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To cite this article: H. Kurita,, S. Ichi, & Y. Shiokawa (1998) Chronic encapsulated intracerebral haematoma in a patient with medically intractable epilepsy, *British Journal of Neurosurgery*, 12:1, 51-53, DOI: [10.1080/02688699845537](https://doi.org/10.1080/02688699845537)

To link to this article: <http://dx.doi.org/10.1080/02688699845537>



Published online: 06 Jul 2009.



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SHORT REPORT

Chronic encapsulated intracerebral haematoma in a patient with medically intractable epilepsy

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Abstract

A patient with a chronic encapsulated intracerebral haematoma presenting with medically intractable epilepsy is described. A tough capsule containing an old haematoma was confirmed surgically, and consisted of dense collagenous tissue with rich neovascularization. The radiological features, aetiology and treatment of this rare occurrence are discussed.

Key words: *Chronic encapsulated intracerebral haematoma, clinical feature, aetiology, epilepsy, treatment*

Introduction

An encapsulated intracerebral haematoma (ICH) associated with intractable symptomatic seizures is reported. The radiological features of the haematoma were similar to those of a cavernous angioma. Histological examination revealed that the lesion was an old clot arising from rupture of the surrounding richly neovascularized capsule. The clinical features of this type of haematoma are not well understood. Our experience adds to the knowledge about this peculiar form of haematoma and should help to define its characteristics.

Case report

The patient was a 12-year-old girl with no family history of epilepsy. She was born after an uncomplicated pregnancy and delivery, and her development was normal. Left-sided clonic convulsions began when she was 10 years old. Despite receiving antiepileptic drugs (phenytoin and zonisamide, plasma levels within reference values) at a local hospital, the frequency of the hemiclonic attacks increased occurring weekly, and they were followed by secondary generalization on occasions. She was referred to our institute for further evaluation in April 1992.

On admission, physical and neurological examinations were normal. An interictal scalp electroencephalogram (EEG) revealed sporadic sharp waves in the right frontal region. Computed tomography

(CT) showed a well demarcated right frontal hyperdense mass; enhanced CT yielded no further information (Fig. 1A,B). Magnetic resonance imaging (MRI) was performed and a T1-weighted image demonstrated a high-intensity core surrounded by a stratified low-intensity rim without Gd-DTPA enhancement (Fig. 2A,B), T2-weighted image revealed a hypointense lesion without perifocal brain oedema (Fig. 2C). Cerebral angiography revealed that the lesion was avascular. The presumptive diagnosis was a cavernous angioma and right frontal craniotomy was performed in July 1992.

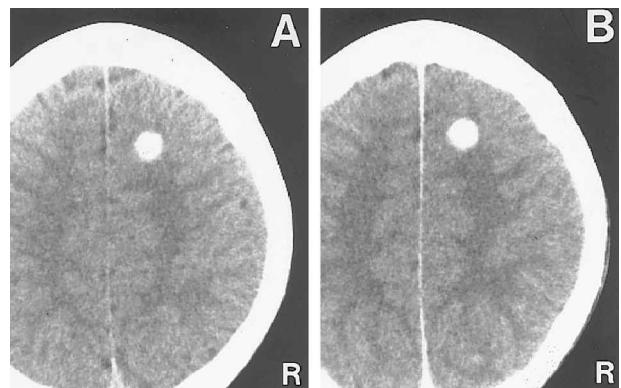


FIG. 1. Axial computed tomographic scan. (A) Precontrast scan showing a homogenous high-density mass in the right frontal lobe. (B) Postcontrast scan showing no apparent contrast enhancement.

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Received for publication 8th November 1996. Accepted 12th December 1996.

