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Ossified Chronic Subdural Hematoma

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A relatively rare condition of ossified chronic subdural hematoma (SDH) mimicking cerebral stroke is presented. A 67-year-old man presented with headache, dysphasia, and left-sided hemiparesis. Routine skull x-ray showed a huge calcification extending from the frontal to the parietal regions in the right side. CT and MRI scan revealed a huge ossified SDH covering the right hemisphere. Right frontoparietal craniotomy was performedand the ossified SDH was completely removed. Severe adhesion was noticed between the pia mater and the inner surface of the ossified mass. The subdural mass had ossified hard outer and inner rims and a soft central part. The postoperative course was uneventful and 3 months after the operation, the patient was neurologically intact. The authors report the successful treatment of a patient with a huge ossified SDH covering the right hemisphere. Careful dissection and total removal are needed in such symptomatic cases to avoid cortical injury and to improve results.

Key Words: Ossified subdural hematoma, hemiparesis, computed tomography

INTRODUCTION

Chronic subdural hematoma (SDH) is a well-known complication of head trauma. Ossified chronic SDH has rarely been encountered. A review of the terature revealed that calcified SDH is relatively common, while ossified SDH is extremely rare.[1-4] The decision for surgical removal may involve difficult questions. In symptomatic cases, surgical removal may be complicated by dense adhesion to the brain surface.[2]

We encountered a 67-year-old male with headache, dysphasia, and weakness of the left extremities who had a large ossified chronic SDH in the right frontoparietal region. Because of symptomatic osified chronic SDH, surgical removal was considered advisable. In this report, we present a successfully treated case of ossified chronic SDH with surgical removal.

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CASE REPORT

A 67-year-old man was admitted to our hospital with complaints of headache, dysphasia, and weakness of the left extremities. A few months before admission, he had sustained a mild head injury and a month before the admission, he had begun to develop headache, dysphasia, and left-sided weakness. On admission he was alert, but had dysphasia and left-sided hemiparesis.

Routine skull roentgenogram showed a huge calcification extending from the frontal to the parietal regions in the right side (Fig. 1). CT and MRI scan revealed an ossified subdural mass covering the right hemisphere (Fig. 2 and 3). The subdural mass had hyperdense outer and inner rims and a slightly hypodense central part (Fig. 3). The diagnosis of an ossified chronic SDH was made on the basis of the neurological and radiological findings.

Right frontoparietal craniotomy was performed, and the bone flap was turned down. When the dura mater, apparently normal, was opened, a stony crust-like subdural mass covering convexity was noticed (Fig. 4). The dura mater was dissected back, and the entire subdural mass was exposed. The mass was severely adhered to the cerebral cortex. Careful dissection was performed, and the ossified subdural mass was completely removed.

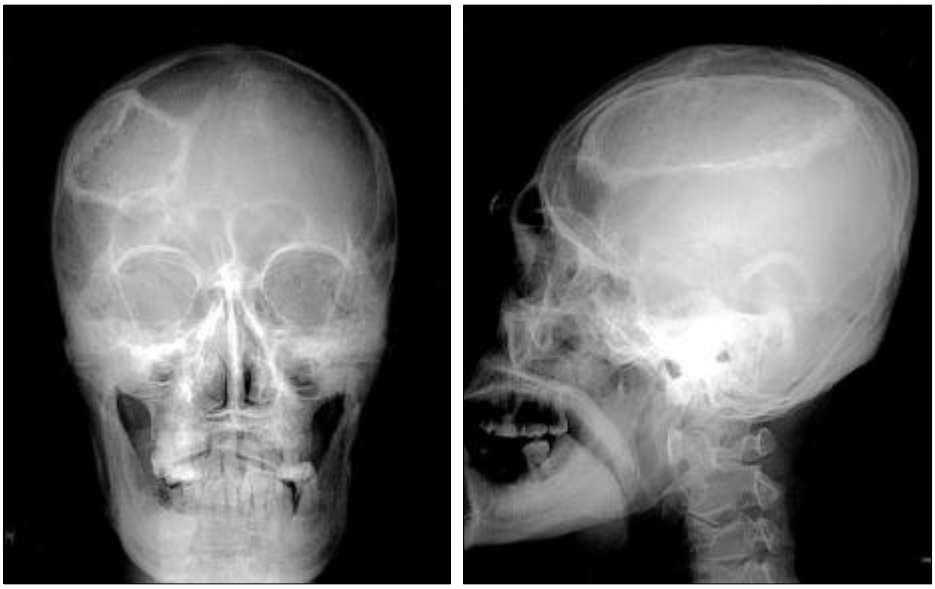

Fig 1. Plain X-ray film of the skull showing a huge calcification extending from the frontal to the parietal regions in the right side.

