

Chronic Subdural Haematomas of Unusual Origin – Experience of a Tertiary Neurosurgery Centre

Sanghamitra Sarkar¹, Shantanu Ghosh¹

¹Associate Professor, Department of Neurosurgery, Calcutta National Medical College, Kolkata, West Bengal, India.

Abstract

Background: To retrospectively study and analyse the cases of chronic subdural haematoma(CSDH) with special reference to the nontraumatic and rare causes of chronic subdural haematomas. **Material and Methods:** Retrospectively studied and analysed 88 cases of chronic subdural haematoma admitted in our hospital over a period of five years from 1st Jan 2018 to 31st Dec 2022 with special focus on nontraumatic causes of CSDH. **Results & Conclusion:** Although a history of trauma which may often be trivial is the most usual cause of CSDH, there are rarer nontraumatic causes of CSDH and these account for nearly 20 to 25 % of cases and these patients need to be diagnosed early and require specific treatment for the cause along with evacuation of the haematoma.

Keywords: Chronic subdural haematoma (CSDH), Rare Causes, Nontraumatic CSDH.

Corresponding Author: Dr. Shantanu Ghosh, Associate Professor, Department of Neurosurgery, Calcutta National Medical College, Kolkata, West Bengal, India.

INTRODUCTION

CSDH is a commonly encountered entity in neurosurgical practice with an incidence of around 1 to 2 per 100000 population per year.^[1] Of these patients most are above 50 years of age.^[2] With increasing life expectancy CSDH is predicted to become the most common neurosurgical condition by 2030.^[3] Chronic subdural haematomas are a liquefied diluted haematoma lying in the subdural space as compared to acute subdural haematomas which are solid clots. Sufficient potential subdural space is found in those with brain atrophy and this predisposes these patients to develop CSDH and hence is more common in the elderly population.^[4] The cerebral atrophy causes the bridging veins to rupture when subjected to angular shearing forces.^[5] Although most patients give a history of trauma which may often be trivial, around 20 to 30 % do not give any history of trauma.^[6] Unusual etiological factors like anticoagulant therapy, bleeding diathesis, blood dyscrasias, dural metastasis, chronic alcoholism, infection, dehydration hypoproteinaemia and rarely vitamin B1 deficiency have been found to be responsible or predispose to the development of CSDH in those without a history of trauma.^[7]

Aims and Objectives

To retrospectively study and analyse patients admitted in our hospital with a diagnosis of chronic subdural haematomas over a five-year period with special focus on those patients without a history of trauma.

METHODOLOGY

This was a retrospective study done in our Institute, Calcutta National Medical College Kolkata on patients admitted with a diagnosis of chronic subdural haematoma, either directly admitted to the neurosurgery ward or patients transferred from other departments over a period of three years from 1st Jan 2018 to 31st Dec 2022.

Detailed records of patients age, sex, residential address, occupation were maintained. A detailed medical history was taken including any history of trauma however trivial it may be, history of addictions, co morbidities, medications patient is taking or has previously taken and any history of bleeding diathesis including any family history of such disorders.

All cases initially had a CT Scan Brain to diagnose Chronic Subdural Haematoma and MRI Brain was done in all patients who did not give any history of trauma. Detailed haematological workup was done including coagulation profile and serology. Other pre operative investigations like chest X rays, ECG, Echocardiography, glucose, urea, creatinine, Liver Function Tests, Electrolytes and Thyroid function tests were done in all patients. Markwalders scoring scale was used to grade the patients on admission and also at the time of discharge.^[8]

GRADE 0	NO NEUROLOGICAL DEFICIT
GRADE 1	MILD SYMPTOMS SUCH AS MILD NEUROLOGICAL DEFICITS OR REFLEX ASYMMETRY. PATIENT ALERT ORIENTED.

GRADE 2	DROWSINESS OR DISORIENTATION WITH VARIABLE NEUROLOGICAL DEFICITS SUCH AS HEMIPARESIS
GRADE 3	STUPOR BUT APPROPRIATE RESPONSES TO NOXIOUS STIMULI, SEVERE FOCAL SIGNS SUCH AS HEMIPLEGIA.
GRADE 4	COMA WITH ABSENT MOTOR RESPONSES TO PAINFUL STIMULI, DECEREBRATE OR DECORTICATE POSTURING.
Markwalders grading scale	

All patients were operated with burr hole evacuation. Patients with bleeding disorders or on anti-coagulant therapy were operated after correction of their coagulation disorder by giving platelet concentrates, fresh frozen plasma, protamine or Vitamin K as and where appropriate.

Patients were again graded using Markwalders grading scale at the time of discharge.

RESULTS

88 cases were admitted in our hospital with a diagnosis of Chronic Subdural Haematoma between 1st Jan 2018 and 31st Dec 2022. Of these 56 were male patients while 32 were female. Majority of these patients were above 60 years of age.

Of these 88 patients, 66 patients gave a history of trauma which was often trivial in nature, while in the remaining 22 patients no history of trauma could be elicited from the patient and their relatives. It is these nontraumatic subdural haematomas which are of special interest in this study and a more detailed history was taken and specialised investigations including MRI were done on all these patients.

