

## **INTRACRANIAL DURAL FISTULA: CASE REPORT**

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*Erick Broder Bichara*

*Victor Arthur Araujo*

*Daniel Abreu Santos*

*Trajano Aguiar Pires Gonçalves*

*Caio César Molina Silva*

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**Introduction:** Intracranial dural fistulas are defined as pathological anastomoses that end up connecting meningeal arteries with dural venous sinuses and/or subarachnoid veins. They are, quite frequently, secondary to dural venous sinus thrombosis after neurosurgical procedures and infections, causing blood congestion and consequent local hypertension, which, over time, generate vessel dilatation and subsequent formation of the anastomoses. Case Report: A patient admitted with headache for 1 week, progressive, weighty, holocranial, associated with bilateral pulsatile tinnitus, without changes suggestive of ICH. He progressed to a generalized tonic-clonic seizure with sphincter release followed by loss of consciousness in July/2021, and was taken to the hospital. He required OTI and was diagnosed with ASH in the frontal region, right temporal region, and near the right Sylvian fissure by CT and Angio-CT, and failure to fill the sagittal venous sinus after contrast administration. He denied any underlying diseases or medication use. Laboratory tests showed a negative thrombophilin test. Referred to the ICU with no return of consciousness levels. A CT scan of the skull was redone one week later, revealing resolution of the supratentorial SAH to the right. Arteriography was indicated to search for an aneurysm, however, due to lack of clinical control, the patient was not submitted. Patient improved and was discharged, with a recommendation for outpatient arteriography due to idiopathic SAH. At the outpatient clinic, a hematologist diagnosed thrombosis and indicated anticoagulant therapy with Dabigatran 150mg, 2x a day for 1 month. After treatment, partial recanalization of the superior sagittal sinus was presented by venous and arterial CTA. Evidence of thrombosis resolution with improvement of headache, but with tinnitus maintenance. The differential diagnosis was cerebral venous

thrombosis or intracranial dural fistula. A new arteriography revealed the presence of dural arteriovenous fistula in the torcula and left transverse/sigmoid venous sinus, Cognard grade 1, with absence of venous reflux; coupled with partial venous thrombosis of the superior sagittal sinus and left transverse/sigmoid sinus. Discussion: Intracranial dural fistulas represent 15% of intracranial vascular malformations, occurring frequently in patients between 50 and 60 years of age. Usually acquired, they may present in a silent or diverse symptomatic manner, ranging from less aggressive manifestations, such as headache and tinnitus, to more aggressive ones, such as progressive cognitive decline, determined by both the venous drainage pattern and the location of the fistula. These fistulas can occur in any portion of the intracranial dura, mainly the cavernous sinus, the transverse sigmoid sinus, and the cerebral tent. The main ways of classifying fistulas are according to Djindjian (1978), Cognard (1995) and Borden (1995). Cognard's classification is a modification of the Djindjian classification, based on the angioarchitecture of the venous flow. These are divided into type I and IIa (benign) and IIb, IIa + b, III, IV and V (malignant). The benign ones drain directly into the venous sinuses, while the malignant ones have direct or indirect reflux into the cortical veins, causing hemorrhages and neurological deficits. CT, Angio-CT and MRI are the first-line diagnostic tools. Non-contrast CT and CTA can show intracerebral hemorrhage, hydrocephalus, cerebral edema related to venous congestion, or enlarged cortical veins. Non-contrast MRI may highlight dilated vessels, venous engorgement, white matter signal changes on T2-weighted sequences, suggestive of venous congestion, and possible infarcts. However, digital subtraction angiography has established itself as the gold standard to detect, evaluate and

follow up on a suspected intracranial dural fistula. In this case, the established relationship between dural fistula with thrombosis and the possibility of hemorrhagic transformation therefrom obscures the cause- consequence relationship. Therefore, depending on the Cognard grade, different approaches will be defined.

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