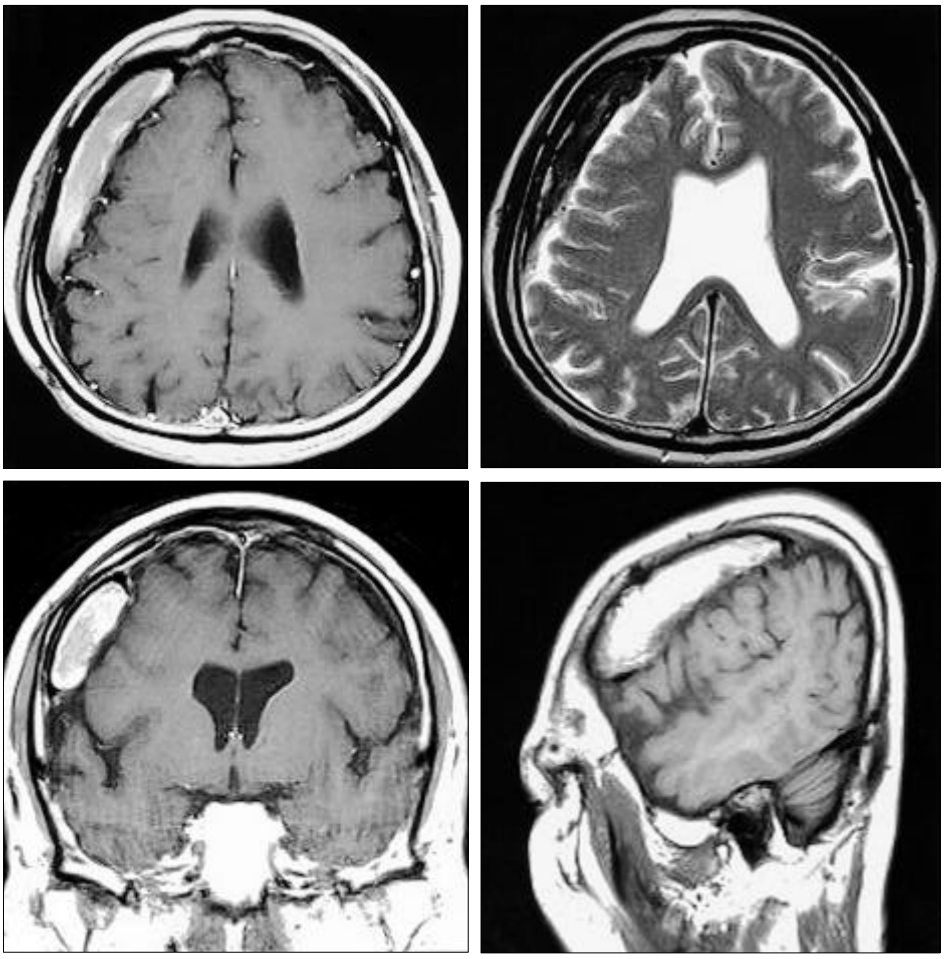

Fig. 2. Preoperative axial T1-weighted, axial T2- weighted, coronal and sagittal MR images demonstrating an ossified subdural mass in the frontoparietal region. Note that this subdural mass is compressing the underlying brain.

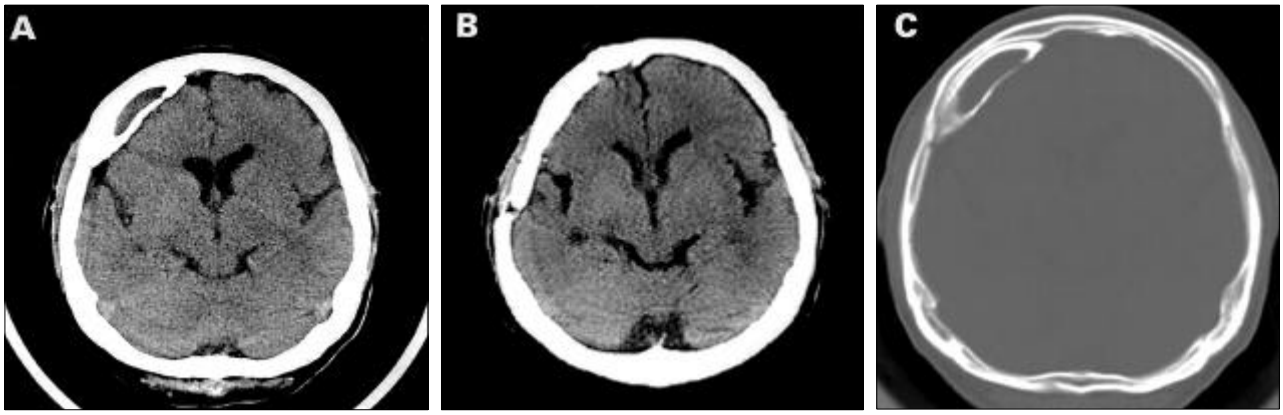

Fig. 3. (A,C) Preoperative CT scan showing an ossified subdural mass in the frontoparietal region. Note that the mass has hyperdense outer and inner rims and a slightly hypodense central part. (B) Postoperative CT scan obtained one month later showing complete disappearance of the mass.

