



OPEN ACCESS

Azygous anterior cerebral artery infarction

Nilshan Fernando ,¹ Udaya Ranawaka^{1,2}

¹University Medical Unit, Colombo North Teaching Hospital, Ragama, Sri Lanka
²Department of Medicine, Faculty of Medicine, University of Kelaniya, Ragama, Sri Lanka

Correspondence to

Dr Nilshan Fernando, University Medical Unit, Colombo North Teaching Hospital, Ragama, Sri Lanka; nilshan.fernando@gmail.com

Accepted 5 November 2023

A 45-year-old woman developed sudden-onset weakness in all four limbs, legs more than arms, and was admitted on the second day of the illness. Muscle tone was increased in all four limbs, with strength of 3/5 at the hips, knees and ankles, 3/5 at the shoulders and 4+/5 at the elbows and wrists. Tendon reflexes in all four limbs were brisk, and both plantar responses

were extensor. Sensation, coordination and cranial nerve functions were normal. She had normal speech and higher functions. Her National Institute of Health Stroke Scale score was 6 (range 0–42).

CT scan of head showed no acute infarction or haemorrhage (figure 1). MR scan of brain showed high signal intensities in both anterior cerebral artery territories,

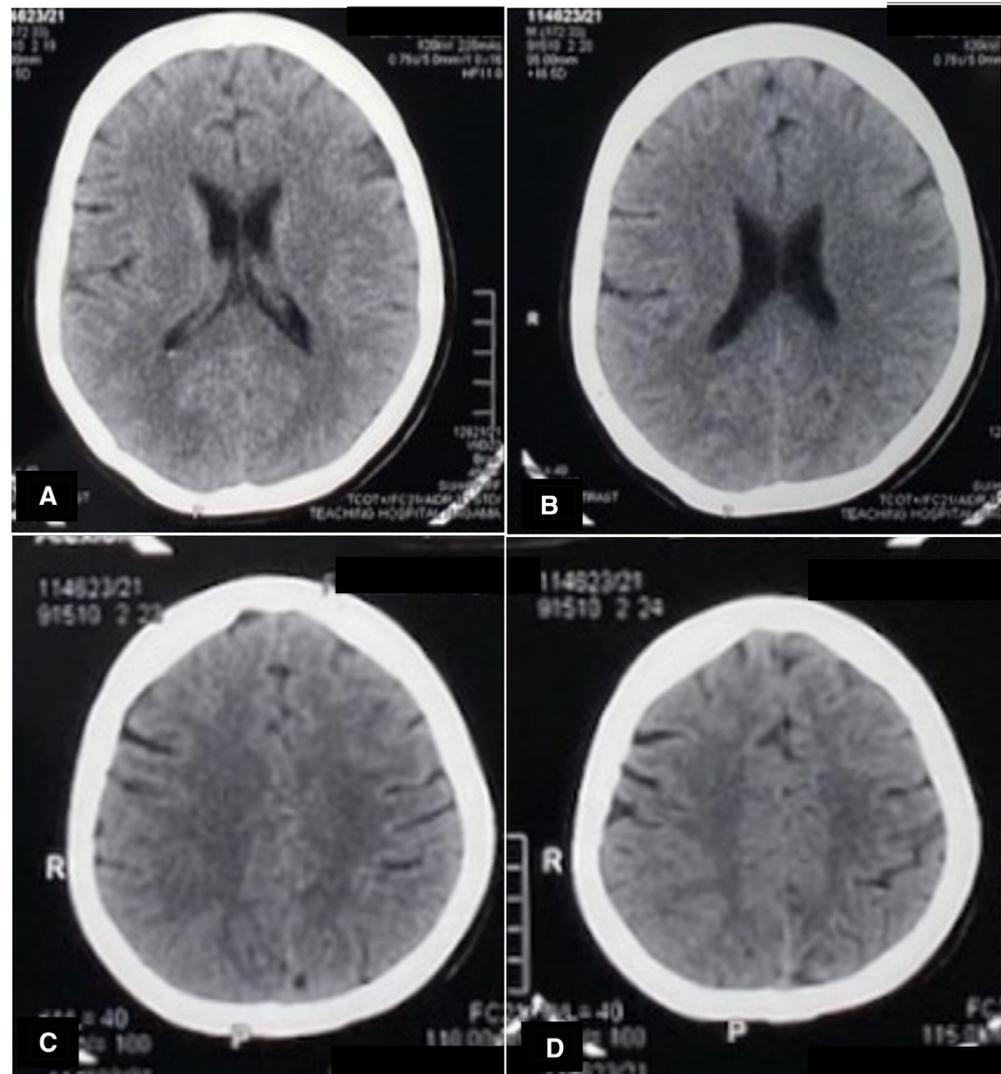


Figure 1 (A–D) CT scan of head without contrast (axial view) showing no evidence of acute infarction or haemorrhage.



