



Image Report

Recurrent chronic subdural hematoma with trabeculae converging toward a burr hole

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ABSTRACT

Background: Radiographically, trabeculae have been observed commonly in chronic subdural hematoma (CSDH) patients. Nevertheless, few authors have focused on how the trabeculae develop. We, herein, report a case of recurrent CSDH in which the evolution of trabeculae was observed with serial brain computed tomography.

Case Description: A 75-year-old man with symptomatic left-sided CSDH who had undergone a burr-hole craniostomy 14 days in our institution earlier came back with a recurrent CSDH with trabeculae within the hematoma cavity. The trabeculae, which had not been present in the first surgery, developed relatively rapidly, converging toward the burr hole. The recurrent CSDH was successfully treated with the middle meningeal artery embolization. During the procedure, a vascular brush was observed around the burr hole, indicating the trabeculae were rich in blood flow.

Conclusion: Surgical manipulation of the outer membrane during the first surgery might likely have elicited local inflammation and subsequent neovascularization of the outer membrane, resulting in trabeculae formation around the burr hole.

Keywords: Burr hole, Chronic subdural hematoma, Middle meningeal artery embolization, Trabecula

INTRODUCTION

Radiographically, trabeculae have been observed commonly in chronic subdural hematoma (CSDH) patients. Nevertheless, few authors have focused on how the trabeculae develop.

CASE DESCRIPTION

A 75-year-old man presenting with motor aphasia was found to have a left-sided CSDH with heterogenous density compressing the adjacent brain [Figure 1a]. The patient, who had not taken any anti-thrombotics, denied recent head trauma. The patient underwent a burr-hole craniostomy followed by the insertion of a silicon tube inside the hematoma cavity under local anesthesia. The postoperative course was uneventful: the aphasia disappeared shortly after surgery, and the tube was removed on postoperative day (POD) 1. A brain computed tomography (CT) on POD 1 showed a marked reduction in the CSDH volume and midline shift [Figure 1b]. While the patient remained asymptomatic, brain CT on POD 14 revealed the formation of a high-density clot-like structure beneath the burr hole [Figure 1c]. A brain CT on POD 21, when

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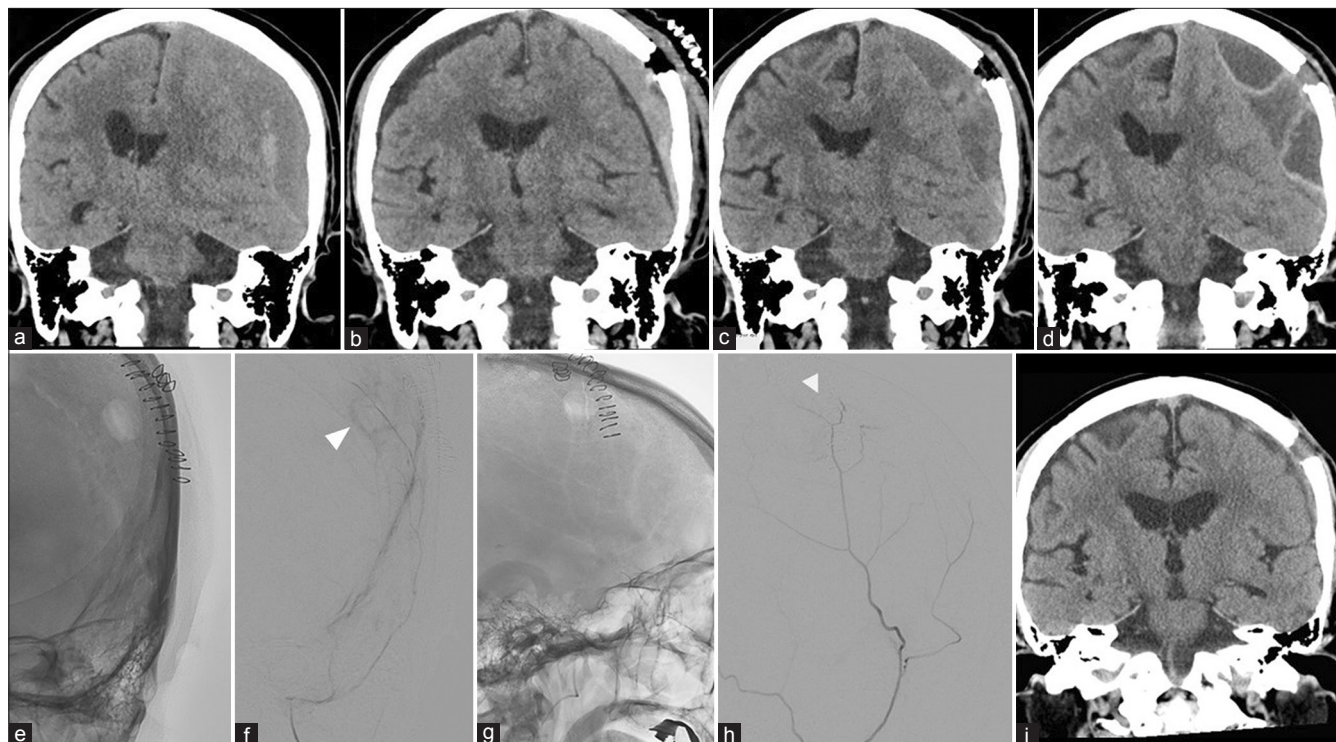


