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Post-traumatic arachnoid cyst without neurological sequels. A case report

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Keywords
encephalocele, tomography, X-Ray computed, craniocerebral trauma, diagnostic imaging

Abstract

An eight-year-old male patient was admitted to the hospital with a history of left median paramedian frontal craniectomy due to car trauma at six months of age. Axial computed tomography of the skull with reconstruction in three dimensions revealed an arachnoid cyst with slight herniation of the brain in the frontal lobe, leading to protrusion against the skullcap, causing dilation of the ex-vacuum of the anterior extension of the homolateral lateral ventricle. He presented asymmetrical lateral ventricles, a reduced base cistern, and a slightly ectatic IV centred ventricle. After the physical examination, no neurological deficit was found, despite the changes identified in the images. It is believed that such conditions may progressively worsen with the development and maturation of nervous tissue over the age of the assessed child. To confirm this, specialized monitoring is of fundamental importance.

Introduction

The arachnoid cyst is a meningeal expansion, in the form of a bag, filled with liquid with characteristics identical to the liquor, and it can develop in any place where there is an arachnoid. They are congenital and are formed due to valve defects in the arachnoid membranes that facilitate the passage of the cerebrospinal fluid into the cyst and, in the same way, hinder the exit(1). Although many may constitute incidental findings, others cause symptoms due to compression of the brain parenchyma or increased intracranial pressure (2). Due to the complexity and rarity of the case, as it is a post-traumatic arachnoid cyst of the skull in the frontal lobe region in a young patient, aged eight, without any apparent neurological impairment, it was considered relevant for the scientific literature describing this case.

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CASE REPORT

Male patient, eight years old, enters the surgical center with a history of left median paramedian frontal craniectomy due to car trauma at 6 months of age. A computed tomography scan of the skull was performed with 3D reconstruction, showing an arachnoid cyst in the frontal lobe protruding into the skull cap determining dilation of the ex-vacuum of the anterior extension of the homolateral lateral ventricle. It also has asymmetrical lateral ventricles, a reduced base cistern and a slightly ectatic centralized ventricle (Figures 1,2 and 3). On physical examination, the patient did not show a neurological deficit.

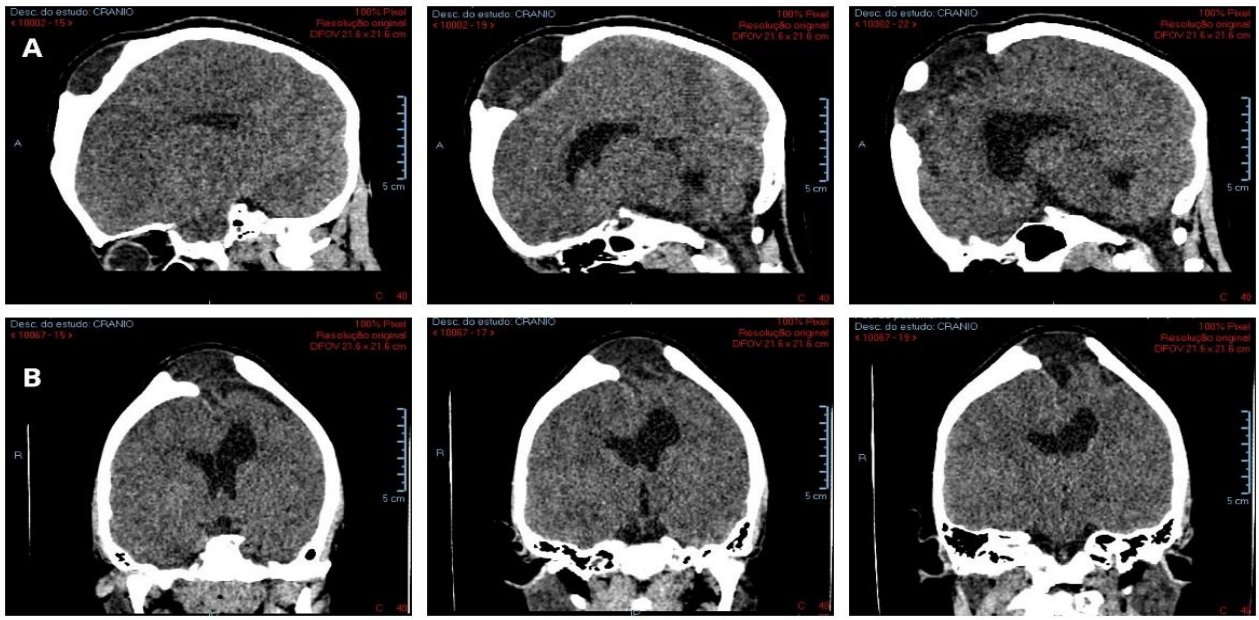

Figure 1: Sagittal (A) and coronal (B) skull computed tomography showing an arachnoid cyst in the frontal lobe protruding into the skullcap, reduced volume cistern and slightly ectasied centered ventricle.

