Bilateral Organized Chronic Subdural Hematoma: A Case Report

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Most of the chronic subdural hematomas (CSDH) develop in elderly patients after a mild head injury and are surgically curable. The incidence of organized or calcified CSDH is only 0.5~2%. Elderly patient with mild head trauma must be in regular follow-up and timely repeated CT scan of head should be done in such cases. However, in patients who fail to follow up regularly, CSDH may progress to an organized hematoma leading to significant mass effect requiring craniotomy and evacuation.

We present a case of 58 years old male patient who presented after 4 months of mild head trauma with complaints of generalized headache and dementia. His CT scan of head revealed bilateral frontoparietal hypodense shadow with thickened membrane, multiple septa and mass effect.

The features were suggestive of bilateral organized CSDH.

Bilateral frontoparietal temporal craniotomy with membranectomy and evacuation of CSDH was performed.

Keywords: CSDH, craniotomy, membranectomy, organized hematoma.

Chronic Subdural Hematoma (CSDH), a common neurosurgical disease, is now steadily increasing in incidence in modern neurosurgical practices because of the aging population.[1] The incidence of organized or calcified CSDH is only 0.5~2%.[2] Preoperative CT and MR image findings are very important in determining the proper surgical method.[8] We present a case with delayed presentation of organized chronic SDH after a mild head trauma.

Case Report

A 55-year-old male patient was admitted in our hospital with complaints of generalized headache and blurring of vision. According to the patient's informants, he also had features of dementia. He had history of accident about 4 months back and was neurologically stable with normal initial CT scan of head. There was no history of limb weakness or seizure like activity. He complained of headache soon after discharge from hospital. His headache went unnoticed and no repeat CT scan was done in between. He was not in regular follow up. Repeat CT head revealed bilateral frontoparietal hypodense collection with thickening of membrane. MRI of brain plain and contrast showed multiple loculated collection in bilateral frontoparietal region with significant mass effect **(Figure 1)**. The provisional diagnosis was bilateral organized chronic subdural haematoma.

The patient underwent right parietal burr hole which was subsequently turned into frontoparietal craniotomy. After excision of dura, membranes of organized haematoma was visible. Excision of membrane drained, liquefied component of haematoma which was similar to machinery oil and solid component which was golden yellowish colored similar to scrambled egg in appearance **(Figure 2)**.

After complete removal of the membranes, gross atrophy of the cerebrum was noticed and was non pulsatile. The cavity was filled with ringer lactate solution and duroplasty with central tenting was done.

He had 3 episodes of generalized tonic-clonic seizures post operatively which was managed with antiepileptics. Patient was discharged on 6^{th} post-operative day and kept on regular follow up.

Discussion

Chronic Subdural Haematoma (CSDH), a common neurosurgical disease, is now steadily increasing in incidence in modern neurosurgical practices because of the aging population. This rise in incidence among aged individuals is due to increased use of anticoagulant and antiplatelet agents in cardiovascular and cerebrovascular diseases.[1] The incidence of organized or calcified CSDH is only 0.5~2%.[2] The propensity for CSDH formation in the elderly can be explained by the shrinking brain volume within the confines of the cranial vault. As this occurs, tension on the bridging parasagittal veins that drain the cortical surface predisposes them to injury and haemorrhage at the dura-arachnoid interface.[3] Most chronic subdural hematomas (CSDHs) develop in elderly patients after a mild head injury and are surgically curable. Low cerebral counterpressure, a subdural collection that is too large, or a physiological brain atrophy are causative factors for the slow, progressive enlargement of a CSDH. Two theories have been proposed for CSDH development: the osmotic gradient theory and the recurrent hemorrhage from hematoma capsule

