

**Agnesis of the internal carotid artery: a rare anomaly**

Dear Editor,

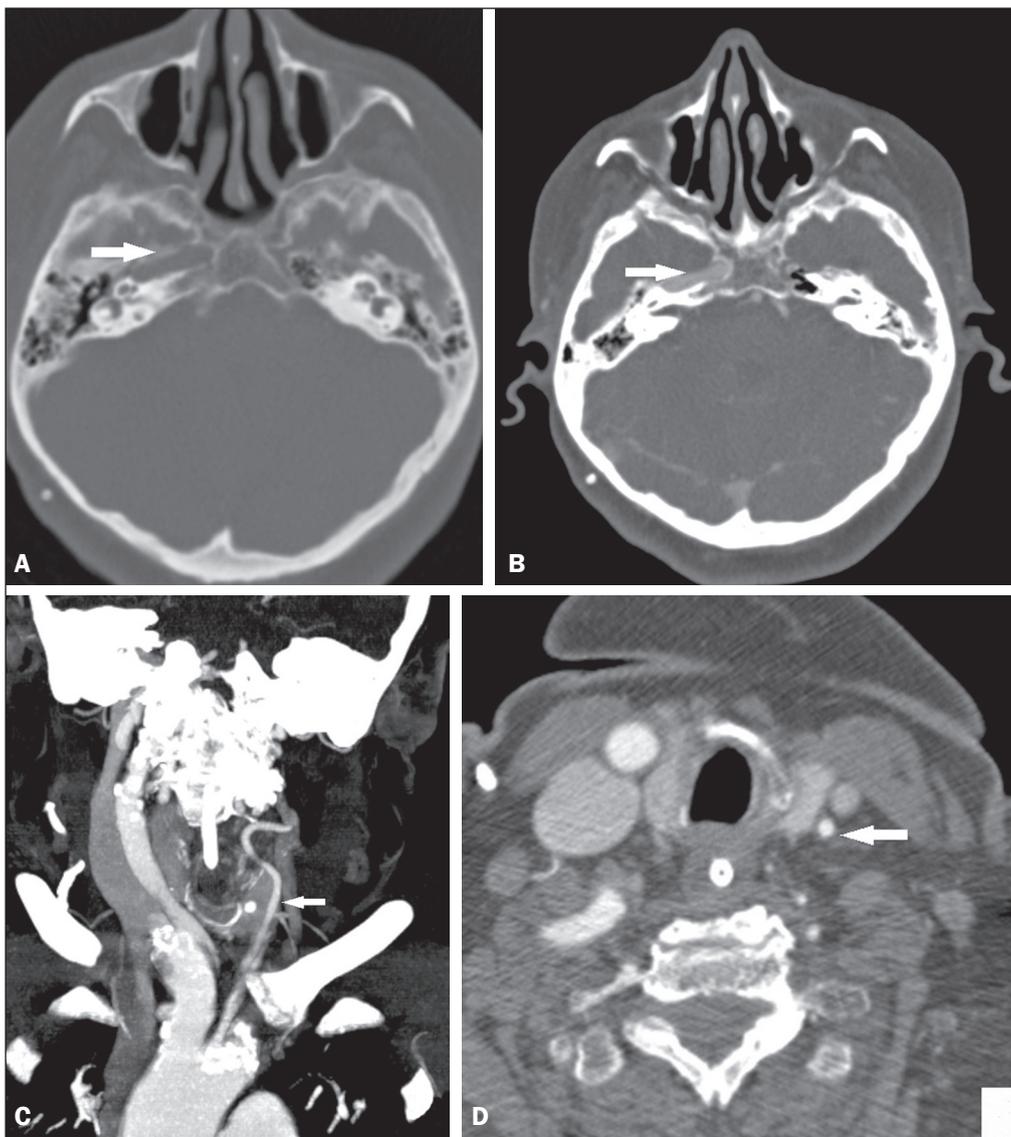
A 77-year-old female patient with a history of cerebral infarction episodes presented with dysphagia and dysarthria after a fall from standing height, without loss of consciousness, seven days prior. Computed tomography (CT) of the brain showed no acute ischemic infarction, although it did reveal areas of encephalomalacia, moderate microangiopathy, a reduction in brain volume, and dilation of the ventricular system. In addition, the right carotid canal was found to be absent (Figures 1A and 1B). Doppler ultrasound of the carotid arteries showed hypoplasia of the left common carotid artery and poor definition of its bifurcation. Arterial CT angiography of the head and neck showed agnesis of the left internal carotid artery (ICA), as well as ipsilateral absence of the carotid canal and hypoplasia of the common carotid artery (Figures 1C and 1D). The blood flow in the left cerebral hemisphere originated from the collateral circulation, through the anterior and left posterior communicating arteries.