© Author(s) (or their employer(s)) 2023. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

To cite: Fernando N, Ranawaka U. *Pract Neurol* Epub ahead of print: [please include Day Month Year]. doi:10.1136/pn-2023-003955

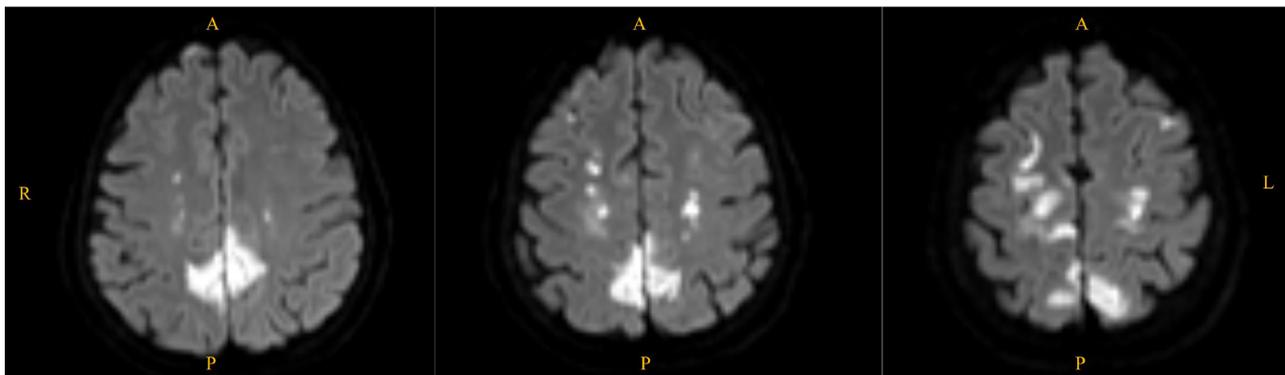


Figure 2 MR scan of the brain (diffusion-weighted images) showing the area of acute infarction.

suggesting acute bifrontal infarction (figure 2). MR angiogram identified an azygous anterior cerebral artery supplying both anterior cerebral artery territories (figure 3). MR scan of cervical spine was normal.

COMMENT

The azygous anterior cerebral artery is a rare anatomical variant, characterised by an absent anterior communicating artery with the two anterior cerebral arteries fused in their proximal segments (A1), forming a single trunk (A2) that ascends through the interhemispheric fissure.¹ Figure 4 shows several anatomical variations.

Baptista defined three variations in the A2 segment of the anterior cerebral artery.²

Type I anomaly, ‘the true azygos anterior cerebral artery’, has a single unpaired anterior cerebral artery supplying the medial surface of both cerebral hemispheres (figure 4E).

Type II anomaly, ‘the bihemispheric anterior cerebral artery’, has both right and left anterior cerebral arteries, but one is dominant and extends branches into the contralateral hemisphere (figure 4F).

Type III anomaly, ‘the anterior cerebral artery trifurcation’, has a third artery (the accessory anterior



Figure 3 MR angiogram of the circle of Willis, showing an azygous anterior cerebral artery (arrow).

