

ORIGINAL RESEARCH

Management of Chronic Subdural Hematoma Institutional Experience

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ABSTRACT

Background: To study and assess the predisposing factors, age, sex distribution, modes of presentation, and management strategies of chronic subdural hematoma.

Materials and Methods: It was a Prospective study. The study was carried out during the Period from March 2020 to January 2022. Sample size included 30 patients. Informed consent will be taken from all the patients included in the study.

Results: A total of 30 patients were included in my study. In this study, the majority of the patients were > 60 year of age (40%). The youngest patient was 30yrs, and the oldest was 84 years. The mean age (59.2 years). The mean GCS was 8 in patients with LOC, 8.36±0.74 in those with altered sensorium, and 9.5±3.78 in patients with seizures. The GCS was comparatively better in patients with weakness (12.14±2.79) and headache (15). In the present study 40% of pt came with GCS 13- 15, and 36.6% came with GCS 9-12. In the present study out of 30 patients, 17 patients (56.7%) had right side involvement, 12 patients (40.0%) had left side involvement and 1 patient (3.33%) had bilateral involvement. More than 95% of patients had FTP involvement. Out of 31 scans, 74.1% of patients had a homogenous type and 22.5% had a layered type appearance on CT.

Conclusion: All patients are managed with burr hole tapping and placement of a subperiosteal drain. On further follow-up, around 2 to 3 months, SDH is completely resolved in all 29 patients and no recurrence of CSDH is noted.

Keywords: SDH, Chronic subdural hematoma, Sensorium, Homogenous type.

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INTRODUCTION

A chronic subdural hematoma (CSDH) has been defined as a liquefied hematoma in the subdural space with a characteristic outer membrane and occurring, if known, at least 3 weeks after head injury.^[1]

Chronic subdural hematoma is one of the most common neurosurgical problems characterized by an abnormal collection of liquified blood in various stages below the inner layer of the dura matter. It is frequently encountered in elderly people with substantial morbidity and mortality.^[2] Surgical evacuation is the standard treatment of choice for chronic SDH, but there are a variety of operative techniques, such as twist drill craniotomy, burr hole craniotomy, and craniotomy.^[3]

Among them, burr hole craniotomy is the most popular surgical method of treating chronic SDH.^[4]

AIMS AND OBJECTIVES

1. To study and assess the predisposing factors, age, sex distribution, modes of presentation, and management strategies of chronic subdural hematoma.
2. To evaluate postoperative results and complications after burr hole tapping along with subperiosteal drainage.

MATERIALS AND METHODS

- Design – Prospective study
- Period of study – from March 2020 to January 2022
- Sample size – 30 patients
- Consent –informed consent will be taken from all the patients included in the study

Inclusion Criteria:

- All patients above the age of 20 yrs with chronic SDH in both genders are included

Exclusion Criteria:

1. Patient age less than 20 years
2. Asymptomatic CSDH
3. Previously operated cases for other pathologies as well as recurrent cases from other institutes
4. Outpatients who were not admitted.

RESULTS

A total of 30 patients were included in my study.

Sociodemographic Characteristics:

Table No. 1: Age wise distribution

Age group (years)	No.	%
21-30	1	3.3
31-40	2	6.7
41-50	4	13.3
51-60	11	36.7
>60	12	40.0
Total	30	100

In this study, the majority of the patients were > 60 year of age (40%). The youngest patient was 30yrs, and the oldest was 84 years. The mean age (59.2 years).

Table No. 2: Gender wise distribution

Gender	No.	%
Male	19	63.3
Female	11	36.7
Total	30	100

The majority of the patients were males (63.3%).

Table No. 3: Presenting complaint

Complaint	No.	%
Altered sensorium	8	26.7
Headache	8	26.7
Weakness*	7	23.3
LOC	3	10.0
Seizures	4	13.3
Total	30	100

* Weakness – either of both sides

In the present study majority of patients came with altered sensorium and headache (26.7% each). And 23.3 % present with weakness, 10.0% present LOC and 13.3% present seizures.

