ORIGINAL ARTICLE

Determine the Neurological Outcomes of Patients Presented with Traumatic Subarachnoid Hemorrhage

NOOR AHMED[1], GHULAM MUSTAFA WARDAG[2], IRFAN ADIL[3], ABID HUSSAIN[4], AZMAT ULLAH[5]
[1,4]Assistant Professors
[2]Associate Professor
[3]Senior Registrar Department of Neurosurgery Unit-1,
[5]Demonstrator, Department of Anatomy, Sandeman Provincial Teaching Hospital/Bolan University of Medical & Health Sciences, Quetta
Correspondence to: Dr. Noor Ahmed E-mail: drnoorahmed74@gmail.com Cell 0333-8001004

ABSTRACT

Aim: To analyze the neurological outcomes based on Glasgow outcome scale in patients presented with traumatic subarachnoid hemorrhage.

Study Design: Prospective study

Place & Duration of Study: Department of Neurosurgery Unit-1, Sandeman Provincial Teaching Hospital Quetta from 1st January 2018 to 31st December 2019.

Methodology: One hundred and forty five patients of both genders presented with traumatic subarachnoid hemorrhage were included in this study. Patient's ages were ranging from 15 to 70 years. Patient's detailed medical history was examined. Glasgow coma scales were recorded at the time of admission and Glasgow outcome scale were recorded at the time of discharge.

Results: There were 109 (75.17%) male patients while 36 (24.83%) were females. Forty one (28.28%) patients were ages between 15 to 30 years, 60 (41.38%) patients were ages 31 to 45 years, 30 (20.69%) patients had ages 46 to 60 years and 14 (9.66%) patients had ages above 60 years. The most common etiology was road traffic accidents found in 88 (60.69%) patients. 98 (67.59%) patients had severe injury according to Glasgow coma scale at the time of admission. 88 (55.17%) patients had unfavorable traumatic subarachnoid hemorrhage at the time of discharge according to the Glasgow outcome scale.

Conclusion: The rate of favorable traumatic subarachnoid hemorrhage is less than the developed countries because of less medical facilities, late arrival of hospital and severe injuries due to road traffic accidents.

Keywords: Traumatic subarachnoid hemorrhage, Outcome, Glasgow coma scale, Glasgow outcome scale

INTRODUCTION

In population having age less than 45 years' head injury is considered in one of the leading causes of morbidity and mortality.[1] Head injuries are one of the main causes of morbidity and death in the population less than 45 years old. Around $100 billion is spent per year on head injury in the United States.[2] Once a person has head injuries, both basic and advanced supports are also applied to patients with head injuries. Head injury is responsible for 70 percent of deaths in trauma patients, and also those who remain living after trauma are often caused by head injuries.[1] Studies have shown that ATLS protocols are highly necessary for potential functional success and recovery in head injury patients.[3] Traumatic subarachnoid haemorrhage (tSAH) has a high incidence of TBI (61%). The prognosis may however be poor; depending on the classification of traumatic subarachnoid haemorrhage and the severity of computerised tomography (CT) findings, pronostics may vary significantly.[4]

For those patients who experience only traumatic subarachnoid haemorrhage, it is important to refer more aggressively to specialist neurosurgical centres for those who suffer from associated other form of headache than the other forms of headache, such as contusion, subdural and epidural hematomas. The risk of cerebral vasospasm is increased if extensive subarachnoid haemorrhage occurs.[5,6] In patients >70 years of age, traumatic brain injury is considered a high risk if it is used in unintended, anti-coagulant treatment and if traumatic subarachnoid haemorrhage occurs in the CT brain, the mortality rate will also increase.[7] The traumatic haemorrhage subarachnoid may not have a profound impact on patient's ongoing co-indetermination following rehabilitation from a high degree of head injury. Anatomical distribution per se did not influence clinical result.[8,9] Initial Glascgow coma Scale (GCS) and extended Glasgow outcome scale (GGOS-E) for monitoring tSAH is the principal variable responsible for cognitive deficits following headache that are at an independent risk.[10] The Glasgow outcome scale is now an appropriate option for assessing prognosis after headache. But it still has some deficiencies and can be overcome.[11]

MATERIALS AND METHODS

This prospective observational study was conducted at Department of Neurosurgery Unit-1, Sandeman Provincial Teaching Hospital Quetta from 1st January 2018 to 31st December 2019. A total of 145 patients of both genders presented with traumatic subarachnoid hemorrhage were included in this study. Patient's ages were ranging from 15 to 70 years. Patients detailed medical history including age, sex, residence and causes of injury were recorded after taking informed consent. Patients with subarachnoid hemorrhage due to aneurysm, AVM, brain tumors, neuroinfections, anticoagulants, sickle cell anemia and having other forms of traumatic brain injuries were excluded. Diagnosis of traumatic subarachnoid hemorrhage was made by CT brain and GCS were recorded at the time of admission and GOS (Glasgow outcome scale) were recorded at the time of discharge. The results of GOS were recorded as favorable and unfavorable, Patients having score 3 or less than 3 notes

as unfavorable and above 3 recorded as favorable outcomes. All the data was analyzed by SPSS 22.