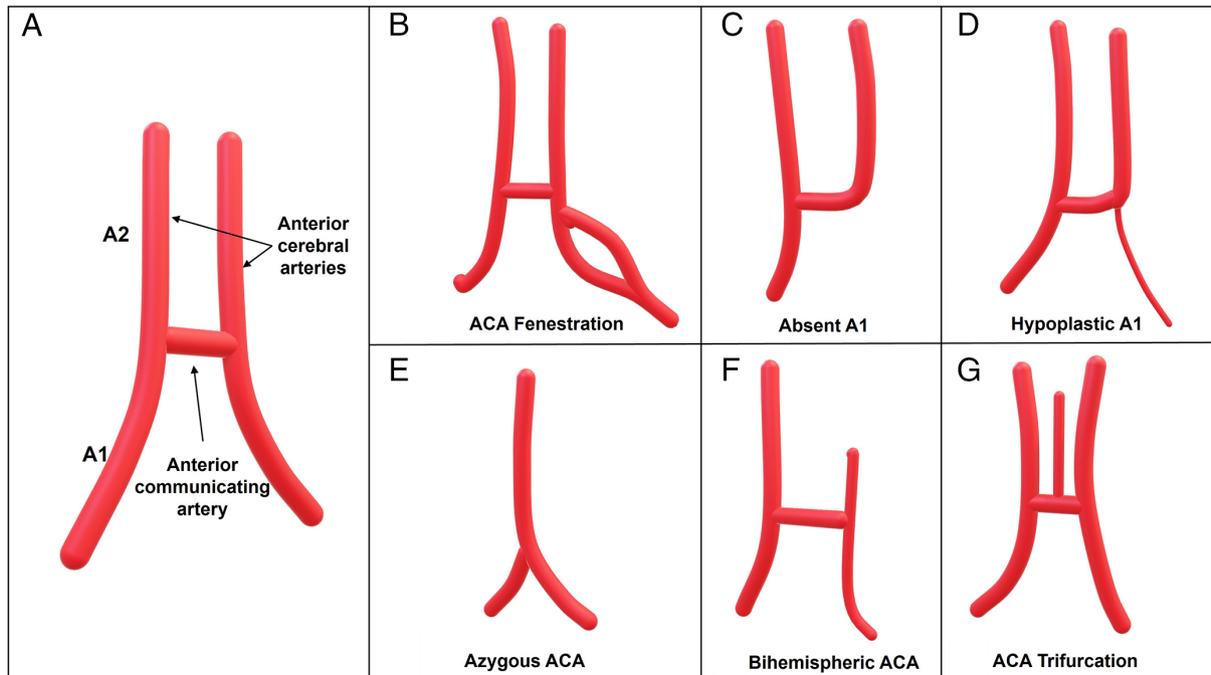


Figure 4 Anterior cerebral artery (ACA) anatomy and anomalies. (A) Normal anatomy with A1 and A2 segments. (B–D) A1 segment variants. (E–G) A2 segment variants.

cerebral artery) emerging from the anterior communicating artery (figure 4G).^{2,3}

There have been three other A2 segment variants reported.⁴

The patient reported here has a type I anterior cerebral artery variation (azygous anterior cerebral artery).

Key point

- ▶ Stroke involving a single artery can present as acute bilateral weakness, especially of the lower limbs.

Further reading

- ▶ Baptista AG. Studies on the arteries of the brain. *Neurology* (Internet). 1963 Oct 1;13(10):825 LP – 825. Available from: <http://n.neurology.org/content/13/10/825.abstract>

Acknowledgements We thank the patient, staff of the medical unit and the Department of Radiology of the Colombo North Teaching Hospital, Ragama, Sri Lanka.

Contributors NF wrote the first draft of the manuscript and prepared the illustrations. NF and UR revised the manuscript and approved the final version. Both authors contributed to the article and approved the submitted version.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Consent obtained directly from patient(s).

Provenance and peer review Not commissioned. Externally peer reviewed by Tom Hughes, Cardiff, UK. Waiver granted.

Data availability statement All data relevant to the study are included in the article or uploaded as online supplemental information.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iD

Nilshan Fernando <http://orcid.org/0000-0002-1378-7565>

REFERENCES

- 1 Auguste KI, Ware ML, Lawton MT. Nonsaccular aneurysms of the Azygos anterior cerebral artery. *Neurosurg Focus* 2004;17:1–5.
- 2 Baptista AG. Studies on the arteries of the brain. *Neurology* 1963;13:825.
- 3 Kondori BJ, Azemati F, Dadseresht S. Magnetic resonance angiographic study of anatomic variations of the circle of Willis in a population in Tehran. *Arch Iran Med* 2017;20:235–9.
- 4 Kumar K, Strbian D, Sundararajan S. Acute cerebral infarction presenting with weakness in both legs and one arm. *Stroke* 2015;46:e134–6.