



Original Article

Outcomes of Conservative Management of Acute Subdural Hematoma at GCS 15/15 in Post-Traumatic Patients

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ABSTRACT

Objectives: We observed the results of conservative care of acute subdural hematoma at GCS 15/15 in patients with a head injury from a car accident (RTA).

Material and Methods: It is a comparative observational study of 15 patients with presented to NS -2 Punjab Institute of Neurosciences (PINS), Lahore. Presenting complaints of patients were loss of consciousness, vomiting, headache, ENT bleeding, etc.

Results: The age range was 10 – 70 years. The mean age was 40 years. Conservative management was given to all patients for 10 days except 2 patients. All patients were advised to take complete bed rest for 3 weeks. We advised head ends elevation of all patients up to 15 – 30 degrees to lessen intracranial pressure. Anti-epileptic, mannitol, antibiotics, and acetazolamide were the medication that was given. Our 4 (26%) were hypertensive. Their blood pressures were monitored regularly and kept in the range of 140 – 160 mmHg so that the hematoma may not expand. Our 2 (13%) patients had DM and their BSR levels were monitored and consultation was also done from the diabetes clinic. Our 2 (13%) patients had a headache, and vomiting and which did not resolve so we had to operate on the patients. Midline shift in CT brain was ≤ 5 mm.

Conclusion: Acute subdural hematoma at GCS 15/15, midline shift was less than 5 mm, and thickness on plain CT brain was greater than 1 cm is best treated by medical management except in 13% of cases.

Keywords: Acute subdural hematoma, conservative management.

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INTRODUCTION

The collection of blood in the subdural space is called a subdural hematoma. A subdural hematoma can occur in 25% of cases after road traffic accidents. Based on duration subdural hematoma can be divided into 3 types. It can be

an acute sub-acute and chronic subdural hematoma. An acute subdural hematoma occurs within 3 days of injury or hemorrhage. A sub-acute hematoma can occur within 3 – 21 days and a chronic subdural hematoma can occur after 21 days.¹⁻²

There are many causes of subdural hematoma. It can be due to road traffic accidents, people taking blood thinners, alcoholics, and people having cardiovascular disorders.³⁻⁴ Followings are signs and symptoms of subdural hematoma: Focal neurological deficit, seizures, memory loss, and coma can occur in subdural hematoma.⁵ Subdural hematoma can be diagnosed by CT brain and MRI brain. In radiology, we can see the location of the hematoma, the thickness of the hematoma, the midline shift, and the volume of the hematoma.⁶

Conservative management of acute subdural hematoma includes hydration, hyperventilation, diuretics, and antiepileptics.⁷ Following are the indications of surgery: 1) Midline shift more than 5 mm; 2) Thickness more than 1 cm; 3) GCS less than 9; 4) GCS drop by 2 or more points and 5) ICP greater than 20 mmHg. Surgical options include burr hole drainage, craniostomy and craniectomy, and evacuation of the hematoma. Complications of subdural hematoma include brain herniation, repeated bleeding, and seizures.⁸⁻⁹ We investigated the results of conservative care of acute subdural hematoma at GCS 15/15 in patients who had suffered a head injury in a car accident (RTA).

MATERIAL AND METHODS

Study Design

A comparative observational study was done for 15 patients at the Punjab Institute of Neurosciences from 1/11/21 to 31/1/22.

Inclusion Criteria

In our study there was no gender discrimination,

midline shift was less than 5 mm, Thickness on plain CT brain was greater than 1 cm, patients had GCS 15/15, patients had co-morbidities and all patients had a history of trauma.

Exclusion Criteria

In our study, patients who had GCS below 15/15 and patients who had an age above 70 years less than 10 years were not included in the study.

Data Collection and Analysis

All the data of patients were taken on a pre-designed proforma. SPSS version 26 was used for data analysis.

RESULTS

Age Incidence

The mean age was 40 years. Details are mentioned in Table 1.

Table 1: Age Distribution.

Age	No	Frequency
10 – 20	6	40%
21 – 30	3	60%
31 – 40	2	73.3%
41 – 50	2	86.6%
51 – 60	1	93.2%
61 – 70	1	100%

Gender Incidence

10 (66.7 %) male patients while 5 (33.3 %) female patients were included.

Thickness of Hematoma

Our included patients had a thickness of hematoma greater than 1 cm on the CT brain plain.

Table 2: Thickness of Hematoma.

Thickness	No	Frequency
Less than 1 cm	15	100%
Greater than 1 cm	0	0%

COMPLICATIONS

All patients reported headaches. Seizures were reported in 20%, re-bleed in 13% and herniation was reported in 6.7% of patients (Table 3).

Table 3: Complications.

Complication	No	Frequency
Herniation	1	6.67%
Re-bleed	1	13.33%
Seizure	2	20%
Headache	15	100%

Management Technique

In 15 patients, we infused ringer lactate at 120 ml/h. We gave mannitol 1 – 2 mg/kg. We gave antiepileptics, FFPs, and antibiotics. We did hyperventilation to keep PCO₂ 30 – 35 mmHg in range. We maintained blood pressure above 140 mmHg and below 160 mmHg.