Table No.4: Mean duration of complaints

Complaint	Mean days	SD
Altered sensorium	1.62	0.74
Headache	8.75	6.2
LOC	1.0	0.0
Seizures	1.5	1.0
Weakness*	4.0	4.58
Total	4.0	4.87

Headache was associated with the highest mean duration with 8.75 ± 6.2 days, whereas altered sensorium had 1.62 ± 0.74 days and LOC had a minimum of 1 day of presentation.

Mean GCS compared with presenting complaints:

The mean GCS was 8 in patients with LOC, 8.36 ± 0.74 in those with altered sensorium, and 9.5 ± 3.78 in patients with seizures. The GCS was comparatively better in patients with weakness (12.14 ± 2.79) and headache (15).

Table No. 5: Mean GCS according to presenting complaints

Complaint	Mean GCS	SD
Altered sensorium	8.63	0.74
Headache	15.0	0.00
LOC	8.0	0.00
Seizures	9.5	3.78
Weakness*	12.14	2.79
Total	11.20	3.27

Table no 6: GCS at the time of admission:

GCS	N=30	%
13-15	12	40%
9-12	11	36.6%
3-8	7	23.3%

In the present study 40% of pt came with GCS 13- 15, and 36.6% came with GCS 9-12.

Table No. 7: Deficits at admission

Complaint	No.	%
Left Hemiparesis	11	36.7

Right Hemiparesis	8	26.7
None	11	36.7
Total	30	100.0

In the present study 19 (63.3%) out of 30 came with deficits, and out of 19 majorities of them, 11 patients (36.7%) had left sided weakness.

Table no 8: Patients with head injury

Trauma history	No of patients
Present	17
Absent	13
Total	30

In the present study, nearly 56 % of patients have a history of trauma.

Table No.9: Distribution according to co-morbidities:

Complaint	No.	%
Hypertension	4	13.3
Diabetes	3	10.0
Epilepsy	1	3.3
>1	11	36.7
Nil	11	36.7
Total	30	100.0

The majority of the patients had more than 1 co-morbidity (36.7%) like DM, HTN, CAD, on anticoagulants and also the same percentage had no co-morbidities. Isolated hypertension is seen in 13.3% and isolated diabetes is seen in 10.0% and epilepsy is seen in only one patient (3.3%).

Table No. 10: Mean laboratory values:

Parameter	Mean value	S.D
Hb	14.6	20.1
Platelet count	2.8	0.8
PT	20.6	23.9
APTT	46.5	10.1
INR	1.7	0.5
TSB	0.9	0.2
SC	1.1	0.3
BT	8.2	9.5
CT	13.2	6.0

In the present study, there is a deviation in the PT, aPTT, INR than the mean values, which states that an altered coagulation profile is one of the risks for CSDH Pre-operative.

Table No 11: Pre-operative CT findings:

Side	No.	%
Bilateral	1	3.3
Left	12	40.0

Right	17	56.7
Total	30	100.0
Convexity	No.	%
FTP	29	96.7
Rt- FTP Lt - F	1	3.3
Total	30	100.0
Type	No.	%
Homogenous	23	74.1
Layered	7	22.5
Laminar/Mixed	1	3.2
Total	31 scans	100.0

In the present study out of 30 patients, 17 patients (56.7%) had right side involvement, 12 patients (40.0%) had left side involvement and 1 patient (3.33%) had bilateral involvement. More than 95% of patients had FTP involvement. Out of 31 scans, 74.1% of patients had a homogenous type and 22.5% had a layered type appearance on CT.

Post-operative CT-scan findings:

Table No. 12: Post-operative CT findings:

CT finding	No.	%
Thin Residual SDH (no mass effect)	17	56.7
Min Pneumocephalus	9	30.0
Completely Resolved	2	6.7
Residual present(significant)	1	3.3
Death	1	3.3
Total*	29	96.7

* One patient expired due to MI.

In the present study postoperatively 17 patients (56.7%) had very thin residual SDH with no mass effect, 9 patients (30.0%) had minimal pneumocephalus, 2 patients (6.7%) completely resolved, 1 patient had significant residual SDH and planned for decompression craniectomy and 1 patient expired because of MI.

