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Azygous anterior cerebral artery infarction

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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,

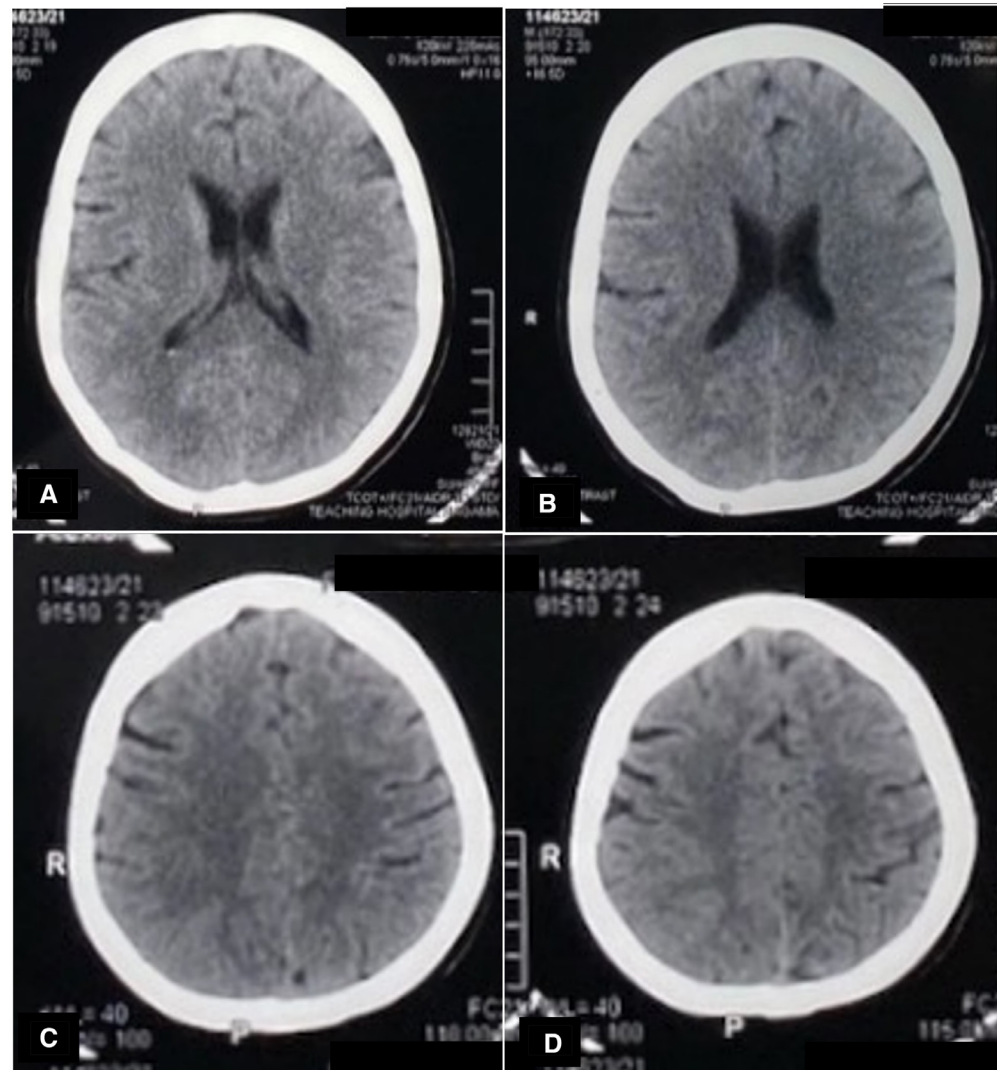


Figure 1 (A–D) CT scan of head without contrast (axial view) showing no evidence of acute infarction or haemorrhage.



