



BILATERAL CHRONIC SUBDURAL HEMATOMA – CLINICAL PRESENTATION, RISK FACTORS, MANAGEMENT AND OUTCOME: A SINGLE CENTRE EXPERIENCE FROM NORTH-EASTERN INDIA

Neurosurgery

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ABSTRACT

Study design: Retrospective hospital-based study. **Background:** Annual incidence of bilateral Chronic Subdural Hematoma (CSDH) is increasing due to an increase in the aging population, associated medical comorbidities such as hemodialysis, anticoagulant and/or antiplatelet therapy. **Objectives:** 1. To study the clinical spectrum of Bilateral Chronic Subdural Hematoma patients. 2. To study the treatment modalities used and outcome of the patients. **Method:** A retrospective hospital-based study was carried out on 50 confirmed patients of bilateral CSDH. Information of patients such as socio-demographic profile, clinical presentation, and laboratory investigations, along with treatment and outcome were recorded and analyzed. **Results:** Among 50 patients, male and female were 80% and 20% respectively. The mean age of patients was 62.08 years. A history of head injury was reported by 40% of patients. The mean Glasgow coma scale (GCS) was 12.24. Common presenting symptoms were headache (76%), hemiparesis (40%), aphasia (28%), complete loss of consciousness (20%). Clinical improvement was observed in 80% while 10% had no change, 04% showed clinical deterioration and 06% of patients died during treatment. **Conclusion:** Bilateral CSDH is common in the elderly and prognosis is poor with increasing age. Bilateral hematoma has a higher risk of acute deterioration of clinical symptoms because of downward herniation, resulting in a poor clinical outcome. Timely interventions can improve the outcome in bilateral CSDH patients.

KEYWORDS

Bilateral Chronic Subdural Hematoma, Glasgow Coma Scale, Hemiparesis

INTRODUCTION

Subdural hematoma (SDH) is a collection of blood between the dura and the arachnoid membranes. SDH has been classified into three types i.e., acute, sub-acute and chronic SDH. Acute SDH is usually caused by head injuries and presents within 24 hours of injury.¹ Chronic Subdural Hematoma (CSDH) is usually characterized by history of trivial head trauma.² CSDH is an encapsulated collection of old blood, which can be liquefied and located between the dura mater and arachnoid. CSDH patient present with symptoms more than 2 weeks after the initial injury.³ It was first described by Virchow in 1857 as “pachymeningitis haemorrhagica interna”.

Incidence of bilateral CSDH is about 1-5.3 cases per one lakh population. The incidence is increasing due to increase in aging population, associated medical comorbidities such as hemodialysis, anticoagulant and/or antiplatelet therapy.^{4,5} Recent reports indicate that 2–4% of patients deteriorate even after successful surgical treatment.⁶ Technical complications and poor clinical condition of patient because of infection, liver dysfunction, and renal dysfunction can lead to poor outcomes.⁵

CSDH are usually treated surgically although multiple surgeries may be required which leads to multiple hospitalization and deterioration of activities of daily living.^{9,10} There is lack of uniformity about the treatment strategies, such as the role of burr hole, twist drill, craniotomy, etc., in CSDH amongst various surgeons. Bilateral CSDHs are operated unilaterally or bilaterally depending on symptoms or hematoma volume.¹¹

METHOD

A retrospective hospital-based study was conducted at Neurosurgery Department, Gauhati Medical College on patients of bilateral CSDH admitted during July 2019 to June 2022. Based on inclusion and exclusion criteria, records of 50 bilateral CSDH patients were assessed and analyzed. Information of socio-demographic profile, clinical presentation at the time of admission, associated medical comorbidities, routine investigation along with neuro-imaging findings, treatment and outcome were assessed. All information were entered in individual case sheet.

Statistical Analysis

All data was plotted in Microsoft Excel Sheet. Data was calculated in absolute numbers and presented in percentage scale. Graphical representation of the data was done with Microsoft Word.

RESULTS

Records of 50 patients with radiologically confirmed cases of bilateral

CSDH were reviewed. Among 50 patients, 40 (80%) were male and 10 (20%) were female. Mean age of patient was 62.08 years. History of head injury was reported by 40% of patients. Underlying medical condition such as hypertension, diabetes mellitus, stroke, and End Stage Renal Disease (ESRD) with hemodialysis was found among 60%, 30%, 10% and 4% of patients respectively. Total 20% of patients were on antiplatelet therapy and 10% were on anticoagulant therapy at the time of admission. Glasgow coma scale (GCS) was assessed for each patient at admission and mean GCS was 12.24. Patients of bilateral CSDH presented with multiple symptoms at admission. Among them most common symptom was headache (76%) followed by hemiparesis (40%), aphasia (28%) and complete loss of consciousness (20%).

