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Case Report

CIENT PERIODIQUE

Bilateral Carotid-Cavernous Fistula: Indirect Signs to the Magnetic Resonance Study of the Orbits without the Use of Paramagnetic Contrast

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Abstract

Background

Bilateral cavernous carotid fistulas are rare, it is an abnormal vascular shunt from the carotid artery to the cavernous sinus.

Case Presentation

We report a case of a 55-years-old woman, who developed Barrow's type D carotid-cavernous fistula.

Conclusion

Magnetic resonance imaging is of great importance for the diagnosis.

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Background

Carotid-cavernous fistulas are characterized by abnormal connections between the carotid circulation and the cavernous sinus. The clinical picture is very wide, ranging from pulsatile exophthalmos to intracranial bleeding. Fistulas can be classified as direct or indirect, both being different conditions with different etiologies. The study aims to show a case where it was possible to suspect the carotid-cavernous fistula with indirect signs on magnetic resonance, with subsequent confirmation by angiographic study.

Case Report

A female patient, 55 years old, about 30 years ago, started strabismus associated with diplopia and bilateral exophthalmos. Submitted to a magnetic resonance imaging of the orbits and skull that showed indirect signs of bilateral carotid-cavernous fistula, then being referred for cerebral angiography, which confirmed Barrow's type D carotid-cavernous fistula.

Figure 1: *Sequence Stir coronal revelando flow-void e ingurgutamento da veia oftálmica superior.*

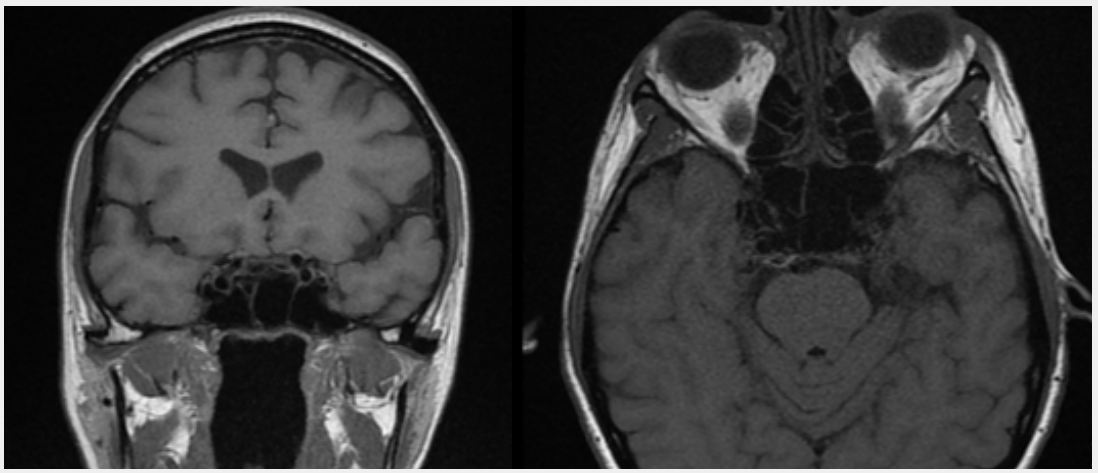

Figure 2: *T1 sequence without use of prominent local flow-void paramagnetic contrast*

