

Images in...

Hyperdense middle and anterior cerebral arteries: familiar and not so familiar CT signs of acute ischaemic stroke

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DESCRIPTION

We present a case of a 67-year-old patient who attended accident and emergency with left-sided weakness. Background included atrial fibrillation (on long-term warfarin). Examination revealed left hemiparesis, expressive dysphasia and a reduced Glasgow Coma Score, consistent with a right hemisphere cerebral vascular accident.

Initial CT head demonstrated a hyperdense right middle cerebral artery (MCA) with extensive right MCA territory infarct and minor mass effect (figure 1). The left anterior cerebral artery (ACA) was also hyperdense, with loss of grey/white matter differentiation within the left ACA vascular territory, suggestive of a further infarct (figure 2).

The patient was managed conservatively but unfortunately following further deterioration a repeat CT showed

haemorrhagic transformation of the right MCA territory infarct with significant mass effect and transtentorial herniation. There was an evolution of the left ACA territory infarct (figure 3).

Neurosurgical intervention was not deemed appropriate and the patient died later that day due to raised intracranial pressure secondary to significant mass effect.

The hyperdense MCA sign represents occlusive thrombus within an MCA. It is one of the most well-recognised early signs of ischaemic stroke detectable on non-contrast CT¹ and is associated with a poor prognosis.² In contrast, a hyperdense ACA is a less well-recognised sign. This probably relates to the preferential course of emboli into the MCA rather than the ACA and the smaller calibre of the ACA, making detection of occlusive ACA emboli on



Figure 1 Non-contrast-enhanced axial CT image showing a hyperdense right middle cerebral artery (MCA) (black arrow), with loss of grey–white matter differentiation and sulcal effacement in the associated vascular territory (white arrow), consistent with an ischaemic right MCA infarct.



Figure 2 Non-contrast-enhanced axial CT image showing a hyperdense left anterior cerebral artery (ACA) (black arrow) with subtle loss of grey–white matter differentiation in the associated vascular territory (white arrow). These findings are suggestive of a synchronous ischaemic left ACA infarct.

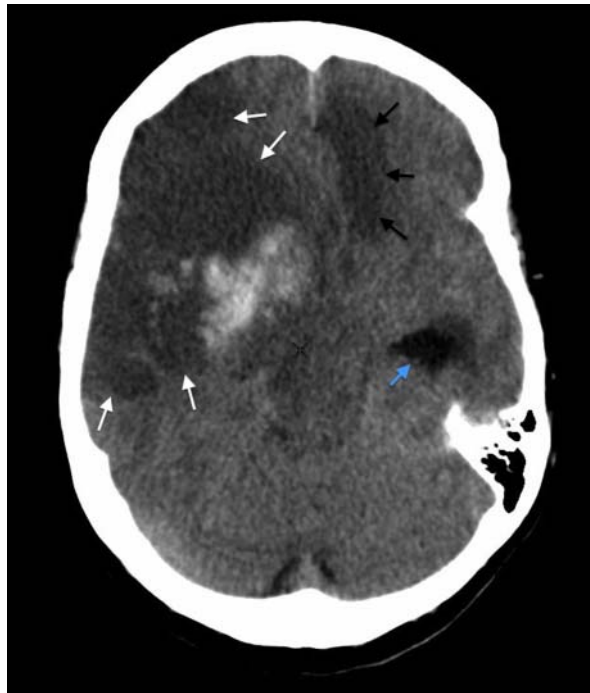


Figure 3 Non-contrast-enhanced axial CT image showing evolution of both the left anterior cerebral artery (black arrow) and right middle cerebral artery (white arrow) ischaemic infarcts. High attenuation within the right frontal lobe and basal ganglia is consistent with an intraparenchymal haemorrhage. There is resultant mass effect from this and the associated vasogenic oedema, with midline shift and evidence of obstructive hydrocephalus of the left lateral ventricle, signified on this image by the dilated temporal horn of the left lateral ventricle (blue arrow).

CT more challenging. It, however, remains an important early sign of ACA territory ischaemic infarction, although its relation with prognosis is currently unclear.³

Learning points

- ▶ The hyperdense middle cerebral artery sign is a familiar early CT finding in ischaemic stroke and predicts a poor clinical outcome.
- ▶ In contrast, the hyperdense anterior cerebral artery (ACA) sign is a less well recognised, but nonetheless useful, early CT sign for ischaemic ACA infarcts; however, its relationship with prognosis is not fully understood.

Competing interests None.

Patient consent Obtained.

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