Arterial spin-labelled perfusion MRI demonstrates early spontaneous recanalisation of clot after cardiogenic embolism

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DESCRIPTION

A 71-year-old man with atrial fibrillation was presented to the emergency department 30 min after the sudden onset of disturbance of consciousness. On examination, he showed a disturbance of consciousness (Glasgow Coma Score: E4V2M5) and severe right hemiplegia, which subsequently improved, and he finally presented with moderate sensory aphasia alone. CT of the head showed no haemorrhage. Diffusion-weighted MRI (DW-MRI) of the brain showed a high-intensity spot lesion in the left insular cortex (figure 1A). Arterial spin-labelled (ASL) perfusion MRI showed hyperperfusion in the same area (figure 1B). Based on the dramatic improvement of symptoms and narrower infarction lesion on MRI than was initially anticipated, spontaneous recanalisation of a clot in the left middle cerebral artery was suspected, and oral rivaroxaban was initiated. On day 9, CT showed a mild haemorrhagic lesion on the left temporal lobe

Figure 2 CT of the head on day 9 showed a mild haemorrhagic lesion on the left temporal lobe cortex.

Figure 1 (A) Diffusion-weighted MRI (DW-MRI) on admission showed high-intensity spot lesion in the left insular cortex (arrow). (B) Arterial spin-labelled (ASL) imaging on admission showed hyperperfusion in the same area (arrow). (C) DW-MRI on day 15 showed minimally increased signals along the left insular cortex (arrow), and haemorrhagic lesion on the left temporal lobe (arrowhead). (D) ASL imaging on day 15 showed normal perfusion.

cortex (figure 2). On day 15, DW-MRI of the brain showed minimally increased signals along the left insular cortex (figure 1C), and ASL imaging showed that perfusion had returned to normal (figure 1D). ASL imaging is a new technique that can visually reveal the presence of hyperperfusion. Restoration of flow to ischaemic regions can be seen as focal hyperperfusion on ASL imaging, following both spontaneous recanalisation and thrombolysis.^{1 2} On the other hand, postischaemic hyperperfusion on ASL imaging positively associated with

Learning points

- ▶ Spontaneous recanalisation can be seen as hyperperfusion on arterial spin-labelled (ASL) perfusion MRI.
- ▶ Postischaemic hyperperfusion on ASL imaging is positively associated with haemorrhagic transformation; therefore, the possibility of haemorrhagic lesion should be considered in cases of spontaneous recanalisation, especially if accompanied by signs of hyperperfusion on ASL imaging.

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haemorrhagic transformation in acute ischaemic stroke.³ Therefore, CT follow-up is important to detect haemorrhagic lesion in spontaneous recanalisation, especially if accompanied by signs of hyperperfusion on ASL imaging.

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