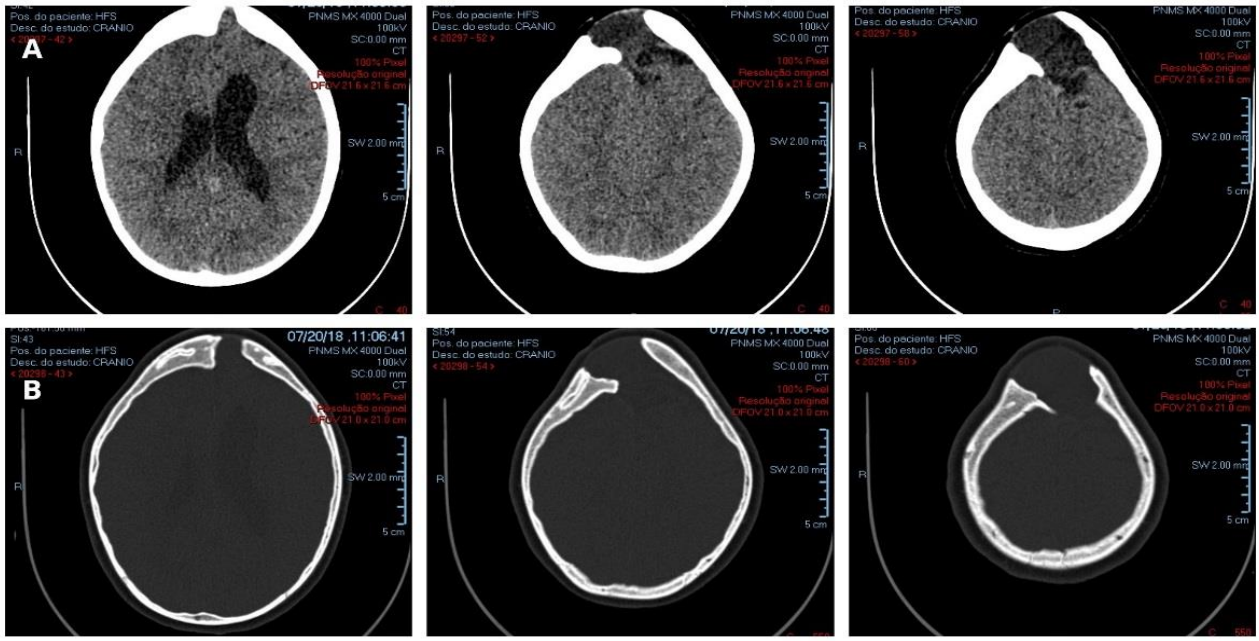

Figure 2: Sequence A of computed tomography of the skull, axial section showing an arachnoid cyst in the frontal lobe protruding

in the skullcap. Sequence B of computed tomography shows dilation of the ex-vacuum of the anterior extension of the homolateral lateral ventricle. Asymmetric lateral ventricles are observed.

