

Chronic Subdural Hematoma: A Comparative Analysis Based On Age

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Abstract:

Background: Chronic subdural hematoma is one of the most common clinical conditions presenting to neurosurgery departments. Presumed to be a disease of the elderly, chronic subdural hematoma is detected in younger patients relatively rarely. Detailed studies worldwide for presenting features and etiopathology of chronic SDH in younger individuals has resulted in an increased rate of detection of the same in this age group as well.

Methods: Here a sample of 160 patients who presented to the department of neurosurgery, Govt Medical College, Kozhikode over two years from 2018-2019 are analysed for the etiopathologic factors, clinical features, course of disease, prognosis and complications.

A total of 95 patients above 40 years of age and 65 below 40 years were studied over a period of two years since diagnosis.

Results: The distribution of males and females is almost equal among the younger patients while two-third of patients belonging to older group were males.

The difference in rates of antecedent trauma across the age groups holds no statistical significance (p value 0.5166). Similarly, rates of bilaterality of hematoma on CT (p-value 0.1912) and rates of recurrence after surgical evacuation (p value 0.771) are comparable statistically when age groups are compared.

Headache and vomiting are more incident in younger age group relative to the second group (p value 0.0025). On the contrary, focal neurological deficits are observed more in the elderly patients and statistically scores higher compared to first group (p value 0.000001).

Regarding other less common forms of clinical presentation of chronic SDH, seizures are prevalent only in a very small number of patients and is comparable across ages, while altered sensorium in the form of confusion, amnesia and altered behavior are observed in the elderly patients more and holds significance statistically.

Expectedly, since the prevalence of comorbidities like diabetes mellitus, stroke, CAD etc. are more among elderly people, the use of antiplatelets is more among them. Considering the above as significant risk factors for chronic SDH, the comorbidities as well as use of antiplatelets are well above the younger patients and hence significant statistically.

Conclusions: Chronic subdural hematoma differs across ages in terms of clinical features of presentation. Headache and vomiting are statistically more predominant among younger patients relative to focal neurological deficits which mandate high degree of clinical suspicion to plan imaging in younger patients presenting with chronic SDH. Also causative factors apart from traumatic events, viz. intake of antiplatelets and comorbidities like CAD, Diabetes Mellitus etc are more prevalent among older age groups.

Keywords: chronic subdural hematoma, antiplatelets

Date of Submission: 06-07-2021

Date of Acceptance: 19-07-2021

I. Introduction

Chronic subdural hematoma is a common entity in neurosurgical practice and is mostly seen in elderly population. In majority of the cases, it has a self-limiting course.

However incidence has been increasing in younger patients as a result of several clinical trends that increase bleeding risk including increased use of anticoagulant therapy and hemodialysis and longer survival with systemic hematologic disease. Despite the benign nature of chronic SDH, re-accumulation of hematoma is still a matter of concern, and disease progression can be fatal without timely surgical intervention. Chronic SDH is more likely to be missed in young adults because of lower incidence in this patient population and low degree of clinical suspicion.

Diagnosis of chronic SDH was made by NCCT Brain. However, MRI Brain was also performed in certain unusual presentations.

In our institution, surgical evacuation of chronic SDH is done via single burr hole craniostomy. Nonsurgical conservative management is followed in cases with hematoma of thickness less than 1cm, with midline shift less than 5mm, no focal neurological deficits, and normal sensorium, and also patients not fit for surgical procedures.

In this study we aim to evaluate the risk factors, etiopathology, clinical features and results of treatment of chronic SDH in different age groups and comparatively analyse the same between patients of age less than 40 years and those above.

Etiology includes head trauma, coagulopathy, intake of anticoagulants/antiplatelets, spontaneous intracranial hypotension etc.

On NCCT Brain, hematomas are usually hypodense, but isodense or mixed density lesions are also observed.

Recurrence is defined as return of symptoms within sometime after surgery (variably defined as up to 1 year) with or without expansion of the CSDH or with expansion of residual postoperative CSDH. Risk factors for recurrence have been reported to include congenital or acquired platelet/vessel and coagulation disorders, older age, brain atrophy, bilateral CSDH, CT appearance (density and type), diabetes mellitus, CAD, CVA, alcohol abuse etc.

Surgery is the best option in moderate to large hematoma with neurological deficit. Burr hole craniostomy and twist drill craniostomy are the commonly performed procedure for CSDH.