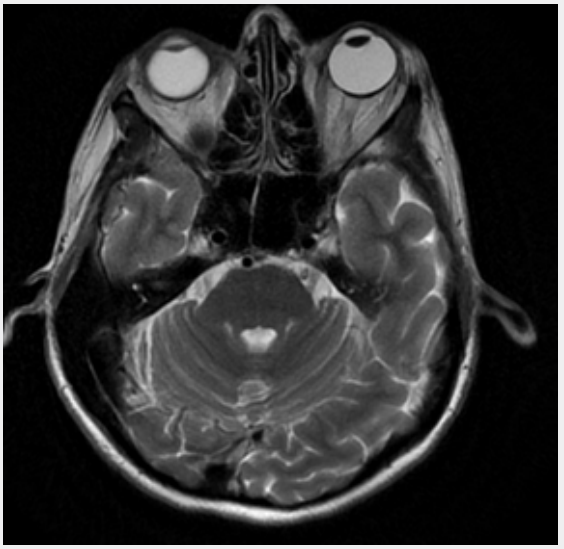

Figure 3: *Bilateral periorbital edema*

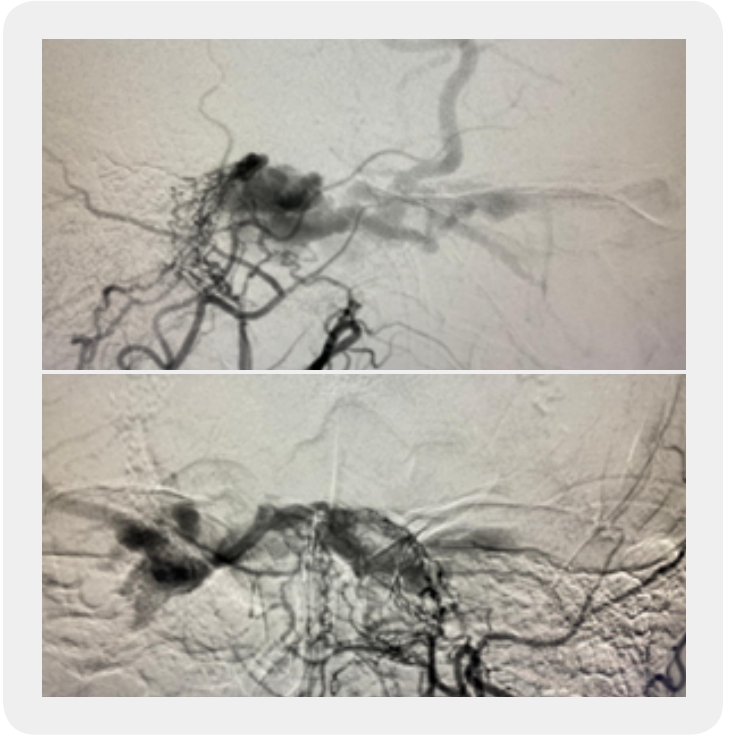

Figure 4: *Angiography demonstrating type D carveid carotid fistula with nutrition mainly derived from the left carotid*

Discussion

Carotid-cavernous fistulas are characterized by abnormal connections between the carotid circulation and venous drainage, more specifically the cavernous sinus. Among the findings of the clinical picture, pulsatile proptosis, progressive visual loss, subarachnoid hemorrhage, intracerebral hemorrhage, and involvement of several pairs of cranial nerves (III, IV, V, and VI) are observed. The radiological findings on magnetic resonance imaging that made it possible to suspect the condition was engorgement and enlargement of the left cavernous sinus with prominent flow-void at the site, associated with dilation of the upper ophthalmic vein, proptosis of the bilateral eyeball, and edema of the left periorbital fat. Other radiological findings reported in the literature are anomalous contrast enhancement and asymmetric enhancement of the cavernous sinus and dehiscent carotid artery. There are several classifications for the pathology, however the most important is related to flow intensity, vascular anatomy, and Barrow's angiographic classification. Regarding vascular anatomy, they are divided into direct and indirect. In the first, communication between the internal carotid artery and the cavernous sinus occurs directly, while in the indirect fistula, there is communication through branches of the carotid circulation. There is also the Barrow angiographic classification characterized in: A: a connection between the intracavernous internal carotid artery and the cavernous sinus; B dural shunt between intracavernous branches of the internal carotid and cavernous sinus; C: dural shunts between meningeal branches of the external carotid artery and cavernous sinus; D: mixed with components B and C. The therapeutic approach is varied and there may be conservative management [1-4].

Conclusions

Although the angiographic study is essential in confirming the diagnosis and therapeutic planning, analysis by magnetic resonance imaging is extremely important, as several radiological findings allow the clinical suspicion of carotid-cavernous fistula.

Acknowledgements

None.

Authors' Contributions

CV and AJ designed the study, acquired and interpreted the data, and have to be personally accountable for the accuracy and integrity of the entire work. NA, PC, JR, CM and JM provided clinical care to the patient, performed literature searches, interpreted the data, and drafted the manuscript. LG collected, analyzed, interpreted the data, study design and conception. All authors reviewed and revised the manuscript and approved the final manuscript.

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Availability of Data and Materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Ethics Approval and Consent to Participate

The patient was consented for participation in the study.

Consent for Publication

The patient is aware of this case report submission and has provided written consent for this publication.

Competing Interests

The authors report no competing interests

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