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ENDOCRINE IMAGING

Into the void: a giant aneurysm mimicking a macroprolactinoma

Elisa Baranski Lamback[1] · **Hugo Rodrigues Gouveia**[2] · **Daniel Alves Bulzico**[1,3]

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A previously well menopaused 51-year-old female presented with a 6-months history of headache, galactorrhea and peripheral vision loss. During investigation, mild hyperprolactinemia was found and a 1.7 cm × 1.4 cm × 1.3 cm intrasellar lesion, with heterogenous signal in T1W and hypointense in T2W, with suprasselar extension abutting the optic chiasm was detected on magnetic resonance imaging (MRI) (Fig. 1a, b). After an initial diagnosis of a macroprolactinoma, the patient was started on cabergoline therapy. Four months later, low levels of basal cortisol and FSH lead to the diagnosis of panhypopituitarism. Due to the emergence of fatigue, weight loss and nausea, a new MRI was performed revealing a suprasellar lesion, of approximately 2.5 cm × 1.9 cm × 1.6 cm, with a flow void phenomenon in T1W and T2W sequences (Fig. 1c, d). Therefore, because of the mass location and the flow void phenomenon, a giant circle of Willis aneurysm was suspected. A computed tomography (CT) angiogram revealed a saccular aneurysm of the internal carotid artery (IC), with sellar extension (Fig. 1e, f). Then an arteriography showed mirror aneurysms of the carotid siphon: a giant saccular aneurysm of 3 cm on the right and 0.4 cm on the left-side (Fig. 1g, h). Glucocorticoid coverage led to clinical improvement. An endovascular flow diverter was opted as the best treatment option.

The present case reports the association of bilateral IC aneurysms (ICA) and hypopituitarism. When projected into the sellar region, aneurysms can be commonly mistaken for pituitary adenomas and have been reported in 1–2% of cases [1, 2]. They may potentially have catastrophic outcomes if a proper diagnosis is not established. In our case, the patient was initially misdiagnosed with a prolactinoma, commonly seen in other cases. The giant aneurysm probably expanded, as suggested by the comparison of the two MRI and by the emergence of panhypopituitarism.

ICA is a well-known radiological differential diagnosis for an apparent intrasellar tumor with lateral or suprasellar extension; bilateral aneurysms are, however, exceptional [3]. However, the real frequency of mirror aneurysms is unknown; estimates range from less than 5–40% [4]. Eleven to twenty percent of ICA are bilateral and only 15% of cases with intrasselar extension are giant [2]. Among risk factors for multiple ICA, the patient presented only the postmenopausal state.

Taking into account cases of non-iatrogenic and unruptured intrasellar aneurysms, causing hypopituitarism, and excluding cases with a concomitant adenoma, as they can interestingly infiltrate the arterial wall leading to its fragility and the formation of an aneurysm, less than 40 cases have been reported to date. Symptoms of both mass effect generated purely from these aneurysms or endocrinopathies usually arise 6 months prior to diagnosis. Pituitary function usually remains unchanged postoperatively [1]. There is a female preponderance. When men are affected, symptoms usually emerge earlier.

The pathogenesis of endocrine dysfunction in patients with an intrasellar aneurysm has not been fully elucidated.

✉ Elisa Baranski Lamback
elisalamback@gmail.com

[1] Endocrinology Section, Federal Hospital of Lagoa, Rio de Janeiro, Brazil

[2] Department of Interventional Radiology, Brazilian National Institute of Cancer, Rio de Janeiro, Brazil

[3] Endocrine Oncology Unit, Brazilian National Institute of Cancer – INCA, Rio de Janeiro, Brazil