Pathological examination revealed a hard mass with typical bone structure and formation of Haversian canals surrounded by osteoblasts (Fig. 5). A postoperative CT scan performed 3 days after the operation demonstrated complete removal of the subdural mass and cerebral infarction on the right frontal lobe. One month after the operation, another postoperative CT scan confirmed the improved state of frontal infarction (Fig. 3). The patient's postoperative course was uneventful. At discharge from hospital, the patient showed partial recovery from the focal neurological deficits, and at 3 months after the operation, the patient was neurologically intact.

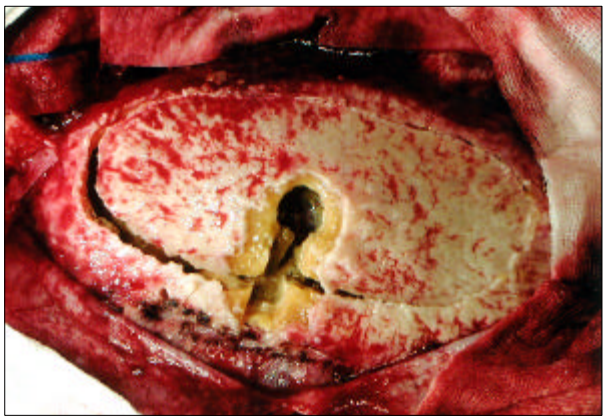

Fig. 4. Intraoperative photograph showing a huge ossified subdural mass.

DISCUSSION

In 1960, McKissock and colleagues defined chronic SDH as those presenting 21 days or more after injury.[5] The majority of chronic SDHs occur in older individuals in theirfifties and sixties. Approximately 50 to 75% of patients have a history of head injury. Ossified chronic SDH is rarely reported in the literature.

The pathogenesis of calcification or ossification of chronic SDH is not clearly defined. Development of calcified SDHs after shunt operation and meningitis have beenreported.[6,7] Several authors suggested that vascular, metabolic and/or some local factors could play a part in this process.[8,9] The interval between hemorrhage and the devel-

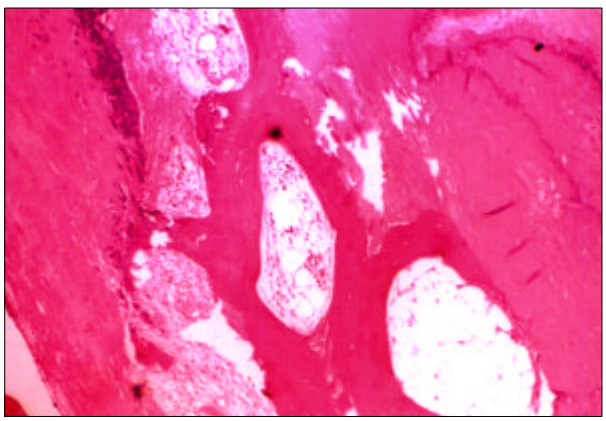

Fig. 5. Photomicrograph of the subdural mass showing the typical appearance of bone and Haversian canals (hematoxylin-eosin, × 40).

opment of calcification is generally longer than 6 months.[1,3,8] The irritation of tissue probably results in the process of ossification after calcification, which takes a few years in most of the reported cases.[1,8] Calcified SDHs are more frequently reported than ossified SDHs, and ossification is considered as the terminal stage of the process.[3]

The most common symptom of chronic SDHs is headache,[10,11] followed by lethargy, confusion, memory impairment, weakness, and seizures. A diminished level of consciousness is relatively common and motor deficits are usually manifested as hemiparesis or gait disturbance.[5,10,12,13] Although the symptoms and signs of ossified chronic SDHs include epileptic seizure, dysphasia, hemiparesis, gait disturbance, and mental retardation,[1,3,7] the majority of the cases remain asymptomatic.[2] Recently magnetic resonance imaging is being used increasingly to evaluate patients with neurological complaints. Nevertheless, computed tomography remains the primary imaging modality for diagnosing chronic SDHs.[1,3,14]

In symptomatic cases, surgical treatment is considered advisable and careful dissection is necessary because of dense adhesion to the brain surface.[2] Postoperative improvement has been reported in symptomatic patients with ossified chronic SDHs.[1,3] In our case, the patient showed much improvement after surgical removal.

In conclusion, the result of our case and a review of the literature suggest that proper surgical treatment is the recommended course of treatment for symptomatic patients with ossified chronic SDHs.

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