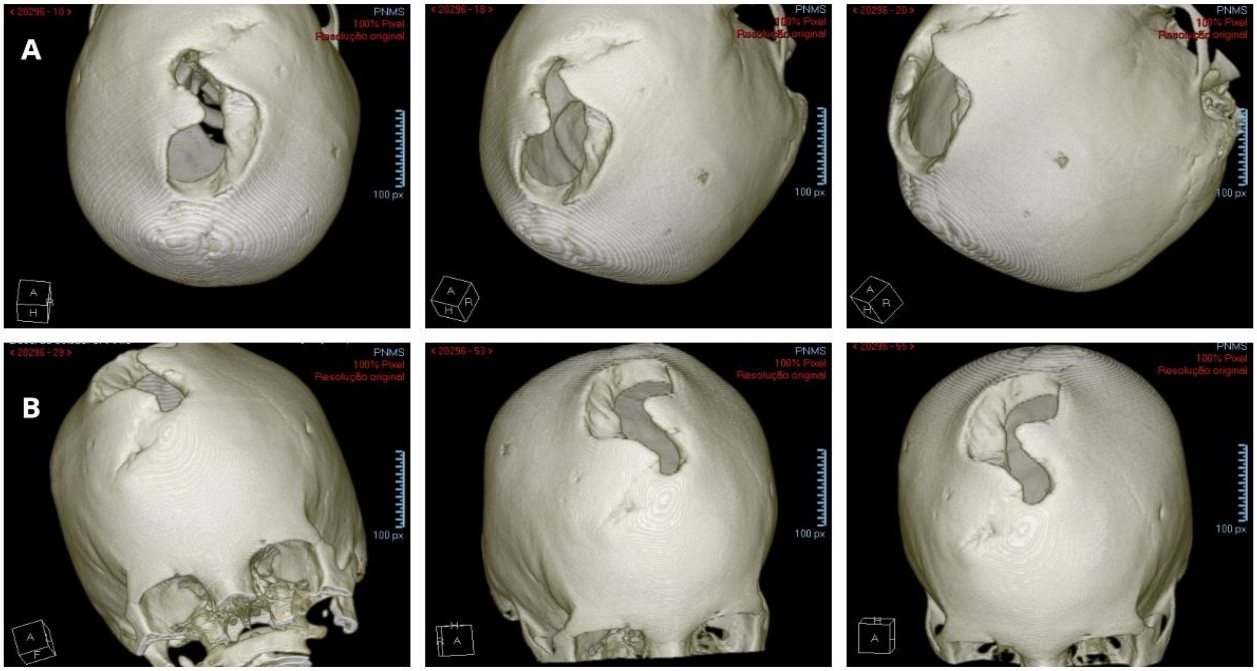

Figure 3: Sequences A and B are computed tomography scans of the skull with 3D reconstruction showing the absence of bone fusion of the anterior fontanelle.

Discussion

Intracranial cysts represent 1% of lesions with a mass effect. Most have a congenital origin and an intra-arachnoid situation, presenting or not communicating with the subarachnoid space (1,2-6). The arachnoid cyst is a meningeal expansion, in the form of a bag, filled with fluid with characteristics identical to cerebrospinal fluid or CSF, and maybe develop in any location where arachnoid exists. Most have a congenital origin and an intra-arachnoid situation, with or without communication with the subarachnoid space (1,2-6).

The development of the cyst can occur due to a primary malformation of the arachnoid, as a consequence of a duplication of the membrane, at an early stage of embryogenesis, however, some cysts originate from the rupture or fragility of the arachnoid membrane in the presence of trauma, tumor or infection (1). Arachnoid cysts occur more frequently in children and young adults, most of them under the age of 20 years (3,5,6), the reasons for this fact are still not well understood. There is no direct relationship between the volume of the cyst and the clinical findings. Large cysts may be accompanied by moderate symptoms and this may occur due to their location and the brain's adaptability. Among the most frequent clinical manifestations are macrocephaly, headache, focal signs and seizures.

Conclusions

The therapeutic strategies currently used are essentially surgical, depending on the symptoms, however, as the patient did not present clinical symptoms, the literature has reported the indication for performing craniotomy with membranectomy (1,5,6) or drainage utilizing cystoperitoneal shunt (7-9).

References

1. Grollmus JM,, Wilson CB, Newton TH. Paramesencephalic arachnoid cysts. Neurology 1976;26:128-134.
2. Koga H, Mukawaa J, Miyagi K, Kinjo T, Okuyama K. Symptomatic intraventricular arachnoid cysts in an elderly man. Acta Neurochir (Wien) 1995;137:113-117.
3. Galassi E, Tognetti F, Gaist G, Fagioli L, Frank F, Frank G. CT scan and metrizamide CT cisternography in arachnoid

cysts of the middle cranial fossa:classification and pathophysiological aspects. Neurology 1982;7:363-369.
4. Handa J, Okamoto K, Sato M. Arachnoid cyst of the middle cranial fossa: report of bilateral cysts in siblings. Surg Neurol 1981;16:127-130.
5. Hayashi T, Anegawa S, Honda E, et al.. Clinical analysis of arachnoid cysts in the middle fossa. Neurochirurgia 1979;22:127-130.
6. Jallo GI, Woo HH, Meshkii CH, Epstein FJ, Wisoff JH. Arachnoid cysts of the cerebellopontine angle: diagnosis and surgery. Neurosurgery 1997;40:31-38.
7. Schroeder HHWS, Gaab MR. Endoscopic observation of a slit-valve mechanism in a suprasellar prepontine arachnoid cyst: case report. Neurosurgery 1997;40:198-200.
8. Arai H, Sato K, Wachi A, Okuda O, Takeda N. Arachnoid cysts of the middle cranial fossa: experience with 77 patients who were treated with cystoperitoneal shunting. Neurosurgery 1996;39:1108-1113. [Links]
9. Borges G, Fernandes YB, Gallani NR. Hemorragia do tronco cerebral após remoção cirúrgica de cisto aracnóide da fissura silviana. Arq Neuropsiquiatr 1995;53:825-830