Chronic Encapsulated Intracerebral Hematoma

Hematoma Intracerebral Crônico Encapsulado

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ABSTRACT
Chronic intracerebral encapsulated hematomas (CEIH) correspond to a very rare neurosurgical pathology. To date, there are about 57 cases described worldwide, especially in Japan, where the disease is more prevalent. To data, until the moment we wrote this report, according to a review on the Pubmed website, there was no case described in South America. It is a condition of difficult preoperative diagnosis because its form of presentation is very similar to brain neoplasms. Only about 20% of cases are diagnosed during pre-operative period.

Keywords: Chronic encapsulated intracerebral hematoma; Cerebral neoplasms, Tumor-like brain lesion

RESUMO
Os hematomas encapsulados intracerebrais crônicos (CEIH) correspondem a uma patologia neurocirúrgica bastante rara. Até a presente data existe cerca de 57 casos descritos em todo o mundo, especialmente no Japão, onde a doença é mais prevalente. Para registro, até o momento em que escrevemos este relato, segundo a revisão levantada no site da Pubmed, não existe nenhum caso descrito na América do Sul. Trata-se de uma condição de difícil diagnóstico pré-operatório, pois sua forma de apresentação assemelha-se bastante com as neoplasias cerebrais. Somente cerca de 20% dos casos são diagnosticados no pré-operatório.

Palavras-Chave: Hematomas intracerebrais crônicos encapsulados; Neoplasias cerebrais; Lesões tumor-like
CASE PRESENTATION

Male patient, 22 years old, born in the city of Urucará, state of Amazonas. According to the anamnesis – collected from the mother and partner, he was born by normal delivery with uneventful pregnancy, therefore born at term. According to the mother, he presented a good neuropsychomotor development without any data that drew attention to a possible abnormality. He performed well at school.

He had no previous pathologies. About 3 years ago, he presented head trauma after physical aggression. After this episode, he developed seizures with a tonic-clonic pattern. He was attended to in his hometown and the medication Phenobarbital 200mg / day was started. Initially, he presented a good response with adequate control of seizures.

After this accident, he started to present headache with tension pattern, frontal-occipital headache, under weight, lasted less than 4h with good response to analgesics.

Mother says that over the years these pain symptoms have worsened. Becoming disabling, and about two months ago, he presented drowsiness and disorientation with occasional nausea episodes. At this moment, he was sent to the capital of the State of Amazonas for specialized evaluation.

He entered the emergency room with support for neurosurgery. He was admitted to the emergency room of the Hospital with Glasgow coma scale of 13, with severe headache, visual alteration (referring partial loss of visual field). He was initially taken for a brain tomography that showed an expansive lesion located in the topography of the temporal lobe D, circular in shape with well-defined edges. The image was contrasted and maintained a pattern very suggestive of a neoplasm with a glial pattern.

After the brain Magnetic Resonance imaging showed the same pattern with elliptical, temporal D image with contrast enhancement in the capsular region and a cleavage plane between the lesion and brain tissue (Figures 1-4).

Due to the urgency required by the staff, he was transferred on an emergency basis to the Hospital Universitário Getúlio Vargas for surgical treatment.

The initial diagnosis of this patient was a neoplasm of glial origin. We believed that we were treating a brain tumor, so a wide right fronto-temporo-parietal craniotomy was planned. After that, a corticectomy was performed in the right superior temporal gyrus.

Figure 1. A, B. Pre-operative CT. Coronal view.
To our surprise, it was a liquid, bloody collection, permeated by some small clots, which were well organized in a yellowish capsule. After drainage, the cerebral cortex collapsed, requiring its internal filling (inside the capsule) with physiological solution. Gelfoam was also used to help not to pull the vein bridges. During the surgery, material from the capsule was collected and it was chosen not to remove its most posterior portion as it was adhered to the Middle Cerebral Artery.

The patient was extubated in the immediate postoperative period and evolved with complete recuperation of the level of consciousness on the same day (Figures 5-7).