The mortality rate is about 2% in CSDH. The prognosis in CSDH depends on the age, GCS at presentation, and associated illnesses like cardiac and renal failure. Prognosis is superior in younger patients with higher preoperative GCS.

II. Objectives

1. To analyse the presenting symptoms and signs in young patients with chronic SDH and to compare the same with those in older patients
2. To evaluate the underlying etiopathology and associated comorbidities in young and older patients
3. To evaluate the laterality and the rates of recurrence following surgery in young and older age patients

III. Methodology

Patients admitted in Neurosurgery Department in Government Medical College, Kozhikode diagnosed with chronic SDH are included. This is a descriptive study of patients emphasizing on the risk factors, presentation, course and prognosis after treatment for the same, dividing them into two groups based on age. First group includes those younger than 40 years, and second group those above.

A total of 160 patients, 95 of which are above 40 years of age, and 65 patients younger than 40 years, over a period of 2 years from 2018 to 2019 are put to analysis.

Patients diagnosed with other coexisting intracranial pathology detected on imaging brain and those not willing to be part of follow up study are excluded from the study.

After obtaining consent, patients were interviewed and examined in the surgical wards, with help of a preformed semi-structured questionnaire. Patients' routine investigation results were collected and documented. Once discharged from hospital, patients were requested to contact the investigator if they are getting admitted again for worsened clinical condition in this hospital. Such patients were again interviewed. Telephone numbers of the patients or bystanders were collected during the initial survey, and were contacted through phone and data collected.

IV. Results

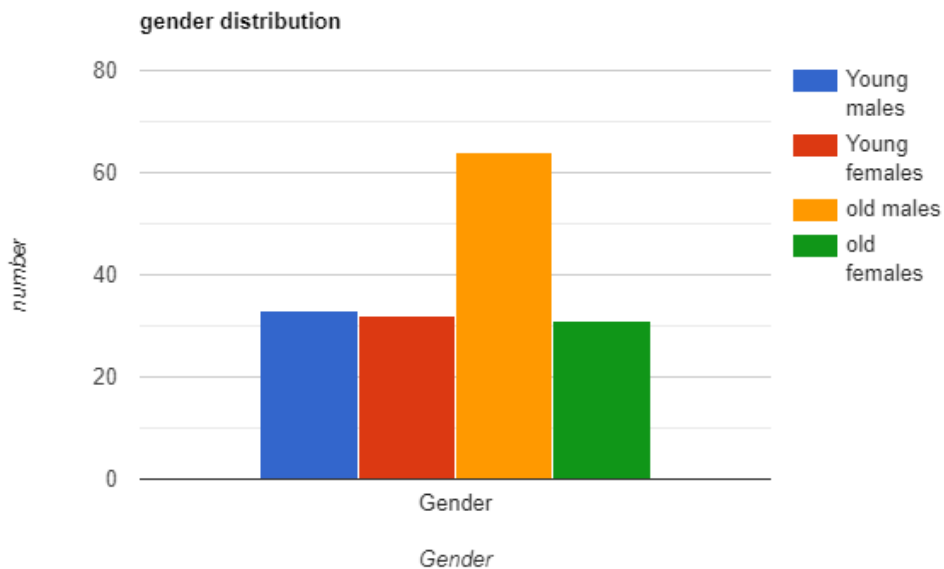
	Less than 40 years age	More than 40 years age	P value	Significance
Total Patients	65	95		
Gender Male	33	64	0.0477	Significant
Gender Female	32	31		
Recurrence (over 1 year)	6	7	0.771	Not significant
Laterality Bilateral	4	13	0.1912	Not significant
Laterality Unilateral	61	82		
Trauma antecedent	39	51	0.5166	Not significant
Headache/Vomiting	61	72	0.0025	Significant
Focal neurological deficits	14	54	0.000001	Significant

Seizure	1	3	0.65	Not significant
Altered sensorium	11	35	0.0075	Significant
Anemia	2	2	1	Not significant
Use of antiplatelets	2	24	0.0001	Significant
Use of anticoagulant (Warf)	3	5	1	Not significant
DM/HT/CAD/CVA	5	37	0.00001	Significant

