Hemorrhagic adenoma mimicking anterior communicating artery aneurysm

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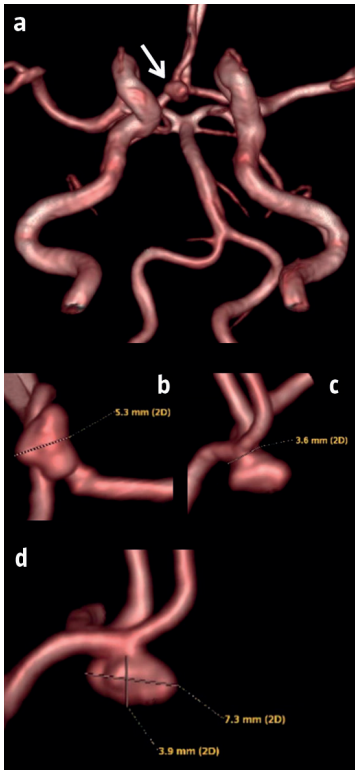

Figure 1. a) Magnetic resonance angiography showing an image suggestive of aneurysm in the anterior communicating artery complex (white arrow); b-d) Dimensions of the presumed aneurysm and its neck.

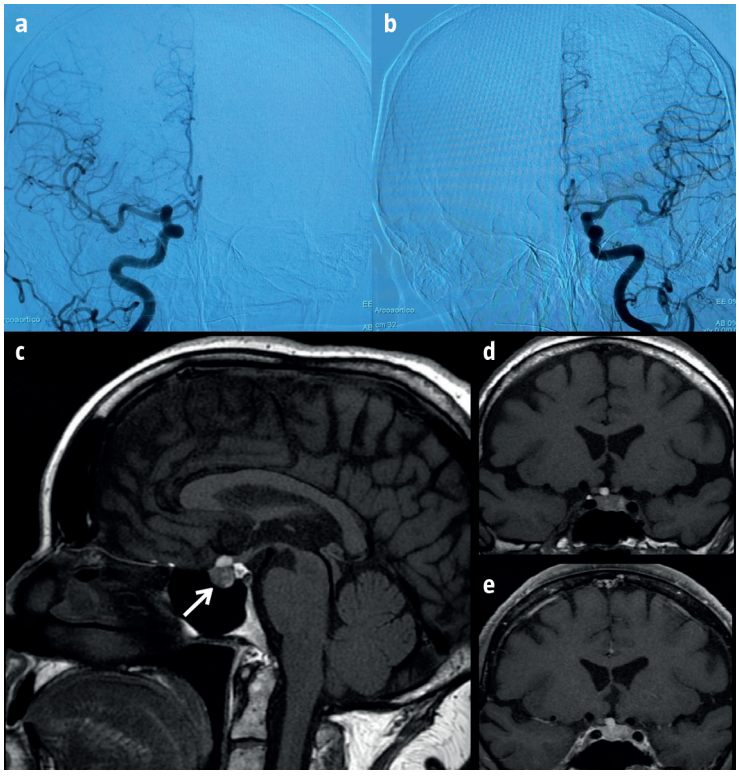

Figure 2. Digital Angiography subtraction. A and b) Posteroanterior projection showing no evidence of aneurysm. Thin-slice pituitary magnetic resonance imaging; c) Sagittal projection demonstrating a lesion (white arrow) with hypersignal on T_1-weighted image in the projection of the pituitary stalk adjacent to the A2 segments of the anterior cerebral arteries; d and e) Coronal projection before and after contrast enhancement showing hemorrhagic adenoma.

A patient in their 50s with no previous comorbidities and a significant family history of cerebral aneurysms in three first-degree relatives underwent magnetic resonance angiography, which revealed an image suggestive of an anterior communicating artery aneurysm (Fig. 1). A digital subtraction angiography was performed for therapeutic planning. The exam was conducted with 3D-studies of the carotid arteries to increase sensibility but did not show any evidence of an aneurysm (Fig. 2). A contrast-enhanced fine-cut magnetic resonance imaging of the sella turcica showed a hyperintense lesion on the T_1-weighted image in the adenohypophysis, consistent with hemorrhagic adenoma diagnosis (Fig. 2). A comprehensive hormonal screening was performed, and no alterations were found.

Differentiating between a pituitary adenoma and an aneurysm is vital, as these two have different management options. In contrast to most cases described in the literature, where internal carotid aneurysms mimic pituitary adenomas, our report presented a distinct pattern in which a hemorrhagic adenoma initially simulated an aneurysm in the anterior communicating artery complex [1-3]. Sellar

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Accepted:
23.05.24.

Conflict of interests:
None.

How to cite this article:
Araújo-de Sousa I, de Oliveira-Veras A, Marques-Pontes-Neto O, Pereira dos Santos-Neto E. Hemorrhagic adenoma mimicking anterior communicating artery aneurysm. Rev Neurol 2024; 78: 355-6. doi: 10.33588/rn.7812.2024018.

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magnetic resonance imaging is considered the imaging modality of choice for the evaluation of lesions in the sella turcica and can provide the size and shape of the adenomas, the presence of cysts or bleeding within the tumor, its relationship with the optic pathways and surrounding structures and differential diagnosis with other sellar lesions. Furthermore, a fluid-fluid level, a hypointense rim on T_2-weighted images, septation, and an off-midline location were more specific for pituitary adenomas [4].

Specifically, regarding the sellar lesions with high T_1 signal, the range of differential diagnosis is narrow and can be divided according to the substance causing the hyperintensity. Thus, clotting of blood can cause a high signal in hemorrhagic pituitary adenoma, like ours, pituitary apoplexy, and thrombosed aneurysm. Furthermore, cystic sellar lesions can be enhanced due to the high protein concentration, like Rathke cleft and pars intermedia cysts. The first has a closer relationship with the infundibulum and sometimes can mimic pituitary adenoma with suprasellar extension. The second usually has a posterior location and inferoposterior relationship to the anterior communicating artery [5]. Moreover, fat (e.g., dermoid cyst) and calcification (e.g., chondroid tumor) can cause high T_1 signal as well; and some tumors may have more than one source for its signal change (e.g., craniopharyngioma).

Thus, this atypical presentation highlights the diagnostic complexity associated with bright lesions on sellar T_1-weighted scans and emphasizes the importance of detailed and differential assessment to ensure accurate diagnoses and adequate clinical management.

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