

Bilateral Anterior Cerebral Artery Stroke

Acidente Vascular Cerebral Isquémico Bilateral do Território da Artéria Cerebral Anterior

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We report the case of a 57-year-old HIV-positive male patient, with a history of drug abuse and currently on opioid replacement therapy. The patient was brought to the emergency department after being found unresponsive on the street. On physical examination, he was obtunded, failing to comply with complex orders and answering questions with isolated words, and his motor examination revealed a non-spastic tetraparesis with a bilateral extensor plantar reflex. After an unremarkable head and cervical computerized tomography (CT) scan and a CT angiogram without large vessel occlusion, he was admitted to the Neurology ward for further study, rapidly progressing to spastic tetraparesis, mutism and urinary incontinence. By this time, a magnetic resonance imaging (MRI) was conducted revealing a bilateral ischemic stroke of the anterior cerebral artery (ACA) territory (Fig. 1.A-C). Reviewing the initial CT angiogram images, a rare variant of the circle of Willis, called azygos anterior cerebral artery, could be seen, facilitating infarcts of the bilateral medial frontal lobe and corpus callosum (Fig. 2).

Infarctions from the ACA territory are rare, accounting for less than 3% of ischemic strokes.¹ As this artery is responsible for the blood supply to the midline portions of the frontal lobes and

superior medial parietal lobes, its occlusion typically affects the leg and foot areas of the motor and sensory cortical homunculus. Notwithstanding, less severe upper limb motor and sensory deficits can also be observed in some patients. Severe and persistent apathy has also been seen in patients with bilateral ACA strokes due to callosal and antero-medial frontal lobe damage. Other symptoms like urinary incontinence, alien hand sign, limb apraxia, transcortical motor aphasia, emotional lability, somnolence, agitation, motor perseveration, amnesia and parkinsonism, have been linked to ACA strokes less frequently.¹

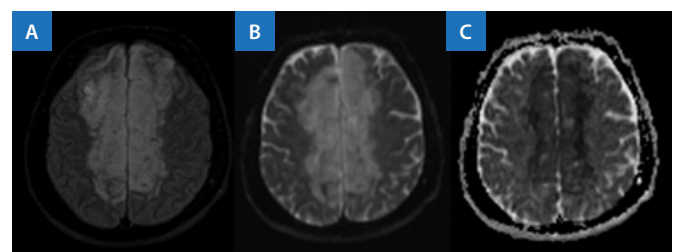


Figure 1. Brain MRI, axial views. Bilateral anterior cerebral artery stroke. T2*FLAIR hyperintense ischemic lesion (A). High signal on isotropic images (DWI, B) is confirmed by ADP maps (C) to represent abnormal restricted diffusion.

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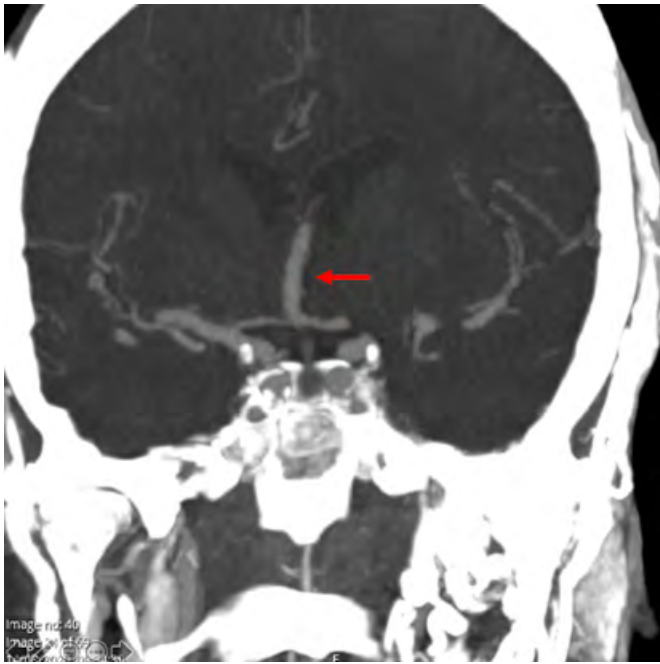


Figure 2. CT Angiogram, coronal view. Type 1 Azygos anterior cerebral artery (red arrow).

Considered an important predictor of bilateral frontal strokes, the azygos anterior cerebral artery is a variant of ACA.² Frequently found in primates, it is a rare finding in humans, with an estimated prevalence of 0.3%-2% according to post-mortem and angiography studies.² Different morphological variants of the Azygos-ACA have been described. The classical Azygos-ACA (known as type 1) is characterized by the existence of a single common trunk that irrigates both cerebral hemispheres by giving rise to all cortical branches without dividing itself into two distal anterior cerebral arteries.³ This vessel morphology can be observed in our patient's CT angiogram (Fig. 2).

Apart from the higher probability of bilateral strokes, little clinical significance has been attributed to azygos-ACA. However, according to anecdotal reports, this variant might be associated with agenesis of the corpus callosum and development of aneurysms or arteriovenous malformations.³

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