



EPIDEMIOLOGY, CLINICAL PRESENTATION, AND MANAGEMENT IN PATIENTS OF CHRONIC SUBDURAL HAEMATOMA

Dr. Anup Kela*

Associate professor, Department of Neurosurgery, Government Medical College & Superspeciality hospital, Akola, Maharashtra. *Corresponding Author

**Dr. Samata
Minayar**

Assistant professor, Department of Paediatrics, Government medical college, Akola, Maharashtra.

ABSTRACT Chronic subdural hematoma (CSDH) is one of the most common neuro surgical conditions. Clinical presentation may vary from asymptomatic patient to unconsciousness. CSDH is usually diagnosed by CTscan. MRI scan is more sensitive in the diagnosis of bilateral isodense CSDH, multiple loculations, intrahematoma membranes, fresh bleeding, hemolysis, and the size of capsule. Contrast enhanced CT or MRI could detect associated primary or metastatic dural diseases. Definite history of trauma may or may not be obtained in patients. Some cases may be secondary to coagulation defect, intracranial hypotension, use of anti coagulants and antiplatelet drugs. Recurrent bleeding, increased exudates from outer membrane, and cerebrospinal fluid entrapment have been implicated in the enlargement of CSDH. Burr hole evacuation is the treatment of choice for an uncomplicated CSDH. Craniotomy and twist drill craniostomy also play a role in the management. Dural biopsy should be taken, especially in recurrence and thick outer membrane. Non surgical management is reserved for asymptomatic or high risk patients.

KEYWORDS : Chronic subdural hematoma, Burr hole, loculations, membranes.

INTRODUCTION :

Pachymeningitis haemorrhagica interna, a term was used by Virchow to name chronic subdural hematoma (CSDH) during the eighteenth century (1857). Trauma to bridging veins was later postulated by Trotter and changed its name to subdural haemorrhagic cyst [1].

It is one of the commonest intracranial pathologies that give excellent outcomes if managed properly. Old people are more exposed to develop CSDH especially after minor trauma due to brain atrophy that increases the space between the brain and skull leading to stretching of aging fragile cortical veins that can be easily torn with minor trauma [2,3].

Although trauma is an important factor to develop CSDH; however direct head trauma is absent in up to 30% - 50% of the patients. Fall without hitting the head to the ground was reported in almost half of CSDH patients [4,5]

Other risk factors may include bleeding tendency, epilepsy, alcoholism and cases that may develop low intracranial pressure in conditions like dehydration and renal dialysis [6].

Fibrin and fibroblasts form hematoma membrane on the fourth day up to two weeks. Phagocytes lead to hematoma liquefaction. New fragile vessel formed in the capsule [6].

The osmotic theory claims that the difference between hematoma contents with higher proteins facilitating fluid transfer through the semipermeable membrane from the nearby vessels [7]. It was denied by Wier et al. who proved that hematoma fluid, blood and cerebrospinal fluid CSF have the same osmolality [8].

Recurrent bleeding from abnormally dilated blood vessels in CSDH capsule is nowadays more accepted theory especially with concurrent use of anticoagulation [9]. Ito et al. demonstrated that there is fresh bleeding in CSDH evacuated fluid reaching from 2% - 28% of cases that were injected 51 Cr-labelled RBCs intravenously 6 - 24 hours before evacuation [10].

MATERIALS AND METHODS :

We have operated 80 patients of Chronic subdural haematoma in a period of 7 years, from 1/1/2016 to 31/12/2022 in our neurosurgery centres. Majority of patients were diagnosed by plain CT scan of brain, with hypodense concavo-convex shadow. After preoperative workup all patients were posted for surgery taking care of all the co morbidities.

We had done all surgeries in general anaesthesia, although local anaesthesia can also be used in selected cases. After giving position, burr hole localization depends on site of maximum thickness, whether intra-sac septae are present or not (avoid putting both burr holes in

front of septum).

We make skin incision vertical over superior temporal line in both anterior and posterior burr holes just in case we need to extend surgery to full craniotomy it will be easier to extend skin incision between both vertical limbs.

We use to prefer mini craniotomy, with slightly larger hole of about 3 cm in cranium, in frontal and parietal region. This aids in complete evacuation of haematoma, along with membrane if present. Giving gentle and thorough saline wash is the key to management of CSDH. Depending upon brain expansion after evacuation, decision was taken for keeping IFT as a drain, which was removed after 48 hours of surgery. Closure was done in layers.

Post operatively antibiotics were given for 5 days. Patients were kept 15-20 degree head elevation, with ambulation after 24 hours of surgery. Suture removal was done on post op day 10. Follow up ct scan was done after 1 month if patient is asymptomatic after surgery.