ICA agnesis is a rare congenital anomaly, reported in less than 0.01% of the population. The spectrum of findings ranges from agnesis (complete absence of the ICA and carotid canal)

to aplasia (absence of parts of the ICA and of the carotid canal) and hypoplasia (narrowing of the ICA and carotid canal)<sup>(1-4)</sup>.

Most cases of unilateral agnesis are asymptomatic, because of the collateral circulation that develops during the fetal period. Three patterns of collateral circulation have been reported. The most common type, which is similar to the one found in the present case, is the fetal variant, in which the anterior cerebral artery on the affected side is supplied by the contralateral ICA via the anterior communicating artery, and the middle cerebral artery arises from the basilar artery through the posterior communicating artery. The second pattern is the adult variant, in which the anterior and the middle cerebral arteries are supplied by the basilar artery through the posterior communicating arteries. In the third pattern, which is the rarest, transcranial anastomoses develop from the external carotid system, either from the contralateral internal carotid artery or from primitive vessels<sup>(5,6)</sup>.

ICA agnesis is usually an incidental finding on head and neck imaging tests, such as Doppler ultrasound, CT, or magnetic resonance imaging. However, some patients present alterations, especially when there is progression of the atherosclerotic disease. The absence of the ICA is also associated with a high incidence of cerebral aneurysms, which is approximately



**Figure 1.** Axial CT scan of the brain (A,B) showing a normal right carotid canal (arrows) and absence of the left carotid canal. Coronal and axial CT angiography of the neck (C and D, respectively) showing hypoplasia of the left common carotid artery (arrows).

25–35% in individuals without an ICA, compared with 2–4% in the general population. Less commonly, it may be associated with delayed neuropsychomotor development and agenesis of the corpus callosum, especially in patients with bilateral carotid agenesis<sup>(7,8)</sup>. In addition, this anomaly has major implications for the planning and execution of endarterectomy and transphenoidal pituitary surgery. In the present case, the patient had no aneurysms or other associated malformations.

We conclude that ICA agenesis is rare and usually asymptomatic. However, careful examination of the vascular signal on magnetic resonance imaging and of carotid canals on CT, in search of stenoses (responsible for common neurological complaints), may lead to the detection of this condition, which, although asymptomatic, can be accompanied by other potentially serious diseases.

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Ruptured endometrioma: main imaging findings

Dear Editor,

A 28-year-old woman presented with a 12-h history of acute pelvic pain. Physical examination revealed signs of peritonitis, and laboratory tests showed mild anemia. The patient underwent transvaginal ultrasound (TVUS) of the pelvis (Figure 1A) and magnetic resonance imaging (MRI) of the pelvis (Figures 1B and 1C). She also underwent laparoscopy, which confirmed the presence of bilateral ovarian endometriosis, with a rupture on the right side (Figure 1D).

The presumptive diagnosis of endometriosis is based on a clinical history consistent with the diagnosis and abnormal

laboratory tests, including elevation of CA-125, a marker that, although nonspecific, is usually elevated in women with the disease<sup>(1)</sup>. Despite the important role of imaging examinations, notably TVUS and MRI of the pelvis in the diagnosis and staging of endometriosis, it should be noted that the gold standard for the definitive diagnosis is still laparoscopy<sup>(1,2)</sup>.

The ovaries are among the sites most commonly affected by endometriosis (in 20–40% of cases). Endometriomas are thick-walled cysts containing dark, thick degenerated blood products. In some cases, there can be a fluid-fluid level, representing bleeding of various chronologies, giving them the typical macroscopic appearance of “chocolate cysts”, which can be transposed to imaging exams<sup>(3)</sup>. They are bilateral in approximately 50% of cases<sup>(2,4)</sup>.

**Figure 1.** A: TVUS showing a cyst with irregular contours and hypoechoic content in the right ovary. B,C: MRI of the pelvis showing formations with high signal intensity in T1-weighted images (B) and low signal intensity in T2-weighted images (“shading” in C, arrow) in both ovaries, with irregular contours in the right ovary. Fluid content in the pelvic cavity with high signal intensity on the T1-weighted image (B), indicating hemoperitoneum. This set of findings is suggestive of bilateral endometriomas, with signs of rupture of the right endometrioma. D: Image obtained in laparoscopic access of the pelvic cavity showing active bleeding (arrow) in the right ovary and blood content collected in the pelvic recess (star), findings that correspond to those seen on TVUS and MRI.