0268-8697/98/010051-03 \$9.50 ©The Neurosurgical Foundation

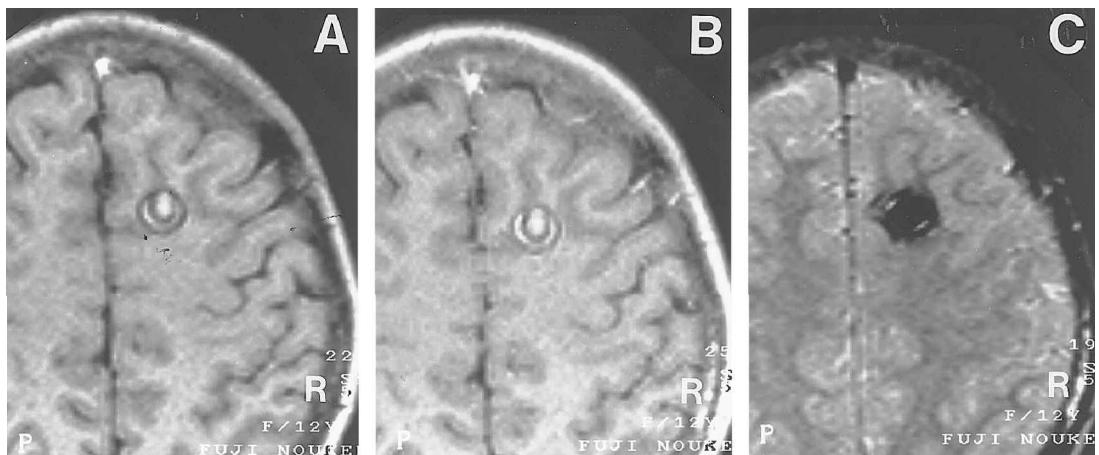


FIG. 2. Axial magnetic resonance images. (A) T1-weighted image showing a high-intensity core with a stratified low-intensity rim. (B) Gd-DTPA-enhanced T1-weighted image showing no apparent enhancement. (C) T2-weighted image showing a hypointense mass.

The lesion was exposed via a trans-sulcal approach, and a thick elastic capsule 1 cm below the surface of the cortex was found. Incision of the capsule disclosed its content to be an organized haematoma. The brain surface surrounding the capsule showed reactive gliosis, but no vascular anomalies were noted. The entire capsule, including the haematoma, was removed (Fig. 3).

Histopathological examination revealed the haematoma contained an old calcified clot. The capsule wall consisted of dense hyaline collagenous tissue that was richly neovascularized. Haemosiderin-laden macrophages were present in the intracapsular vascular zones and inner thin granulation layer, which suggested repeated intracapsular and subcapsular haemorrhages had occurred (Fig. 4A,B).

Following surgery, the patient showed no neurological deficit, a postoperative EEG showed no epileptic discharges and she was discharged ambulatory 10 days after surgery. Subsequently, her condition

improved and at her 4-year follow-up, she had been seizure-free for 3 years while receiving antiepileptic therapy with a low dose of phenytoin.

Discussion

Chronic encapsulated intracerebral haematoma is a rare, but defined entity characterized by a gradual clinical onset, capsule formation and occasional self-perpetuating expansion. In our literature review, we found 32 cases of this entity had been reported.¹⁻¹⁸ Histologically verified vascular anomalies were frequently detected as bleeding sources, including five angiographically occult arteriovenous malformations (AVMs),¹⁻⁴ one radiosurgically treated degenerate AVM,⁵ six cavernous angiomas,⁶⁻¹⁰ one venous angioma¹¹ and one unclassified vascular malformation.¹² Even in patients without a clear bleeding source, destroyed or thrombosed vascular malformations were suggested to have caused the initial haemorrhage and capsule formation.^{1-3,5} Histological examination of our patient suggested that the organized haematoma resulted from rupture of the newly developed fragile vessels in the capsule. However, small vascular malformations that probably had been destroyed during subclinical haemorrhage might have been a source of fibroblasts and contributed to the capsule formation.

The clinical and radiological features of this peculiar haematoma are similar to those of cavernous angiomas, and the most frequent initial symptoms associated with both entities are seizures, headache and progressive neurological deficits.^{2,7,8,13-15,19} A MRI appearance of a core of mixed signal intensities with a surrounding low-intensity rim is considered characteristic of cavernous angiomas.²⁰ However, these findings indicating various stages of an organized clot were observed in our patient with this type of haematoma with repetitive bleeding from the neovascularized capsule.