Figure 1: (a) A left-sided chronic subdural hematoma (CSDH) with heterogeneous density compressing the adjacent brain. (b) A postoperative day (POD)-1 computed tomography (CT) in a coronal view shows a reduction in the CSDH volume and midline shift. (c) A POD-14 CT shows the formation of a high-density clot-like structure beneath the burr hole. (d) A POD-21 CT showing the convergence of trabeculae toward the burr hole. (e) A selective digital subtraction angiography during the left middle meningeal artery embolization showed vascular staining and MMA branches encircling the burr hole. (f) Lateral scout view (an arrowhead showing the burr-hole). (g) Lateral view, capillary phase. (h) Anteroposterior (AP) scout view (an arrowhead showing the burr-hole). (i) AP view, late arterial phase. A CT 2 months after embolization showed the disappearance of both trabeculae and hematoma.

the patient became symptomatic again, showed convergence of trabeculae around the burr hole and marked midline shift [Figure 1d]. For this recurrence, a decision to perform a redo craniostomy using the same burr hole followed by the middle meningeal artery embolization (MMAE) was made. A selective digital subtraction angiography of the left MMA showed vascular staining around the burr hole [Figures 1e-h], and the MMA was successfully embolized. A brain CT 2 months after the MMAE showed the disappearance of the CSDH and trabeculae [Figure 1i].

Radiographically, trabeculae have been observed relatively frequently in CSDH patients. While Wakuta *et al.* reported that the trabeculae had been associated with a high postoperative recurrence rate,^[3] Takei *et al.* reported that CSDH patients with trabeculae had lower postoperative recurrence rate compared with CSDH with other inner structures.^[2] While it remains unclear whether trabeculae are one of the risk factors for hematoma recurrence, trabeculae developing in recurrent CSDH may have a somewhat aggressive nature. Our case was unique in that rise and fall of trabeculae around the burr hole was observed chronologically

with serial brain CTs. Convergence of the trabeculae toward the burr hole suggests that manipulation of the hematoma outer membrane during the first surgery may have elicited local inflammation, resulting in neovascularization and growth of the trabeculae, which converged toward the burr hole.^[1]

CONCLUSION

Surgical manipulation of the outer membrane during the first surgery might likely have elicited local inflammation and subsequent neovascularization of the outer membrane, resulting in trabeculae formation around the burr hole.

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