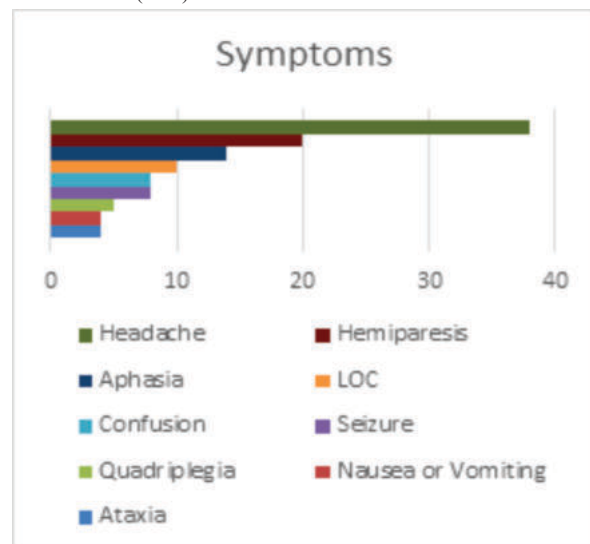


Figure 1. Symptoms of study participants at admission

Table 1: Socio-demographic and clinical characteristics of study participants

Variables	Male (n=40)	Female (n=10)	Total (n=50)
Mean age(years)	65.53	61.3	62.08
Age(years)			
<=40	3	0	3
41-60	13	4	17
61-80	23	5	28

>80	1	1	2
History of head injury			
Yes	17	3	20
No	23	7	30
Underlying medical condition			
Hypertension	25	5	30
Diabetes Mellitus	12	3	15
Stroke	4	1	5
Antiplatelet therapy	9	1	10
Anticoagulant therapy	4	1	5
ESRD with hemodialysis	1	1	2
Alcoholism	6	0	6
Mean GCS at admission	12.08	12.9	12.24

Neuro-image findings showed midline shift (16%), mass effect (90%), presence of layering (20%) and multiplicity of hematoma cavities (20%) among patients of bilateral CSDH. Mean thickness of hematoma was 30.58 mm.

Table 2: Neuro-image findings of study participants at admission

Neuro image finding	Numbers
Midline shift	8(16%)
Mass effect	45(90%)
Presence of layering	10(20%)
Multiplicity of hematoma cavities	10(20%)
Mean thickness of hematoma	30.58 mm

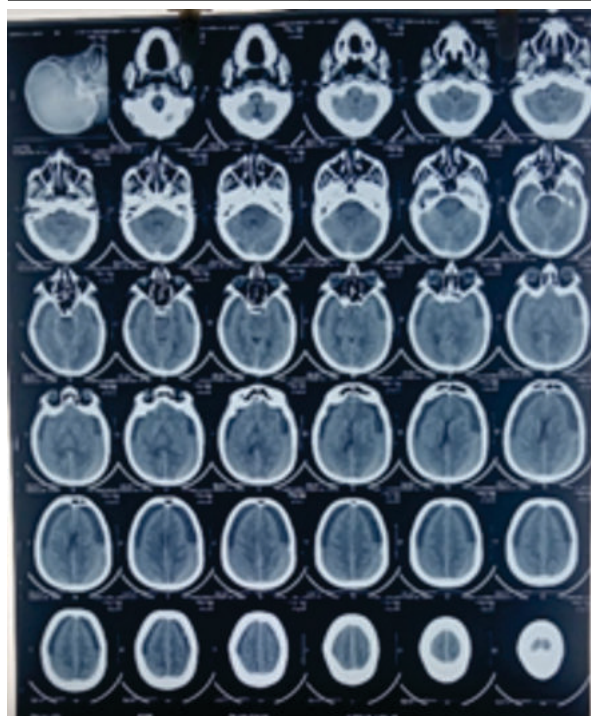


Figure 2. NCCT brain of a 57-year-old male who presented with bilateral CSDH

All patients of bilateral CSDH were treated surgically (burr hole / mini craniotomy). Mean duration of hospital stay was found to be 6.36 days. At the time of discharge, 80% patients showed clinical improvement, 10% had no change in condition while 04% showed clinical deterioration and 06% patients died during treatment. 1 patient (02%) developed post operative wound infection. During follow up, 6% of patients showed recurrence of SDH.

