Stroke

STROKE IMAGES

Whole-Brain Perfusion via Right Common Carotid Artery With Type 2 Proatlantal Intersegmental Artery

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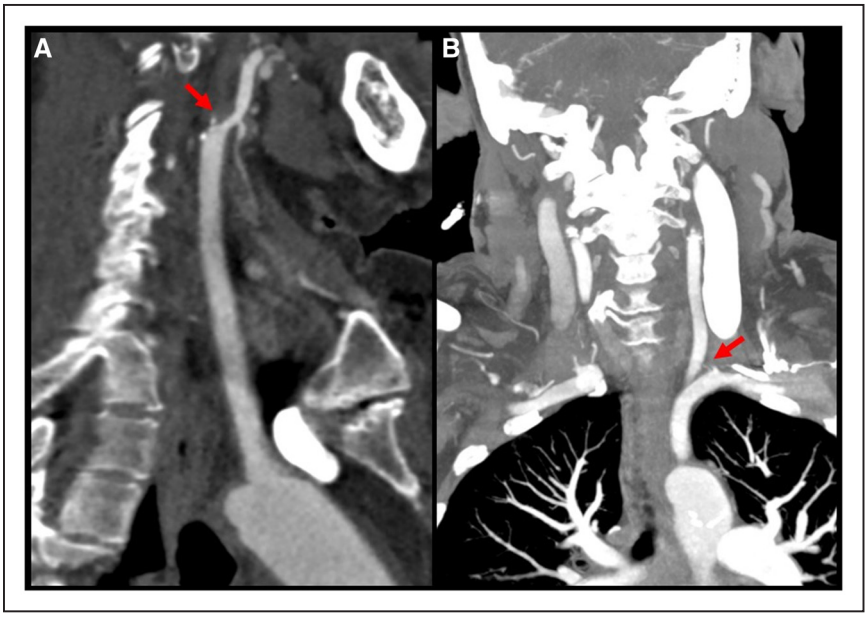

Figure 1. Three-dimensional computed tomography angiography of the neck. Proximal cervical left internal carotid artery occlusion (**A**, arrow), and proximal left vertebral artery occlusion (**B**, arrow).

A 79-year-old woman with diabetes and hypertension presented to the hospital in diabetic ketoacidosis. She received insulin and isotonic fluids. She subsequently developed sudden onset aphasia and right hemiparesis with occlusion of the cervical left internal carotid artery (Figure 1). Endovascular therapy was attempted but unsuccessful. Injection of the right common carotid artery revealed cross-filling of the left anterior circulation via the anterior communicating artery. The right common carotid artery injection also revealed a large type 2 proatlantal intersegmental artery or persistent first cervical intersegmental artery—a rare anatomic variant in which there is a persistent anastomosis between the external carotid artery and the ipsilateral vertebral artery (Figure 2).[1] The patient later developed septic shock and died after withdrawing care.

ARTICLE INFORMATION

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Key Words: brain ■ carotid arteries ■ diabetic ketoacidosis ■ hospital ■ hypertension

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Supplemental Material is available at https://www.ahajournals.org/doi/suppl/10.1161/STROKEAHA.122.040239.
For Sources of Funding and Disclosures, see page e482.

Stroke is available at www.ahajournals.org/journal/str

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Sources of Funding

None.

Disclosures

Dr Burkhardt serves as a consultant for Longeviti Neuro Solutions LLC, MicroVention, Inc, Q'Apel Medical, and Stryker. The other authors report no conflicts.

Supplemental Material

Video S1

KEY POINT

In the setting of an occluded left internal carotid artery and highly diseased left vertebral artery, this patient's entire brain was perfused via the right common carotid artery and proatlantal intersegmental artery.

REFERENCE

1. Uchino A, Saito N, Inoue K. Type 2 proatlantal intersegmental artery associated with persistent trigeminal artery diagnosed by MR angiography. *Surg Radiol Anat.* 2012;34:773–776. doi: 10.1007/s00276-011-0839-1

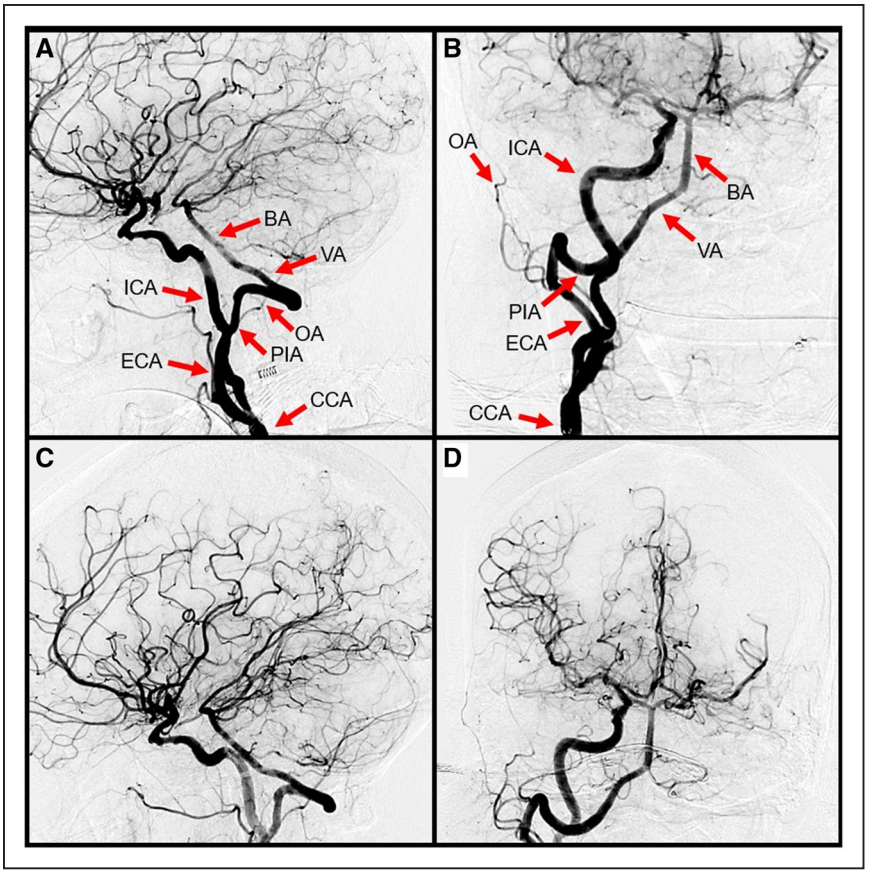

Figure 2. Digital subtraction angiography of the right common carotid artery (RCCA).
Digital subtraction angiography of the RCCA at the level of the neck (**A** and **B)** and head (**C** and **D**) in the lateral (**A** and **C)** and anteroposterior (**B** and **D**) planes. Injection of the RCCA reveals a large type 2 proatlantal intersegmental artery (PIA) branching off of the right external carotid artery (ECA; Video S1). There is filling of the left hemisphere via the right internal carotid artery (ICA) and anterior communicating artery due to the left cervical internal carotid occlusion. The basilar artery (BA) is supplied exclusively via the right PIA given severe atherosclerotic disease in the left vertebral artery (VA). The occipital artery (OA) is also seen. CCA indicates common carotid artery.