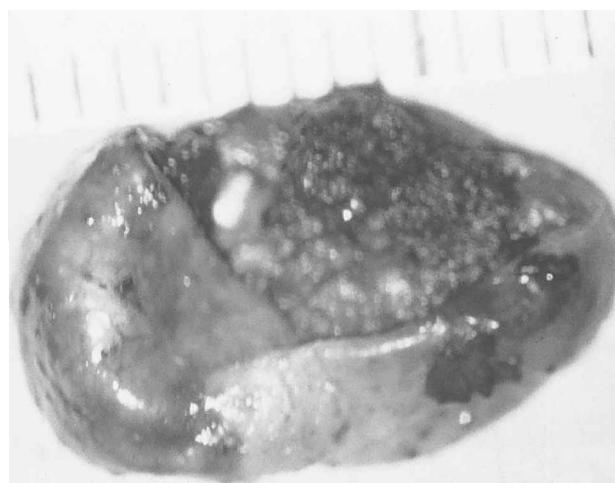


FIG. 3. Surgical specimen demonstrating the thick elastic capsule containing an old calcified clot.

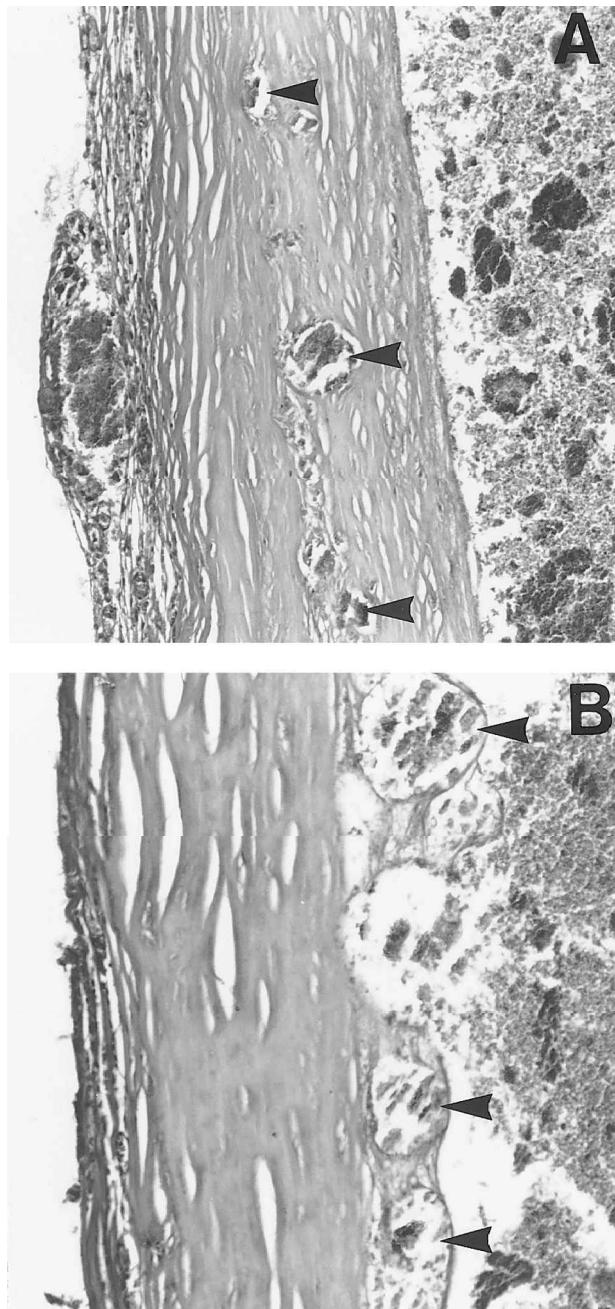


FIG. 4. Photomicrograph of the dense collagenous haematoma capsule (EVG staining). Thin-walled dilated capillaries (arrowheads) can be seen in the capsule (A), and inner fibrotic granulation layer (B). Haemosiderin-laden macrophages, suggestive of repetitive bleeding, can be seen in these perivascular areas. (Magnification $\times 60$).

In conclusion, accurate preoperative diagnosis of this type of haematoma is difficult. When a thick elastic capsule is encountered during surgery, this haematoma entity should be considered and a search for a bleeding source should be carried out. Total removal of the haematoma with the capsule is the only recommended method of treatment.

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