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MRI in internal cerebral vein thrombosis: case note

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Abstract A 40-year-old man developed general malaise, dizziness and progressive headache 1 week after acute haemorrhagic conjunctivitis. Bizarre behaviour, confusion and adverse seizures occurred later. MRI showed haemorrhagic infarct in the bilateral basal ganglia and thalamus and abnormal signal density in the internal cerebral veins. Bilateral carotid angiography showed no filling of superior sagittal

sinus and internal cerebral veins. With MRI, cerebral venous thrombosis can be suspected and diagnosed earlier than before, obviating any invasive investigation.

Key words Stroke · Sinus thrombosis · Internal cerebral veins

Introduction

Internal cerebral vein thrombosis is rarely reported, especially in adults. We report the MRI findings in a man aged 40 years.

Case report

A 40-year-old robust man developed acute haemorrhagic conjunctivitis on 16 July 1992, which improved gradually on treatment. General malaise, dizziness and progressive headache developed 1 week later. Bizarre behaviour and confusion developed on 28 July, and three adverse seizures occurred on 1 August. The patient looked apathetic, was disoriented to time and place with impaired recent memory and poor calculation. There were positive frontal lobe signs, right hemianopia, gegenhalten in all limbs, clumsiness of the right limbs with motor perseveration and generalised hyperreflexia with flexor plantar reflexes. There was sensory extinction over the right limbs. Lumbar puncture on 4 August disclosed a mildly elevated protein level only. Routine laboratory examinations were all within normal limits except an elevated fibrinogen level. EEG on 7 August showed diffuse slow waves with frontal prominence. Somatosensory evoked potentials from the median nerve were normal.

CT on 1 August showed faint high attenuation in the left thalamus. On August 7 MRI showed symmetrical low signal lesions in

the basal ganglia and thalamus, and high signal in the left parietal lobe on T1-weighted images (Fig. 1 a). On T2-weighted images, the lesions gave low signal intensity at their centre, with high signal peripherally (Fig. 1 b). After intravenous Gd-DTPA, rather symmetrical ring enhancement in the thalamus and focal enhancement in the left basal ganglia were seen (Fig. 1 c). High signal was seen in the internal cerebral veins on sagittal T1-weighted images (Fig. 1 d), and the superior sagittal sinus, straight sinus and internal cerebral veins showed contrast enhancement (Fig. 1 e). Bilateral carotid angiography on 11 August showed no filling of the superior sagittal sinus and internal cerebral veins, with numerous collateral veins draining anteriorly (Fig. 2).

Subcutaneous heparin 5,000 units was given twice daily for 1 week. The symptoms and signs gradually resolved and the patient was discharged on 20 August. MRI on 25 September showed resolution of brain oedema and partial resorption of the haematomas in the basal ganglia, thalamus, and parietal lobe. EEG the same day was normal. The patient was able to work as before from October.

Discussion

Thrombosis of the deep cerebral veins is rarely reported. The majority of cases are seen in children [1], although there are isolated case reports in adults [2, 3]. Occlusion leads to haemorrhagic infarcts deep in the

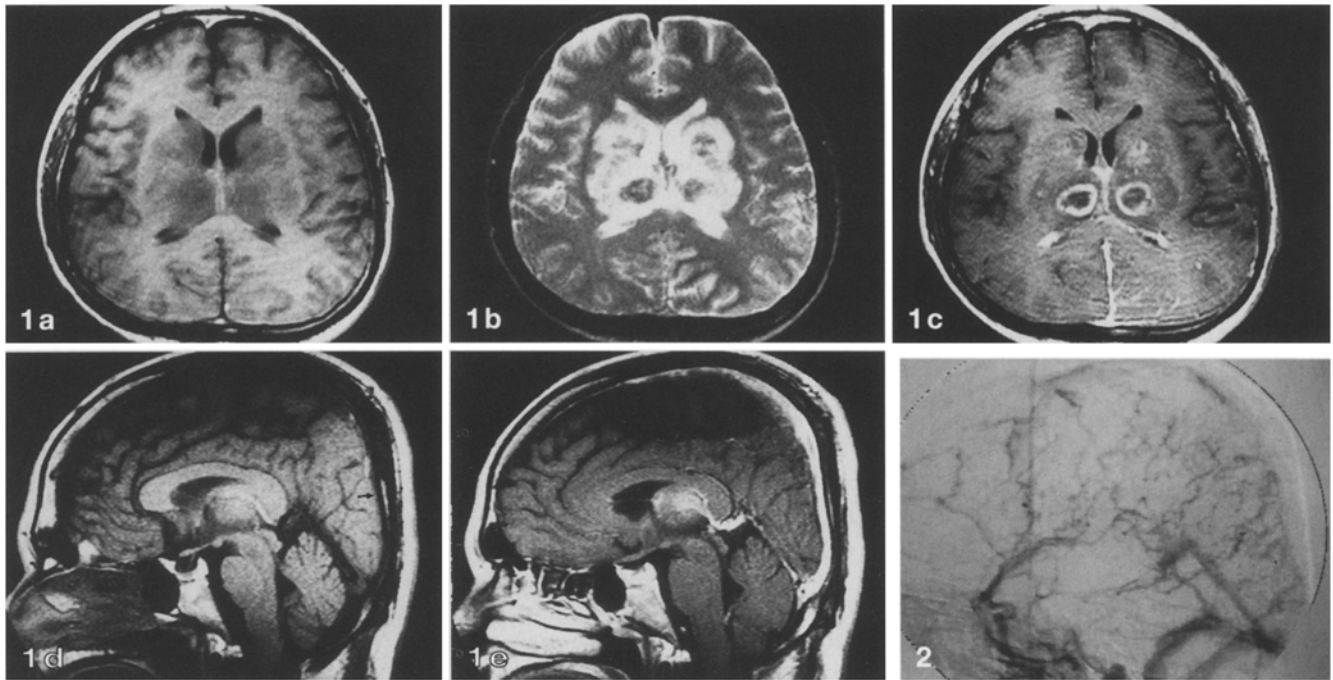


Fig. 1 **a** T1-weighted MRI disclosed symmetrical low signal lesions in the basal ganglia and thalamus. High signal was seen in the internal cerebral veins. **b** The lesions in the basal ganglia and thalamus gave low signal centrally, with a periphery of high signal, on T2-weighted images. **c** Rather symmetrical ring contrast enhancement in the thalamus and focal enhancement in the left basal ganglia was seen. The internal cerebral veins and straight sinus also enhanced. **d** High signal in the internal cerebral veins and low signal in the superior sagittal sinus (*arrow*) were clearly seen on sagittal T1-weighted images. **e** The superior sagittal sinus, straight sinus and internal cerebral veins also enhanced

Fig. 2 Lateral venous phase of left carotid angiogram showed no filling of superior sagittal sinus and internal cerebral veins, with numerous collateral veins

cerebral hemispheres, sometimes with intraventricular haemorrhage. Mortality is probably high because the condition is often overlooked. The diagnosis may be suggested by CT [3], and confirmed by cerebral angiography.

MRI clearly showed the haemorrhagic infarcts in the basal ganglia and thalamus. The high signal from the internal cerebral veins, and marked contrast enhancement of the superior sagittal sinus, straight sinus, and internal cerebral veins suggested thrombosis of the internal cerebral veins and stagnant slow flow in the sinuses. These abnormalities led us to perform confirmatory angiography. Thus, with MRI cerebral venous thrombosis can be suspected and diagnosed earlier than before, obviating any invasive investigation.

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