural hematoma managed surgically.
Study Design: Prospective study
Place and Duration: Department of Neurosurgery, PGMI Lady Reading Hospital Peshawar. Duration of the study was four years (from 9th December 2014 to 8th Dec 2018)
Material and methods: One hundred and forty seven patients of both genders presented with acute subdural hematoma were enrolled in this study. Informed consent was taken from all patients. These patients were further assessed through detailed history, including personal particulars, name, age, sex, address, mechanism of injury, symptoms and clinical examination, time since injury, initial Glasgow coma scale (GCS) score. Diagnosis of acute subdural hematoma (ASDH) was made on the basis of CT brain and per-op findings. The patient were followed post operatively till discharge from the hospital and were assessed by a Neurosurgeon for any morbidity or mortality in term of Glasgow outcome score (GOS) after one month, 3 months and 6 months and then categorized either in the functional recovery or nonfunctional recovery groups. All the observation and examination recorded in a predesigned Performa.
Results: Mean age was 31.34 years with SD ± 1.49. Our study shows 47(32%) patients were in age range < 20 years, 59 (40.1%) in age range 21-40 years, and 41(27.9%) were in age range 41-60 years. Male are more involved in this type of injury (68.7%) and 46(31.3%) were females. GOS were 1 for 51% (n-75) patients, 27% (n-40) patients had GOS score 2-3 and 22% (n-22) patients had GOS score 4-5. Thirty two (22%) patients had functional recovery (GOS 4-5) while 115(78%) patients didn't have functional recovery (1-3).
Conclusion: Functional recovery of the surgically managed acute subdural hematoma was 22% in our study. Functional outcome of traumatic brain injury with subdural hematoma is multifactorial and timely surgical intervention can make functional recovery more favorable.
Keywords: Acute subdural hematoma, Traumatic brain injury, Glasgow outcome score

INTRODUCTION

A increasing epidemic and a significant public health issue in developing countries is traumatic brain injury (TBI) [1]. TBI is the main cause of admissions into the European hospitals and is estimated at one million a year to the working class. TBI caused 1% of all deaths and is 15-24-year-old with a higher incidence, where 15% of all deaths occurred [1, 2]. The key cause of preventable deaths is the lack of neurochirurgical centres from major centres, which causes delays in the diagery and care of intracranial hematomas [2]. Epidural and subdural hematomas remain among the most common causes of death and lifelong morbidity due to traumatic brain injuries. Over the past three decades, advances in rescue, neuromonitoring, and intensive care have provided improved outcomes [3]. Acute subdural hematoma (ASDH) is found 12 - 29% in TBI cases, with highly unstable natural history of ASDH, but most spontaneously resolved, with some development requiring surgical treatment [4]. The cause of such an ASDH exacerbation is normal in patients with initially non-operated ASDH, and death is 60% and higher in the majority of sequence, which depends on the patient's preoperational Glasgow Coma Score (GCS), with a catastrophic injury with a mortality rate of 60% or higher.

Acute subdural trauma represents a serious type of brain injury which is frequently caused by falls, abuse or, most generally, collisions by motor vehicles [1, 4]. Hematoma location and rhythm of development depend on the clinical picture. The past is often apparent except in the case of ASDH, which occasionally happens because of aneurysm breakage. Headache, sickness, Confusion, Personality-related changes are the most prevalent type of presentation, including reduced levels of consciousness, coma, speech disturbances and changes in psychological status, diminished sight or vision, weakness or hemiparesis or localisation. Most of the patients (37-80%) suffering from GCS score or below, as a significant type of head injury [8]. There is a number of patients aware; some deteriorate late as the hematoma develops [2, 5, 7]. Neurological tests provide an essential basis for continuing surveillance to follow the patient clinically. Craniotomy with or without dural greasing and various decompressive craniectomy procedures with or without Dural greasing are included in surgical treatments [3, 5, 6, 8,9]. The key factors affecting outcomes following serious traumatic brain injury due to acute subdural hematoma were the age, the mechanism of injury (high versus low energy trauma), other injury associated with age, CT screening, preoperatives and other co-morbids, including hypertension.6 In terms of

Glasgow performance, the functional recovery of ASDH (GOS 4 or 5) is 57% 3 and 26.5% [5].

MATERIAL AND METHODS

This study was conducted in Department of neurosurgery Lady Reading Hospital Peshawar after approval from hospital ethical committee. A total of 147 patients were included in the study during a period of three years (from 9th December 2015 to 8th Dec 2018). All patients having head injury with acute subdural hematoma between age 14 to 60 years were included in the study whereas those having subdural hematoma associated with other conditions like contusion, subarachnoid hemorrhage, ASDH due to aneurysmal bleed and extradural hematoma in those having age below 10 or above 60 years were excluded from the study.

After permission from hospital ethical committee, patients with acute subdural hematoma (ASDH) admitted in Neurosurgery Department of Lady Reading Hospital were approached. Those who fulfill inclusion criteria were included in the study. Informed consent was taken from all patients. These patients were further assessed through detailed history, including personal particulars, name, age, sex, address, mechanism of injury, symptoms and clinical examination, time since injury, initial Glasgow coma scale (GCS) score. Diagnosis of acute subdural hematoma (ASDH) was made on the basis of CT brain and per-op findings. The patient were followed post operatively till discharge from the hospital and were assessed by a Neurosurgeon for any morbidity or mortality in term of Glasgow outcome score (GOS) after one month, 3 months and 6 months and then categorized either in the functional recovery or nonfunctional recovery groups. All the observation and examination recorded in a predesigned Performa.