Table 3: Treatment and outcome of study participants

Variables	Numbers
Treatment	
Surgical	50(100%)
Conservative	0(0%)
Outcome (at discharge)	

Improved	40(80%)
No change	5(10%)
Worsened	2(4%)
Death	3(6%)
Mean Hospital Stay(days)	6.36
Recurrence during follow up	3(6%)

DISCUSSION

The global incidence of bilateral CSDH is increasing because of an aging population and has a great disease burden on the society.^{5,12} Clinically, patients often present with a history of gradually increasing altered level of consciousness and/or focal signs. Surgery can improve the outcome in patients; however, high mortality is still observed.¹³ In the present study, a retrospective study was done on 50 radiologically confirmed cases of bilateral CSDH. Among 50 patients, 80% were male and 20% were female. Age of patients varied from 37 years to 85 years with mean age of 62.08 years. There was history of head injury in 40% of patients. Patients presented with multiple symptoms at admission such as headache (76%), hemiparesis (40%), aphasia (28%), complete loss of consciousness (20%). Total 20% of patients were on antiplatelet therapy and 10% were on anticoagulant therapy at the time of admission. Similar to our study, Tsai et al. reported that patients with bilateral CSDH were more likely to show symptoms associated with increased intracranial pressure such as headache, but less likely to show symptoms associated with brain shift such as hemiparesis.⁶ Yuji Agawa et al.¹⁴ studied 368 cases of bilateral CSDH. Average age at onset of disease was 74 years and 246 (66.8%) patients were male and 122 (33.2%) were female. Motor weakness (74.45%) was the most common clinical presentation followed by headache (19.56%). Forty-one patients (11.1%) had warfarin use. Nina Christine et al.¹⁵ studied 291 patients of bilateral CSDH out of which 71.1% were male and 28.9% were female. Age was between 40 to 98 years, with a mean age of 73.0 years for males and 76.7 years for females. A history of head trauma was obtained in 53.3% patients. Approximately half of the study population (47.8%) received anticoagulant or antiplatelet therapy upon admission.

In this study, midline shift (16%), mass effect (90%), presence of layering (20%) and multiplicity of hematoma cavities (20%) was found in neuroimaging. Mean thickness of hematoma was 30.58 mm. In neuro imaging of 25 patients of bilateral CSDH, Yu-Hua Huang et al.¹⁶ found midline shift (12%), mass effect (96%), presence of layering (20%) and multiplicity of hematoma cavities (20%) among patients of bilateral CSDH. Mean thickness of hematoma was 32.16 mm which is comparable to our study.

In the present study, all the patients of bilateral CSDH were treated surgically. The mean duration of hospital stay found to be 6.36 days. At the time of discharge, clinical improvement was seen in 80% patients while 06% patients died during treatment. 02% patients developed post operative wound infection. Nina Christine et al.¹⁵ treated 264 (90.7%) patients surgically while 27 (9.3%) patients conservatively. Sakina Mehboob Rashid et al.⁷ found improvement in 53.3%, worsening of condition among 6.6%, no change in 16.7% and deceased in 23.3% of patients. Yuji Agawa et al.¹⁴ observed poor clinical outcome among 03 (5.7%) patients and Yu-Hua Huang et al.¹⁶ observed death among 01 (04%) of patients with bilateral CSDH which is comparable to our study. Olufemi Babatola et al.¹⁷ studied 73 patients with age range of 24 to 82 years. In majority of the patients, the outcome was favorable (91.3%). There was a recurrence rate of 12.5% and a mortality rate of 6.3%. David Kitya et al.⁹ assessed 205 patients of bilateral CSDH and found that 202 patients underwent surgical intervention with burr holes and drainage. Two patients had a recurrence, 5 suffered postoperative wound infection, and 18 died.

CONCLUSION

Bilateral CSDH is common in elderly and prognosis is poor with increasing age. History of head injury and underlying medical conditions such as hypertension, diabetes mellitus, stroke, and End Stage Renal Disease (ESRD) with hemodialysis are risk factors for bilateral CSDH. Bilateral hematoma has more risk of acute deterioration of clinical symptoms due to downward herniation, thus resulting in a poor clinical outcome. Hence, an urgent operation should be considered for CSDH with bilateral involvement.

Conflicts of interest

The authors declare no conflict of interest.

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