OBSERVATION & RESULTS:

We are presenting a series of 80 cases of chronic subdural haematoma operated over a period of 7 years from 1st jan 2016 to 31st dec 2022. All patients were in age group 50 years to 85 years. Out of 80 patients, 50 were males and 30 were females. Majority were not having any definite history of major head injury. Most were having history of trivial trauma. 20 were having history of taking anticoagulants and antiplatelets.

Most of the patients presented to us with headache, unilateral weakness. Some patients came to us with imbalance while walking, urinary incontinence, psychiatric symptoms. Few were detected incidentally with nonspecific symptoms.

All patients were subjected to surgery after getting pre operative work up and fitness. Majority of patients recovered uneventfully, except one mortality was there. 2 patients had recurrences, which needed re-surgery in the form of craniotomy. These two patients recovered after second surgery. One mortality was in a high risk case who had undergone CABG, with EF of 20%. Patient went into CCF on POD4 and succumbed.

DISCUSSION:

CSDH is one of commonest types of intracranial haemorrhages especially in old age. [3] [11] [12] [13] [14] [15]. Ahmed Fiki et al found 60% cases were between 5th and 7th decade. Qiang kai et al operated all 25 patients between age group 42 to 96 years. Simple evacuation by burr holes and putting a closed drainage system gives excellent results although it can recur. These patients are to be re-operated first by re-exploration of burr holes, SOS craniotomy [16] [17] [18] [19] [20].

Computerized topography (CT) before surgery can give some information about the prognosis. Hyper and mixed density of the hematoma may be linked with higher recurrence rate [16] [18] [21,22], especially if associated with intra-sac septae which may be explained by the presence of excess exudates, higher protein levels and fibrinolytics in fresh blood leading to more bleeding [23,24,25].

It is recommended to continuously wash until clear fluid is coming out through the other burr hole to avoid recurrence especially in hyper or mixed density CSDH.

Residual fluid in the subdural space is a common finding in about 80% of cases in postoperative CT brain and usually asymptomatic, but real recurrence usually with recurred clinical complaints which often start from POD4 to four weeks has been observed in 8% - 37% of operated cases [6].

The CSDH thickness in pre-operative CT scan may give an impression about outcome prediction. More the thickness, less is the elasticity of the brain especially in old age and poor expansion with higher possibility of recurrence and pneumocephaly to develop [2] [17] There were 2 recurrences in our series (2.5%). One patient expired post op, due to CCF (1.25%).

Funding Source: None

Conflict Of Interest: None

Acknowledgement: Authors would like to acknowledge and thank the patients, their families, who gave their valuable time and participation in this study.

REFERENCES:

1. Fogelholm, R. and Waltimo, O. (1975) Epidemiology of Chronic Subdural Haematoma. *Acta Neurochirurgica*, 32, 247-250. <https://doi.org/10.1007/BF01405457>
2. Ellis, G.L. (1990) Subdural Haematoma in the Elderly. *Emergency Medicine Clinics of North America*, 8, 281-294.
3. Feldman, R.G., Pincus, J.H. and McEntee, W.J. (1963) Cerebrovascular Accident Or Subdural Fluid Collection? *Archives of Internal Medicine*, 112, 966-976. <https://doi.org/10.1001/archinte.1963.03860060178020>
4. Rozzelle, C.J., Wofford, J.L. and Branch, C.L. (1995) Predictors of Hospital Mortality in Older Patients with Subdural Haematoma. *Journal of the American Geriatrics Society*, 43, 240-244. <https://doi.org/10.1111/j.1532-5415.1995.tb07329.x>
5. Jones, S. and Kafetz, K. (1999) A Prospective Study of Chronic Subdural Haematomas in Elderly Patients. *Age Ageing*, 28, 519-521. <https://doi.org/10.1093/ageing/28.6.519>
6. Munro, D. and Merritt, H.H. (1936) Surgical Pathology of Subdural Haematoma: Based on a Study of One Hundred and Five Cases. *Archives of Neurology & Psychiatry*, 35, 647-8. <https://doi.org/10.1001/archneurpsyc.1936>
7. Gardner, W.J. (1932) Traumatic Subdural Haematoma with Particular Reference to the Latent Interval. *Archives of Neurology & Psychiatry*, 27, 847-858.
8. Weir, B. (1971) The Osmolality of Subdural Haematoma Fluid. *Journal of Neurosurgery*, 34, 528-533. <https://doi.org/10.3171/jns.1971.34.4.0528>
9. Sato, S. and Suzuki, J. (1975) Ultrastructural Observations of the Capsule of Chronic Subdural Haematoma in Various Clinical Stages. *Journal of Neurosurgery*, 43, 569-578. <https://doi.org/10.3171/jns.1975.43.5.0569>
10. Ito, H., Yamamoto, S., Saito, K., et al. (1987) Quantitative Estimation of Haemorrhage in Chronic Subdural Haematoma Using the 51Cr Erythrocyte Labelling Method. *Journal of Neurosurgery*, 66, 862-864. <https://doi.org/10.3171/jns.1987.66.6.0862>
11. Amirjamshidi, A., Abouzari, M., Eftekhari, B., Rashidi, A., Rezaei, J., Esfandiari, K., et al. (2007) Outcomes and Recurrence Rates in Chronic Subdural Haematoma. *British Journal of Neurosurgery*, 21, 272-275. <https://doi.org/10.1080/026886907012722321>
12. Nakaguchi, H., Tanishima, T. and Yoshimasu, N. (2000) Relationship between Drainage Catheter Location and Postoperative Recurrence of Chronic Subdural Hematoma after Burr-Hole Irrigation and Closed-System Drainage. *Journal of Neurosurgery*, 93, 791-795. <https://doi.org/10.3171/jns.2000.93.5.0791>
13. Okada, Y., Akai, T., Okamoto, K., Iida, T., Takata, H. and Iizuka, H. (2002) A Comparative Study of the Treatment of Chronic Subdural Hematoma—Burr Hole Drainage versus Burr Hole Irrigation. *Surgical Neurology*, 57, 405-409. [https://doi.org/10.1016/S0090-3019\(02\)00720-6](https://doi.org/10.1016/S0090-3019(02)00720-6)
14. Ramachandran, R. and Hegde, T. (2007) Chronic Subdural Hematomas—Causes of Morbidity and Mortality. *Surgical Neurology*, 67, 367-372. <https://doi.org/10.1016/j.surneu.2006.07.022>
15. Santarius, T., Lawton, R., Kirkpatrick, P.J. and Hutchinson, P.J. (2008) The Management of Primary Chronic Subdural Haematoma: A Questionnaire Survey of Practice in the United Kingdom and the Republic of Ireland. *British Journal of Neurosurgery*, 22, 529-534. <https://doi.org/10.1080/02688690802195381>
16. Ernestus, R.L., Beldzinski, P., Lanfermann, H. and Klug, N. (1997) Chronic Subdural Hematoma: Surgical Treatment and Outcome in 104 Patients. *Surgical Neurology*, 48, 220-225. [https://doi.org/10.1016/S0090-3019\(97\)80031-6](https://doi.org/10.1016/S0090-3019(97)80031-6)
17. Gonugunta, V. and Buxton, N. (2001) Warfarin and Chronic Subdural Haematomas. *British Journal of Neurosurgery*, 15, 514-517. <https://doi.org/10.1080/02688690120097822>
18. Markwalder, T.M., Steinsiepe, K.F., Rohner, M., Reichenbach, W. and Markwalder, H. (1981) The Course of Chronic Subdural Hematomas after Burr-Hole Craniotomy and Closed-System Drainage. *Journal of Neurosurgery*, 55, 390-396. <https://doi.org/10.3171/jns.1981.55.3.0390>
19. Markwalder, T.M. (1981) Chronic Subdural Hematomas: A Review. *Journal of Neurosurgery*, 54, 637-645. <https://doi.org/10.3171/jns.1981.54.5.0637>
20. Tabaddor, K. and Shulmon, K. (1977) Definitive Treatment of Chronic Subdural Hematomas by Twist-Drill Craniotomy and Closed-System Drainage. *Journal of Neurosurgery*, 46, 220-226. <https://doi.org/10.3171/jns.1977.46.2.0220>
21. Lee, K.S., Bae, W.K., Doh, J.W., Bae, H.G. and Yun, I.G. (1998) Origin of Chronic Subdural Haematoma and Relation to Traumatic Subdural Lesions. *Brain Injury*, 12, 901-910. <https://doi.org/10.1080/026990598121972>
22. Oishi, M., Toyama, M., Tamatani, S., Kitazawa, T. and Saito, M. (2001) Clinical Factors of Recurrent Chronic Subdural Hematoma. *Neurologia Medico-Chirurgica (Tokyo)*, 41, 382-386. <https://doi.org/10.2176/nmc.41.382>
23. Fujisawa, H., Nomura, S., Tsuchida, E. and Ito, H. (1998) Serum Protein Exudation in Chronic Subdural Haematomas: A Mechanism for Haematoma Enlargement? *Acta Neurochirurgica (Wien)*, 140, 161-165. <https://doi.org/10.1007/s007010050077>
24. Nakaguchi, H., Tanishima, T. and Yoshimasu, N. (2001) Factors in the Natural History of Chronic Subdural Hematomas that Influence Their Postoperative Recurrence. *Journal of Neurosurgery*, 95, 256-262. <https://doi.org/10.3171/jns.2001.95.2.0256>
25. Tokmak, M., Iplikcioglu, A.C., Bek, S., Gökdoğan, C.A. and Erdal, M. (2007) The Role of Exudation in Chronic Subdural Hematomas. *Journal of Neurosurgery*, 107, 290-295. <https://doi.org/10.3171/JNS-07/08/0290>