The data was analyzed using the statistical program SPSS version 20. Descriptive statistics like mean ± standard deviation was calculated for age. Frequency/percentage was calculated for categorical variables like gender, recovery. Functional recovery was stratified among the age, gender and initial Glasgow coma scale (GCS) to see effect modifiers. Post stratification was done through the chi-square test keeping p value <0.05 as significant. Results were presented in tables, charts and graphs.

RESULTS

Age distribution among 147 patients was analyzed as 32% (n-47) patients were in age range < 20 years, 40.1% (n-59) patients were in age range 21-40 years and 27.9% (n-41) patients were in age range 41-60 years. Mean age was 31.34 years with SD ± 1.49. Gender distribution among 147 patients was analyzed as 68.7% were male (n-101) and 31.3 % were female (n-46). (Table 1)

Preoperatively GOS score among 147 patients was analyzed as 75 (51%) patients had GOS score 1, 40(27%) patients had GOS score 2-3 and 32(22%) patients had GOS score 4-5 (Table 2).

Functional recovery among 147 patients was analyzed as 32(22%) patients had functional recovery (GOS 4-5) while 115(78%) patients didn't have functional recovery (GOS 1-3) (Table 3). Stratification of functional recovery with age is given in (Table no 4, 5).

Table 1: Age Distribution (n=147).

Age	Frequency	Percentage
< 20 years	47	32%
21-40 years	59	40.10%
41-60 years	41	27.90%
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Male	101	68.70%
Female	46	31.30%

Table 2: GCS SCORE (n=147)

GCS	Frequency	Percentage
1	75	51%
2 to 3	40	27.00%
4 to 5	32	22.00%

Table 3: Functional Recovery (n=147)

Functional	Frequency	Percentage
Yes (GOS 4-5)	32	22%
No (GOS 1-3)	115	78.00%

Table 6: stratification of functional recovery w.r.t gender (n=147)

Outcome	Male	Female	Total
Yes	20 (62.5)	12 (37.5)	32
No	81 (70.43)	34 (29.57)	115
Total	101	46	147

P-value <0.05

DISCUSSION

Our analysis found that 50 patients (34 per cent) were < 20 years old, 59 patients (40 per cent) were 21 to 40 years of age, and 38 (26 per cent) were 41 to 60 years of age. The average age was SD ± 2.71 for 30 years. Every six hundred (72%) were male and 41 (28%) were female patients. 75% of patients had GOS score 1, 40 (27%) had GOS score 2-3 patients and 32 (22%) had GOS score 4-5, respectively. These findings were comparable to several previous trials of more than 60% of male patients and a plurality of patients 20-40 years of age[10-11].

In our sample, 22% of patients had GOS 4–5, while 78% had GOS 1-3 after surgery. In their study 62 people were treated with surgical procedure, and 50 percent of them patients with GOS 1-2, 27 percent had GOS 4-5 and 44 percent had deaths at 3 months, while our study found deaths in 60 per cent of patients. A study by Omar S Akbik et al[12] regarding the functional outcome of acute subdural hematomas.

Out of 100 patients with acute subdural hematoma who were operally treated, Gulzar F et al [13] recorded that 47% had fatalities and 39% had functional recoveries.

An additional study by Yunsi A et al[14] stated that 33% of patients were surgically treated and 22% of patients died during hospitalisation.

In our sample, mortality was 95% to 75% in patients with GCS scores of 4 and 5. These findings showed that the GOS 4-5 patients were mortal in several earlier trials, compared to GOS 1-3 patients [15-16].

The death rate was 73% in patients over 61 years of age compared with 64% of those 21-40 years. 97% of bilateral unreactive pupil and 81% of unilateral unreactive pupil patients were destroyed. Study demonstrated

thatelderly patients had high rate of unfavorable outcomes as compared to younger [20].

The intracranial lesion mortality rates were 91% in intracerebral hematoma, 87% in subarachnoid haemorrhage, and 75% in contusion. Durability did not impact fractures, surgical evacuation and the surgical operation. The most therapeutic value of traumatic ASDH is attributed to delays from injury to procedure in a study[17]. However, there is still a controversial relationship between time and result. The study recorded that 47% died and 32% had good results for those who had coma operations within two hours[18]. However, mortality in later operations in patients was 80%, with just 4% of positive results. In another 101 sequence of comatoses, the mortality rates for operated patients within 4 hours were 59% vers. 69% for those operated later, and for those operated the favourable recovery rate for those patients was 26% and 16% respectively without statistical significance[19]. The most significant factors for predicting outcomes were severe injuries and pupil responses.

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CONCLUSION

Our study concludes the functional recovery of the surgically managed acute subdural hematoma was 22% in traumatic brain injury. Prompt diagnosis and early surgical intervention can change the devastating course of this form of traumatic brain injury resulting in a better functional outcome.

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