V. Discussion

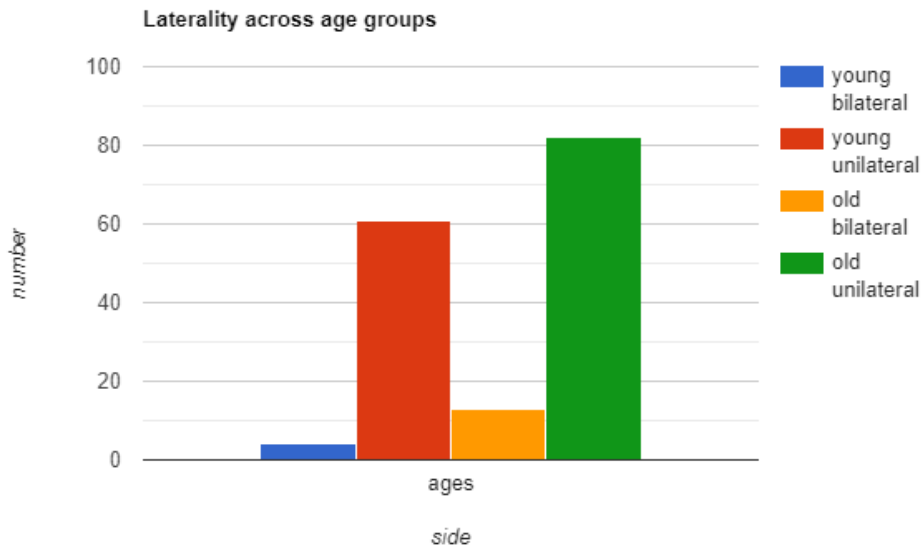
Over a span of 3 years, a total of 160 patients, including 95 aged 40 y and above and the remaining younger than 40 years, were evaluated ,treated and followed up for chronic subdural hematoma. Various aspects put to study include distribution across sexes, rates of recurrence, number of cases with bilateral pathology, presenting clinical symptoms and signs ,presence of anemia and associated comorbidities like diabetes mellitus(DM), coronary artery disease(CAD),cerebrovascular accidents(CVA) and hypertension some of which mandate intake of antiplatelets/anticoagulants.

Dividing into two sexes, of the 65 patients aged 40 and below, 33 were males and remaining females. Of the patients aged above 40, 64 were males. Evaluating the gender distribution in relation to ages, it is seen that the increased difference in number of males compared to females in older patients is significant and states that incidence of chronic SDH in patients older than 40 years is more in males compared to females. This could possibly be attributed to relatively higher risk for traumatic events among males since they contribute more to the working group.



There were in total, 6 cases of recurrent SDH in first group and 7 in the second. A p-value of 0.771 on comparing recurrence across age groups, shows that statistically the difference in rates of recurrence across age groups holds no significance.

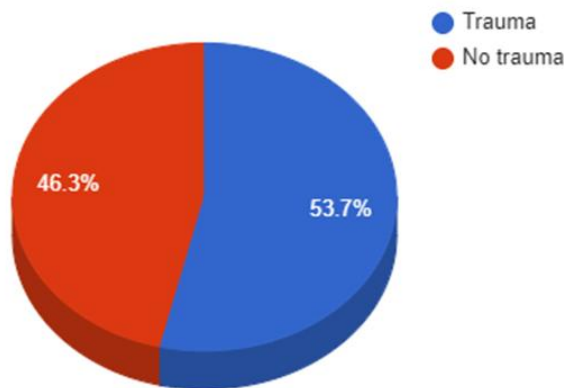
Out of 65 young patients, only 4 reported bilateral hematoma while 13 of 95 older patients showed the same. Bilaterality is believed to be a predisposing factor for recurrence of chronic SDH. Statistically this difference in number of cases of bilateral chronic SDH shows no significance.



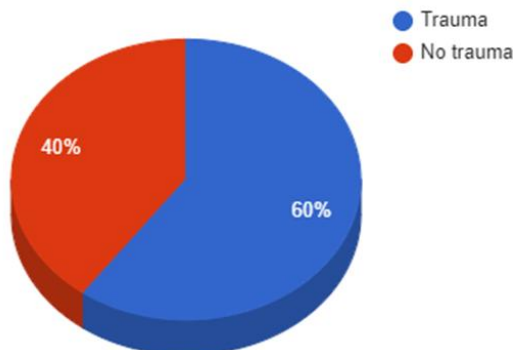
Factors predisposing to chronic SDH ,viz. traumatic events, anemia,use of antiplatelets and anticoagulants and comorbidities including Diabetes,Hypertension,CAD and CVA were also analysed.