Outcome of Management

Outcomes were good in 13 (87%) patients and no improvement with conservative management occurred in 2 (13%) patients.

Table 3: Outcomes.

Outcomes	No	Frequency
Bad	2	13%
Good	13	100%

Way of ICP Monitoring

Intracranial pressure was monitored by clinical status in 14 patients and by lumbar puncture in 1 patient.

Table 4: ICP monitoring.

Way	No	Frequency
Lumbar Puncture	1	6.67%
Clinical status	14	100%

DISCUSSION

Patients in the age range of 10 – 70 years were included in the study and their mean age was 40 years. Of these patients, 10 patients were male, and the rest 5 were female. All patients presented with a head injury. Our all patients had a thickness of hematoma greater than 1 cm on plain CT brain plain. All patients were managed conservatively. On admission, the heads of all patients were elevated gradually from 15 – 30 degrees. Medically, we advise the following medicine; 1) mannitol, 2) ringer lactate, 3) sodium valproic acid, 4) levetiracetam, 5) phenytoin, 6) ceftriaxone, and 7) amoxicillin into patients.

In our study, 2 (13%) patients had pneumocephalus and they were managed as follows: 1) Good hydration status; 2) Antibiotics drugs; 3) Antiepileptic drugs, and 4) Oxygen inhalation for 2 days.

Of our 4 (26%) patients had wound over the skull for which we did wound care to heal the wound and they all healed with proper care.

In our study, headache occurred in all patients, re-bleed occurred in one patient, seizures occurred in 2 patients and herniation occurred in one patient. Associated disorders in our study were DM and HTN. Our 4 (26%) patients had hypertension and 2 (13%) patients had diabetes mellitus.

Patients presented to us with complaints of vomiting, loss of consciousness, headache, and seizures. Whenever patients present at the Punjab Institute of Neurosciences Lahore we do all investigations of the patients. These investigations include baselines and CT scans of the brain plain and other investigations too to rule out comorbidities. Sometimes patients who have acute subdural hematoma also had predisposing factors we also do investigations to manage that.

We monitored the ICP of all patients by clinical features and LP manometry if required. LP manometry was performed in 1 (6.67 %) patient.

In our study, only 2 (13%) patients, (who presented with a diagnosis of post-traumatic acute subdural hematoma) we have to perform surgery. Rest all patients managed with conservative management. In our study, complications are not occurred except in 2 (13%) who have to operate. The follow-up duration in our study was 3 months through OPD.

Wong et al., in 1995 explained the criteria for conservative treatment of supratentorial acute subdural hematomas. This is a good study, but in this study the included patients having supratentorial hematomas.¹² Vega et al., in 2017 mentioned the natural history of acute subdural hematoma. This study showed the natural history of the hematoma only.⁵

Feliciano et al., 2008 reported conservative management and outcomes of traumatic acute subdural hematomas.¹⁰ Lee et al., in 2015 described risk factors of chronic subdural hematoma progression after conservative management of cases with initially acute subdural hematoma. Our study included acute subdural hematoma.¹¹ Kaestner et al, in 2019 described the frequency of and risk factors for chronification in traumatic acute subdural hematoma following conservative therapy. They observed the chronification of hematoma for surgical evacuation later on if required.¹³

Kayahara et al, 2020 described the predictors of subacute hematoma expansion requiring surgical evacuation after initial conservative treatment in patients with acute subdural hematoma. In our study, we take the thickness of hematoma while in this study they take density, brain atrophy, and volume for predictors for evacuation.¹⁴

RECOMMENDATIONS

Most cases of post-traumatic acute subdural hematoma at GCS 15/15 and having a thickness greater than 1 cm on the CT brain plain are resolved by conservative management.

Advantages

1. Good outcomes.
2. Less hospital stay.

Limitations

1. Delayed presentation.
2. Less compliance
3. Less awareness.

CONCLUSION

In our study, 87 % of cases of post-traumatic acute subdural hematoma were resolved by conservative management.

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Additional Information

Disclosures: Authors report no conflict of interest.

Ethical Review Board Approval: The study was conformed to the ethical review board requirements.

Human Subjects: Consent was obtained by all patients/participants in this study.

Conflicts of Interest:

In compliance with the ICMJE uniform disclosure form, all authors declare the following:

Financial Relationships: All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work.

Other Relationships: All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

AUTHORS CONTRIBUTIONS

Sr.#	Author's Full Name	Intellectual Contribution to Paper in Terms of:
1.	Rana Zubair Mahmood	1. Study design and methodology.
2.	Mukhtar Ahmad Lakho	2. Paper writing.
3.	Talha Abbas, Shahzeb Ahmad	3. Data collection and calculations.
4.	Umer Farooq	4. Analysis of data and interpretation of results.
5.	Azhar Sattar, Sarfraz Khan	5. Literature review and referencing.
6.	Muhammad Anwar Chauadary	6. Editing and quality insurer.