Table 1: Age and Gender Distribution

Age group	Male patients	Female patients
<20 YEARS	1	0
20-39 YEARS	5	2
40-59 YEARS	10	8
>60 YEARS	38	24

Table 2: Age Group Wise Incidence of Non-Traumatic CSDH (Rare Causes)

Age group	No. Of patients	Percentage
< 10 YEARS	1	4.5%
10- 19 YEARS	3	13.6%
20 – 29 YEARS	4	18.3%
30 – 39 YEARS	12	54.5%
> 40 YEARS	2	9.1%

Table 3: Etiological factors in non traumatic CSDH(rare causes)

Etiology	No. Of patients	Percentage
VASCULAR MALFORMATION	2	9.1%
BLEEDING DIATHESIS	5	22.8%
ALCOHOLISM	1	4.5%
DURAL METASTASIS	2	9.1%
ANTI COAGULANT THERAPY	9	40.9%
POST VP SHUNT	2	9.1%
ROLLER COASTER RIDE	1	4.5%

Table 4: Presenting Symptoms of Patients with CSDH

Symptoms	Percentage of patients
HEADACHE	76%
ALTERED SENSORIUM	39%
VOMITTING	15%
MOTOR WEAKNESS	77%
SEIZURES	8%

Table 5: Markwalders Grading of Patients at the Time of Admission

Grade	No. Of patients	Percentage
GRADE 0	0	0
GRADE 1	11	12.5%
GRADE 2	20	22.72%
GRADE 3	24	27.27%
GRADE 4	33	37.5%

Table 6: Markwalders Grading at the Time of Discharge

Grade	No. Of patients	Percentage
GRADE 0	65	73.8%
GRADE 1	12	13.6%
GRADE 2	8	9.1%
GRADE 3	1	1.2%
GRADE 4	0	0

We lost 2 patients during the post operative period due to respiratory complications.

DISCUSSION

Chronic Subdural Haematomas are a commonly encountered entity in neurosurgical practice and has been controversial in regards to its etiology, mechanism of progression and the course of development of symptoms and also regarding the ideal mode of management.^[9] Among the various types of intracranial haematomas CSDH has the best prognosis and this good outcome depends upon early diagnosis and management.^[10] Around 80% of the cases of CSDH have a history of trauma.^[11] The trauma may often be very trivial in nature like coughing or straining and often patients or their relatives do not initially give a history of this unless questioned closely and repeatedly. It is the remaining patients who do not give a history of trauma who develop CSDH due to rarer causes. An increasing cause in that is being found in recent times is the frequent use of oral anticoagulants like warfarin and now NOACs (new oral anti coagulants) and the increasing use of antiplatelets in post myocardial infarction, post ischaemic stroke patients and those with cardiac stents and valve replacements. The increasing use of these agents is likely to result in an increasing incidence of CSDH.^[12] Patients on Vitamin K antagonists and NOACs are at a higher risk compared to those on anti-platelets who have a smaller risk.^[13] Blood dyscrasias,^[14] bleeding diathesis, dural metastasis, CNS infections, Vitamin B1 deficiency are malnutrition are other rarer causes of CSDH.^[15] Sudden decrease in intracranial pressure following VP shunt can result in the development of CSDH especially in children.^[16] Chronic alcoholism is also a cause of CSDH in the middle age group of patients. Non traumatic CSDH can also occur due to rapid repetitive movements of the head like in roller coaster rides in amusement parks or head banging as in rock concerts. It is hypothesised that high angular acceleration is responsible for the bleed.^[17] Similar such activities which may cause CSDH include race walking, reverse bungee jumping and shaken baby syndrome.^[18] Travelling at high altitudes has also been found to be responsible for the development of CSDH.^[19,20] Hypoxia at high altitude causes increase in cerebral blood flow and an increase in cerebral venous pressure with potential rupture in bridging veins to bleed.^[21] In our study it was found that 22 patients out of 88 included in the study (25 %) did not have any history of trauma which is similar to other studies where the incidence of non-traumatic CSDH has been found to be 20- 30%. Among the nontraumatic patients in our series most were found in the 30-40 year age group (54.5%), which again is similar to the finding of other series and hence we can conclude that non traumatic CSDH is more common in the younger age group as compared to those with a history of trauma who were mostly in the above 60 years age group. Etiology wise the most common cause of non-traumatic CSDH in our series was found to be oral anti coagulants (40.9%) followed by bleeding diathesis. Other rarer causes were dural AVM, chronic alcoholism, post VP shunt operation and post roller coaster ride. Surgical treatment in the form of burr hole evacuation of CSDH along with specific measures aimed at the cause of the haematoma resulted in very good outcomes in most patients as evidenced by rapid improvement in their Markwalder scale grading.

CONCLUSION

No definite history of trauma is found in nearly 20-25% of patients of CSDH and on detailed history and investigations unusual causes like anticoagulant therapy, bleeding diathesis, dural metastasis, vascular malformations, chronic alcoholism and post VP shunt operation have been found to be responsible. It is important to correctly identify these causes as treatment of these patients requires not only evacuation of the subdural haematoma but also specific therapy directed at the cause like correction of the coagulation defect or

excision of vascular malformations otherwise these are likely to increase the chances of recurrence. Early diagnosis and treatment of CSDH gives a good outcome in most patients and helps to reduce morbidity and mortality if left untreated.

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