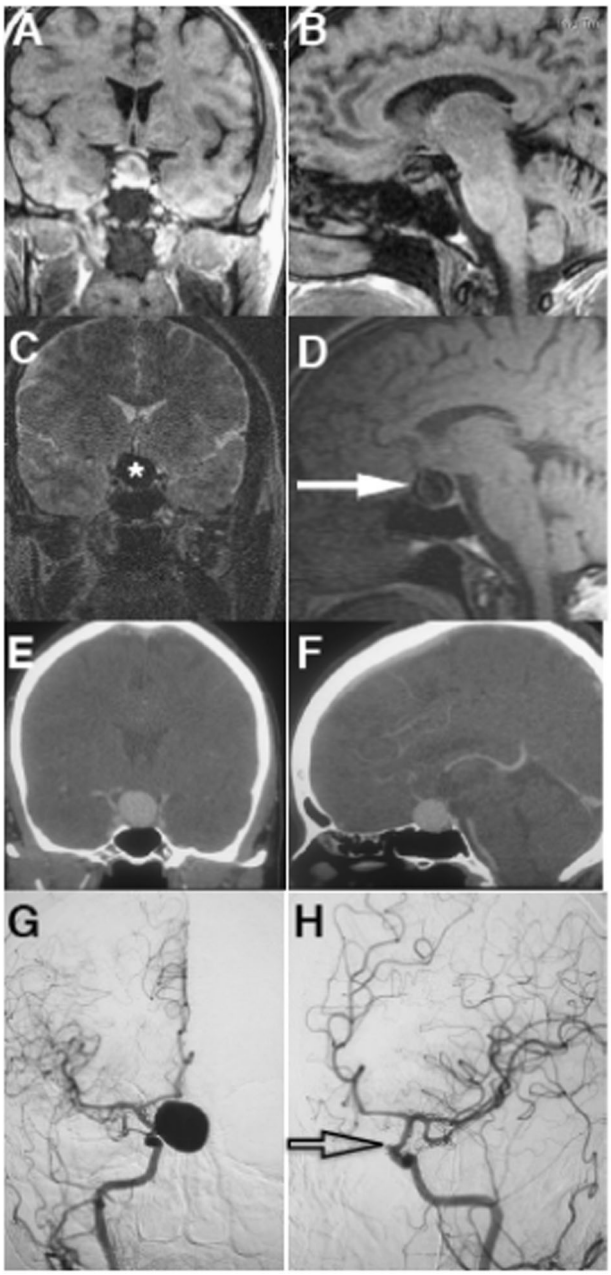

Fig. 1 51-year-old female with a giant internal carotid aneurysm. Coronal (**a**) and sagittal (**b**) T1W MRI images demonstrate a heterogeneous round sellar lesion which measures approximately 1.7 cm × 1.4 cm × 1.3 cm. Coronal T2W (**c**) and sagittal T1W (**d**) MRI images demonstrate the black signal lesion and its contact with the right internal carotid artery (**c**: asterisk; **d**: white arrow). Post-contrast coronal **e** and sagittal **f** CT images demonstrate a saccular aneurysm which measures approximately 1.8 cm × 1.8 cm × 2.0 cm, with a neck width of 0.7 cm, arising from the medial-posterior aspect of the right supraclinoid segment of the internal carotid artery, with intra-sellar and supra-sellar extension. **g** Right side selective internal carotid artery angiogram with digital subtraction AP demonstrating a giant saccular aneurysm above the ophthalmic artery emergence measuring approximately 3 cm. **h** Left side selective internal carotid artery angiogram with digital subtraction oblique view depict a small mirror saccular aneurysm of approximately 0.4 cm (black arrow)

Usually a combination of two mechanisms is present: an expanding mass near the sella turcica can cause destruction of pituitary tissue and interference with the delivery of releasing and inhibiting factors to the pituitary [5]. Massive pituitary destruction seems unlikely because most patients have hyperprolactinemia [1].

Little is known about the natural course of these aneurysms. Interestingly, most patients stay asymptomatic. Rupture of the aneurysm accounts for fewer than 15% of cases [2]. In some cases, these aneurysm thrombose or form a cavernous-carotid fistula, which may delay the expansion of the aneurysm.

MRI is preferred to assess sellar structures. A lesion with flow effect, well-defined margins, and contiguous with a vessel suggests a vascular origin. Nevertheless, angiography remains the gold standard for studying aneurysms.

Compliance with ethical standards

Conflict of interest The authors declare that they have no competing interests.

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