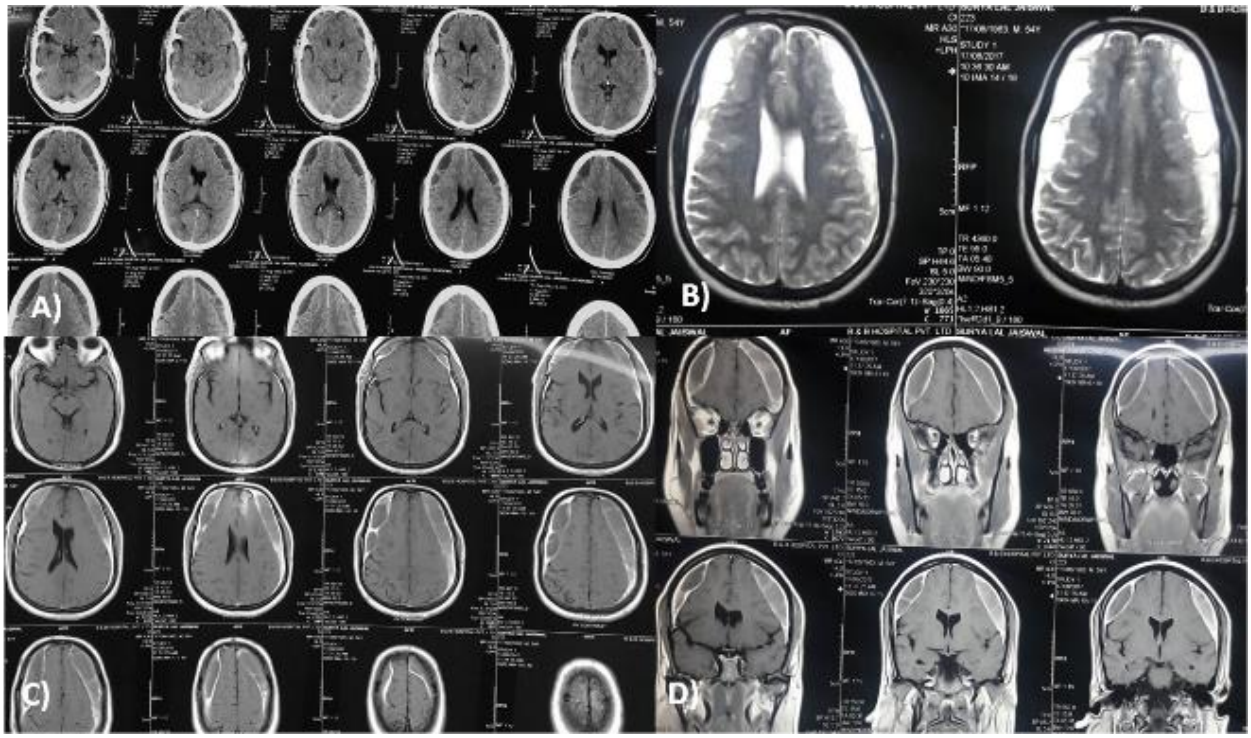

Figure 1: A) CT scan of head plain showing Subdural collection in bilateral frontoparietal region with multiple septa inside, B) MRI T2 Axial section, C, D) Contrast MRI of brain axial and coronal image in coronal view showing multiple loculated subdural collection in bilateral frontoparietal region

associated with hyperfibrinolysis theory. The latter hypothesis has been more widely accepted.[4] Transformation of acute bleeding to chronic bleeding follows a series of pathologic processes in which there is fibrin deposition followed by subsequent organisation, enzymatic fibrinolysis and clot liquefaction.[3]

Chronic subdural hematomas are thought to form in the dural border cell layer of the hematoma cavity that is surrounded by outer and inner membranes.[5] Whereas there are few blood vessels in the inner membrane, the outer membrane contains many fragile macrocapillaries (also called sinusoidal vessels) that are often the source of repeated

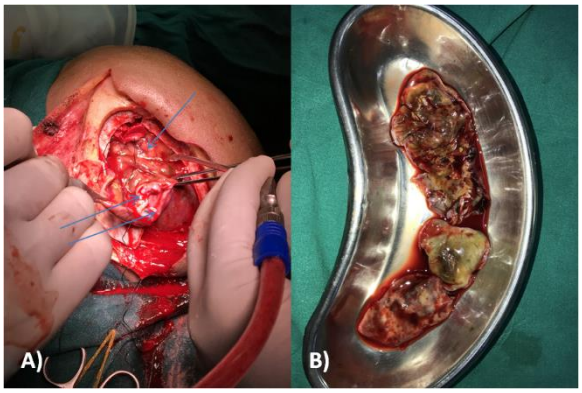

Figure 2: A, B) intraoperative images showing organized chronic subdural membrane indicated by arrows, C) huge chunk of membrane after total removal

multifocal bleeding.[5,6] This repeated hemorrhaging from the outer membrane is considered to be a causative factor for

progressive enlargement of the hematoma, occurring after a minor head injury.[6,7] Preoperative CT and MR image findings are very important in determining the proper surgical method.[8] The CT scan in this case showed formation of neomembranes and heterogeneous density in the hematoma. The MR image demonstrated a heterogeneous web- or net-like appearance in the hematoma cavity. Imaizumi et al. reported five cases of an organized CSDH, and proposed that a large craniotomy was the best treatment for calcified or organized CSDH associated with progressive symptoms.[9] Kim et al reported eight cases of organized/calcified CSDH, and performed large craniotomy with extended membranectomy; these cases required no reoperation and postoperative results were excellent.[10] Thus, the authors considered craniotomy to be the optimum removal method for this case. Endoscopic removal of organized CSDH has recently been developed with good results.[11] Chronic SDH may completely organize depending upon the time lapse, and may sometime even calcify completely giving rise to a condition termed armored brain or "Matrioska" head (Russian doll).[12]

Conclusion

Regular follow up in elderly patient after mild head trauma helps in early detection of SDH and prevents its organization. As a result, a simple burr hole can elude large craniotomy.

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