RESULTS

There were 109 (75.17%) male patients were while 36 (24.83%) were females. Forty one (28.28%) patients were ages between 15 to 30 years, 60 (41.38%) patients were ages 31 to 45 years, 30 (20.69%) patients had ages 46 to 60 years and 14 (9.66%) patients had ages above 60 years. 85 (58.62%) patients had urban residency while 60 (41.38%) patients had rural residency. Causes of injuries were recorded such as road traffic accidents, fall from height, violent acts and others as 88 (60.69%), 32 (22.07%), 15 (10.34%) and 10 (6.90%) respectively (Table 1).

At the time of admission 98 (67.59%) patients had severe injury GCS score 3 to 7, 30 (20.69%) patients had moderate injury with GCS 8 to 12 and 17 (11.72%) patients had GCS score above 12. 80 (55.17%) patients had unfavorable traumatic subarachnoid hemorrhage and 65 (44.83%) patients had favorable outcomes at the time of discharge according to the Glasgow outcome scale (Tables 2-3).

Table 1: Demographic information of the patients

Variable	No.	%
Gender		
Male	109	75.17
Female	36	24.83
Age (years)		
15 – 30	41	28.28
31 – 45	60	41.38
46 – 60	30	20.69
> 60	14	9.66
Residence		
Urban	85	58.62
Rural	60	41.38
Cause of Injury		
RTA	88	60.69
Fall	32	22.07
Violent acts	15	10.34
Others	10	6.9

Table 2: Distribution of patients according to the GCS at the time of admission

GCS	No.	%
Severe (3-7)	98	67.59
Moderate (8-12)	30	20.69
Mild (>12)	17	11.72

Table 3: Frequency of Glasgow outcome scale at the time of discharge

GOS	No.	%
Favorable	65	44.83
Unfavorable	80	55.17

DISCUSSION

Head injury is responsible for 70% deaths in trauma patients and furthermore those who remain alive after trauma the permanent disabilities are mostly due to the head injuries.[12] Approximately 100 billion dollars are spent every year on patients of head injuries in United States.[2] Present study was conducted aimed to examine the neurological outcomes based on Glasgow outcome scale in patients presented with traumatic subarachnoid hemorrhage. During the study period total 145 patients who fulfilled the inclusion criteria were analyzed. Most of the patient in our study was male 75.17% followed to females 24.83%. Many of other studies shows similarity to our study in which male patients population was high 60 to 80% as compared to females.[13,14] We found road traffic accidents were the most common cause of injury 60.69% and in Pakistan people didn't follow the traffic rules properly and that's why accidents ratio is high. Also people didn't use helmets when riding motor bikes. These are the main causes of road traffic accidents and in our study most of the accidents were due to not wearing helmet during ride. Multiple other studies shows similarity to our study in which RTA was the most common cause of brain injuries.[15-17]

In the present study, most common age group was 31 to 45 years and mostly patients were ages 20 to 45 years. These results shows similarity to our study in which most of the patients had ages 20 to 40 years.[17] In this study, at the time admission we assessed patients according to Glasgow comma scale and found most of the patients had severe injuries 67.59% followed by moderate 20.69% and mild 11.72%. A study conducted by Ishfaq et al[18] regarding outcomes of traumatic subarachnoid hemorrhage demonstrated that the most of the patients had severe injury 74.74%. In our study, 80 (55.17%) patients had unfavorable traumatic subarachnoid hemorrhage and 65 (44.83%) patients had favorable outcomes at the time of discharge according to the Glasgow outcome scale. These results shows similarity to some other studies conducted in Pakistan but in developed countries the rate of favorable outcomes was high as compared to our study.[19-21]

Our study shows that we need to aware people about traffic rules and to provide people better medical facilitation so that the rate of mortality and morbidity due to severe injuries could reduce.

CONCLUSION

Head injuries are the most important cause of mortality and morbidity in all over the world. It is concluded that the rate of favorable traumatic subarachnoid hemorrhage is less than the developed countries because of less medical facilities, late arrival of hospital and severe injuries due to road traffic accidents. We should have to do more work and to provide better treatment we have to improve our transportation, medical facilities and also made strict rules to follow traffic rules.

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