Traumatic events antecedent to diagnosis of chronic SDH were reported in 39 of the 65 young patients, and 51 of the 95 older patients. P-value of 0.5166 demonstrates lack of any statistical significance. Traumatic events predispose to chronic SDH in all age groups. They include a spectrum ranging from trivial sudden movements of head to falls and road traffic accidents many of which were documented with acute SDH which were conservatively managed.

Trauma antecedent to Chronic SDH in elderly patients



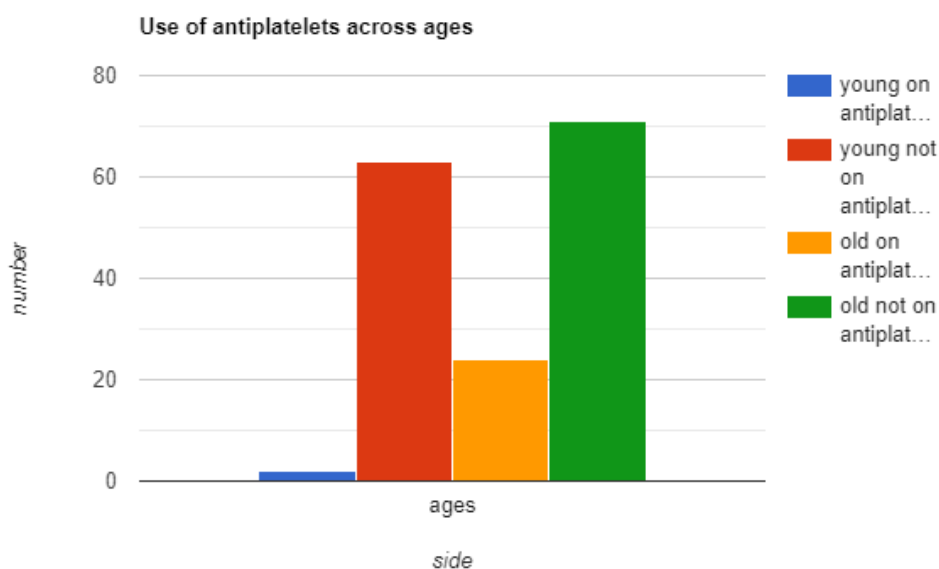
Trauma antecedent to Chronic SDH in young patients



Anemia, defined as a level of hemoglobin concentration less than 9mg/dL was noted in 2 patients each from both groups.

Use of anticoagulants (Warfarin) following valvular heart diseases with and without a history of surgical repair, obviously increased the risk of development of intracranial hematomas. 3 patients from first group and 5 from second group reported prolonged use of Warf. The predisposition is present irrespective of age distribution.

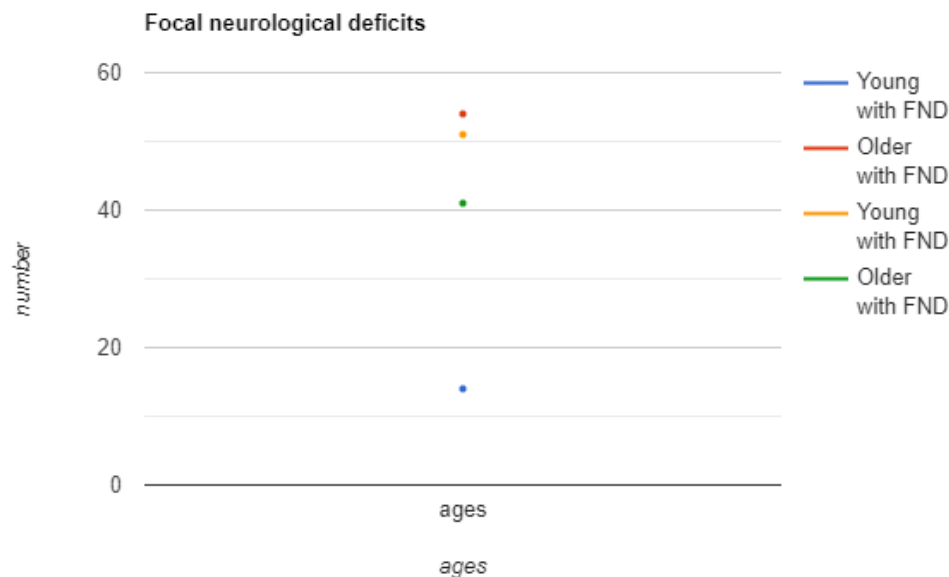
Use of antiplatelets ecospirin and clopidogrel, alone or both together also resulted in increased risk of development of SDH particularly following trivial or non-trivial traumatic episodes. Commonly these are used following cardiac events related to coronary artery occlusion or cerebrovascular events. Use is more among older people. 2 from the first group used antiplatelets for long durations, while 24 from the second group were categorized to this group. A P value of 0.0001 on fisher’s test showed that use of antiplatelets contributed to development of SDH more characteristically in patients of age above 40 years compared to those below. This result may also show a bias since CAD and CVA events mandating chronic use of antiplatelets are more prevalent among elderly population.