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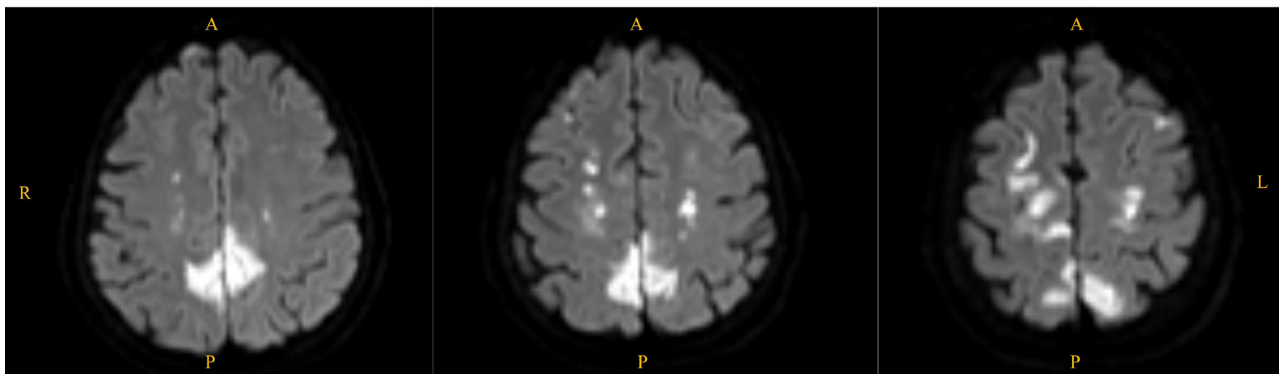


Figure 2 MR scan of the brain (diffusion-weighted images) showing the area of acute infarction.

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).

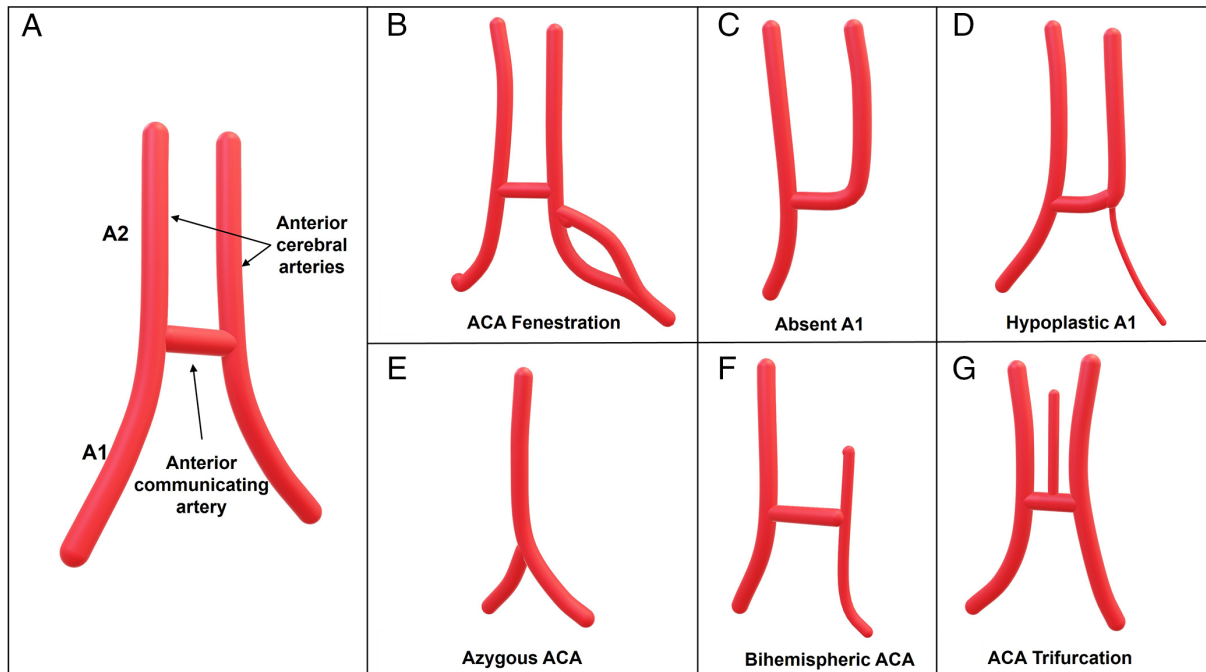


Figure 4 Anterior cerebral artery (ACA) anatomy and anomalies. (A) Normal anatomy with A1 and A2 segments. (B–D) A1 segment variants. (E–G) A2 segment variants.

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>

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