DISCUSSION

CSDH is a disease of the elderly; the mean age at presentation in a randomized controlled trial from our institution was 76.8 years (range 36-95 years) and there is a 3:1 male-to-female ratio across all age groups.^[5] The incidence of CSDH is quoted at about 10/100,000 per year,^[6,7,8] and is rising as a result of the combination of an aging population and the increasing use of anticoagulant and antiplatelet medications.

A total of 30 patients were included in my study. In our study, the majority of the patients were > 60yr of age (40%). The youngest patient was 30yrs, the oldest was 84 years and the mean age is 59.2 years. The mean age of chronic subdural hematoma patients has been reported as 60.4 years in India.^[13] In another study conducted by Lun-Xin Liu et al, in 2019, the mean age was 65.14+/-13.76 yrs.^[9] Another study conducted by Bhavuk Kapoor et al, in 2020 states that 54% of patients were in the age group of >62 years and the mean age was 62.06 years.^[12] Asaduzzaman et al. found the mean age of 52.8 years in their study.^[14] In a study by Mekaj et al., the mean age was 62.85 years.^[15] Ak et al. found the mean age of 62.06 years.^[16] The majority of the patients were males (63.3%). In another prospective cohort study conducted by Sami Ridwan, Anna-MargareteBohrer et al, in 2019, the majority

of the patients were male 136 out of 208 (65.3%).^[10] Some studies like Yang W et al. states that the male gender as a risk factor.^[17] In the present study majority of patients came with altered sensorium and headache (26.7% each). And 23.3 % present with weakness, 10.0% present LOC, and 13.3% present seizures. In another study by Santarius T, Kirkpatrick PJ et al, the majority of patients came with gait disturbance and falls (55.5%) and mental deterioration (34.0%)⁵. And in another study by DevidKitya et al, the headache was the most common presenting symptom (89.6%, 173/193), whereas seizures were uncommon (11.5%, 23/200).^[20]

Headache was associated with the highest mean duration with 8.75 ± 6.2 days, whereas altered sensorium had 1.62 ± 0.74 days and LOC had a minimum of 1 day of presentation. The mean GCS was 8 in patients with LOC, 8.36 ± 0.74 in those with altered sensorium, and 9.5 ± 3.78 in patients with seizures. The GCS was comparatively better in patients with weakness (12.14 ± 2.79) and headache (15). In our study, 40% of pt came with GCS 13- 15, and 36.6% came with GCS 9-12. In another study by Santarius T, Kirkpatrick PJ, et al, the majority of patients 80.7% came with GCS 13-15.^[5] In another study by Nouri A et al, mention that the vast majority of patients with CSDH present with a GCS between 13-15, with an estimate, that only about 8% present with a GCS between 9 and 12, and 3% with a GCS between 3 and 8.^[21]

In the present study, nearly 56 % of patients have a history of trauma. In another study by j Shen et al, a history of head injury was identified in 51.6% of patients¹¹. A study by Bhavuk Kapoor et al states that traumatic brain injury is the commonest predisposing factor for chronic SDH occurrence.^[12] In another study by DevidKitya et al, most CSDHs occurred as a result of motor vehicle collisions (MVCs) and falls, 35.6% (73/205) and 24.9% (51/205), respectively.^[20]

Huang et al. found traumatic brain injury in 74.49% of patients they studied,^[18] Rovlias et al. found traumatic brain injury in 51.01% of patients they studied.^[19] The majority of the patients had more than 1 co-morbidity (36.7%) like DM, HTN, CAD, on anticoagulants and also the same percentage had no co-morbidities. Isolated hypertension is seen in 13.3% and isolated diabetes is seen in 10.0% and epilepsy is seen in only one patient (3.3%). In the present study, 8 patients are having a previous history of CAD and on antiplatelets, corresponding to 26.6%. in another study by Sim YW et al, reported the proportion of CSDH associated with ACs/APs was ranged from 0.6% to 22.5% in the literature.^[23]

In the present study out of 30, 13 patients (43.3%) have deranged coagulation profiles. Out of 13, 8 patients (26.6%) are having h/o CAD on antiplatelets and only 3 (10.0%) out of 8 receiving antiplatelets are having a history of head injury (Total head injury cases are 17). Another study by Sim YW et al,^[23] states that there were significantly less histories of head trauma in patients with ACs/APs related to CSDH. No patient in the present study has altered liver and renal function tests and no history any dialysis in the past.