Reportedly, neurodegenerative diseases causing brain atrophy can predispose to chronic SDH in all ages. In our study, 2 patients from the first group were earlier diagnosed with Huntington’s disease while 3 from the second group suffered from Parkinson’s disease. No difference among age groups was evident.

Next, the various symptoms and signs were assessed. Common clinical features included headache/vomiting, focal neurological deficits viz. hemiparesis,aphasias etc.,alteration in sensorium and rarely focal/generalized seizures. Commonest presentation was headache and associated vomiting due to raised intracranial pressure. This was more prominent in younger patients, amounting to 61 out of 65 patients. Relatively less number of patients above 40 years reported headache suggestive of raised ICP. This could probably be attributed to varying degrees of cerebral atrophy in elderly patients thus reducing the probability of acutely raised ICP. The difference was statistically significant.

Focal neurological deficits commonly demonstrable by weakness of limbs followed by a few cases of aphasia, are also common presenting features of chronic SDH. 14 from the first group, and 54 from the second group showed varying levels of focal deficits. A p-value of negligible value, on Fisher’s exact test testifies that focal deficits are much rarer in patients aged less than 40 years. Generally the time for diagnosis following onset of symptoms is longer for elderly patients, during which they may develop worsening of symptoms and appearance of focal deficits due to prolonged uncorrected pathology. Many cases of chronic SDH present with clinical features of stroke only to be diagnosed with a CT/MRI. Relatively earlier diagnosis in younger patients is presumably the reason for lesser prevalence of hemiparesis/aphasias.



Seizures are very rare modes of presentation with incidence of 1 among 65 in the first group and 3 in the second in the present study. 1 of these was a known case of epilepsy.

Alteration in sensorium, manifesting as confusion, agitation, memory impairment, drowsiness and decreased responsiveness are seen in a large fraction of cases, evidently more in elderly patients. Of the 65 patients in the first group, only 11 showed altered sensorium, while 35 out of 95 in the second group presented with altered sensorium associated with other symptoms. This difference is significant statistically.

A significant number of patients in the second group reported with history of comorbidities like Diabetes Mellitus, hypertension, Coronary artery disease and Cerebrovascular accidents. Though a direct correlation cannot be derived, most cases of CAD/CVA were on antiplatelets for a long period which puts them at risk of acquiring bleeding tendency following trivial episodes of trauma.

Of the etiological factors presumed to cause chronic SDH, intracranial hypotension following cranial surgery, spinal surgery, spinal anesthesia, or lumbar puncture is significant. In our study there were two cases diagnosed with intracranial hypotension and the size of hematoma necessitated evacuation.

VI. Conclusion

Our study observes a significant difference in distribution of incidence of chronic SDH across genders such that male patients show predominance over females in age group above 40 years. Also, presenting clinical features such as focal deficits and altered sensorium are more seen in age groups older than 40y, while headache/vomiting being the commonest suggestive feature, is more soundly manifested in the younger patients. Adding to it, use of antiplatelets for long terms result in higher prevalence of chronic SDH significantly in the older population.

History of antecedent trauma, use of anticoagulants, neurodegenerative diseases causing brain atrophy etc are significant predisposing factors increasing the risk of chronic SDH but show no difference across age groups.

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Authors' contribution :

DR VINEETH K K : Performed burr hole craniostomy on cases of chronic SDH and evaluated the history and postoperative course.

DR RAJEEV M P : Professor and Head of department. Guided through the clinical applications and validity of findings.

DR PRAKASAN K : Associate Professor. Guided in the statistical analysis of various parameters

DR RADHAKRISHNAN M : Assistant Professor. Helped in following up cases after surgery and evaluation of recurrences

Conflicts of interest :

The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

All authors read and approved the final version of the manuscript.

Dr Vineeth K Kuthampulli, et. al. "Chronic Subdural Hematoma: A Comparative Analysis Based On Age." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 20(07), 2021, pp. 10-16.