After 2 days, he was discharged asymptomatic.

**BACKGROUND**

Chronic encapsulated intracerebral hematoma (CEIH) is a rare condition. About 60 cases have been described worldwide\(^1\). It was first described in 1981 by Hirsch et al in Pennsylvania in the United States\(^2\).

It is a slow-growing lesion, with a mass effect, which resembles a neoplasm of the central nervous system. This pattern of behavior makes it a nosological entity with difficult preoperative diagnosis, so that only about 20% of cases are diagnosed prior to surgery\(^3\).

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**Figure 2.** Pre-operative CT. Sagittal view.

**Figure 3.** A, B. Pre-operative CT. Axial view.
Case Report

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Figure 4. Pre-operative CT. A. T1, sagittal view. B. Flair, axial view. C. T2, axial view. D. T2, coronal view.

Figure 5. A, B. Post-operative CT (Day 1).
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**Figure 6.** A. Pre-operative image. B. Post-operative image.

**Figure 7.** A. Intra-capsular content (blood). B. Hematoma capsule after hematoma drainage.
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Such pathology presents slow growth which allows the formation of a fibrous capsule, rich in fibroblasts that end up isolating the hemorrhagic content and preventing its absorption. Such a capsule is quite similar to that seen in chronic subdural hematomas, both from a macroscopic and histological point of view.

Of all reported cases, it is clear that it is an entity that is found in all age groups. Cases have been described in individuals aged 2 years and 80 years. Men are more affected (37 men, 20 women). The mean age of diagnosis is 44 years. There is a small difference in the presentation of these cases. Subdural hematomas have a more acute presentation, with neurological deficits of more evident onset. Chronic encapsulated intracerebral hematomas (CEIH) have a slower pattern. It is characterized by a more incipient evolution of intracranial hypertension syndrome. About 30% of patients starts the picture with a seizure crisis.

About 80% of CEIH cases are diagnosed as a neoplasm, the main ones being glioblastoma and metastasis. This is due to the fact that this type of lesion presents with perilesional edema and the appearance of a progressive neurological deficit. This is not common in vascular cases. It is widely observed in neoplasms.

CEIH cases are related to arteriovenous malformations (AVM), micro-aneurysms, cavernomas and venous angiomas.

CT images of CEIH always show quasi-circular or elliptical cystic lesions. Most of the cysts are of uniform low density. Cysts can vary depending on different manifestations and different periods of bleeding, and can be of high or mixed density. On enhanced CT, granulation tissue with rich neovascularization can be observed as a ring enhancement pattern that is similar to that of brain abscesses. Thus, CEIH is easily misdiagnosed as glioma tumor, stroke or brain abscess. A small proportion of capsular hematomas can be multi-lobed and few cases showed visible calcification.

Regarding the images generated by MRI, we observed the bright signal capsule, as it is formed by chronic or subacute bleeding. Therefore, it presents bright signal as in T1 as in T2. T2 shows that more clearly as a black “ring sign” which is specific for CEIH. This data is extremely important, since when we encounter an intense T2 signal on MRI and a hemosiderin halo, we must strongly consider the hypothesis of CEIH.

Hemorrhage in cases of CEIH occurs slowly and progressively. Thus, the initial symptoms hardly attract the patient’s attention. They are usually mild symptoms that do not make the subjects to seek for medical help. Therefore, as the blood capillaries bleed, the hematoma volume and mass effect increase. At this moment, when they have undoubted symptoms of intracranial hypertension syndrome, that patients seek medical help.

It is not yet clear why this hematoma is not absorbed. It is believed to be a continuous and repeated bleeding, associated with a continuous inflammatory process. The capsule is characterized by processes of gliosis and neovascularization. In the outer portion of these capsules, the presence of abnormal vessels and capillaries is observed.

Currently, the most accepted theories are that VEGF is the route of formation of the capsule.

REFERENCES


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