In our study out of 30 patients, 17 patients (56.7%) had right side involvement, 12 patients (40.0%) had left side involvement and 1 patient (3.33%) had bilateral involvement. More than 95% of patients had FTP involvement. In a study by Kitya et al., a chronic subdural hematoma was on the Right side mostly (42.3%), followed by the Left side (36.3%) and bilateral in 21.4%⁸⁸. In the present study 19 (63.3%) out of 30 came with deficits, and out of 19 majority of them, 11 patients (36.7%) had a left-sided weakness.

In comparing the preoperative CT scan with other studies, the present study includes 74.1% of patients are having homogenous type (isodense 51.6% and hypodense 22.5%) and 22.5% are having layered type appearance on CT and only 1 patient (3.22%) are having a laminar type, and another study done by Park HR et al, isodense is seen in 115 patients, hypodense seen in 31 patients i.e; homogenous type in 146 (out of 242 is 60.3%) and mixed type in 79 cases (32.6%), and layered type in 17 (0.70%) cases.^[22] In the present study, all the 30 patients underwent burr hole tapping, out of which only one patient underwent bilateral burr

hole tapping, under GA or scalp block based on patient GCS. And for all patients, a subperiosteal drain was placed and removed on the 2nd or 3rd postoperative day by taking a postoperative CT scan.

Only one patient is having a laminar type appearance with significant residual SDH in CT scan postoperatively and hence craniotomy with excision of membranes done. Twist drill craniostomy is not done in our institute. Antibiotics are kept postoperatively for 3 days and IV hydration is given for 2 to 3 days to promote the expansion of brain. If early postoperative anticoagulation was necessary, LMWH was used.

Patient was kept supine to facilitate gravitational drainage of residual subdural fluid. Immediately on pod 1, atorvastatin 20mg was administered daily once for 1 month. In a study by QIU et al, states that the results of atorvastatin given postoperatively as “The postoperative improvement rate was 97.4% (38/39) in the atorvastatin group versus 80.9% (51/63) in the control group.”^[24] Also, AED is kept for all patients for 1 month and then tapered. The patients usually get discharged after they meet their daily activities around 4 to 5 days and are advised to come to OP after 1- 2 months for follow-up, or to the emergency department if any deterioration of sensorium or any weakness or any vomitings or incontinence. On day 2 or 3 postoperative scan is done in all patients. In which postoperatively 17 patients had very thin residual SDH with no mass effect, 9 patients had minimal pneumocephalus, 2 patients completely resolved, 1 patient had significant residual SDH and hence craniotomy and excision of membranes done and 1 patient expired because of MI. No patient had seizures postoperatively. No patient had a surgical site infection. On further follow-up, around 2 to 3 months, SDH is completely resolved in all 29 patients and no recurrence of CSDH is noted.

CONCLUSION

1. Most of the patients are elderly patients (age >60)
2. Males are most commonly involved
3. Common presenting complaints are altered sensorium and headache
4. Headache is having highest mean duration, whereas LOC and altered sensorium has a minimal duration of the presentation.
5. Most of the patients came with GCS 13-15.
6. Co-morbidities is present in most of the patients like HTN, DM, CAD on antiplatelets.
7. Altered coagulation profile is also noted in the majority of patients.
8. History of trivial fall is seen in nearly 56% of patients.
9. Most of the patients had a homogenous type and then layered type of appearance of CSDH in CT.
10. All patients are managed with burr hole tapping and placement of a subperiosteal drain.
11. Postoperatively 17 patients had very thin residual sdh with no mass effect and only one patient with laminar type had significant residual SDH with mass effect, for which craniotomy and excision of membranes done.
12. Only one pt was expired with MI, not related to surgical complications.

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