

## Diagnostic Images

# An unusual cause for a fit

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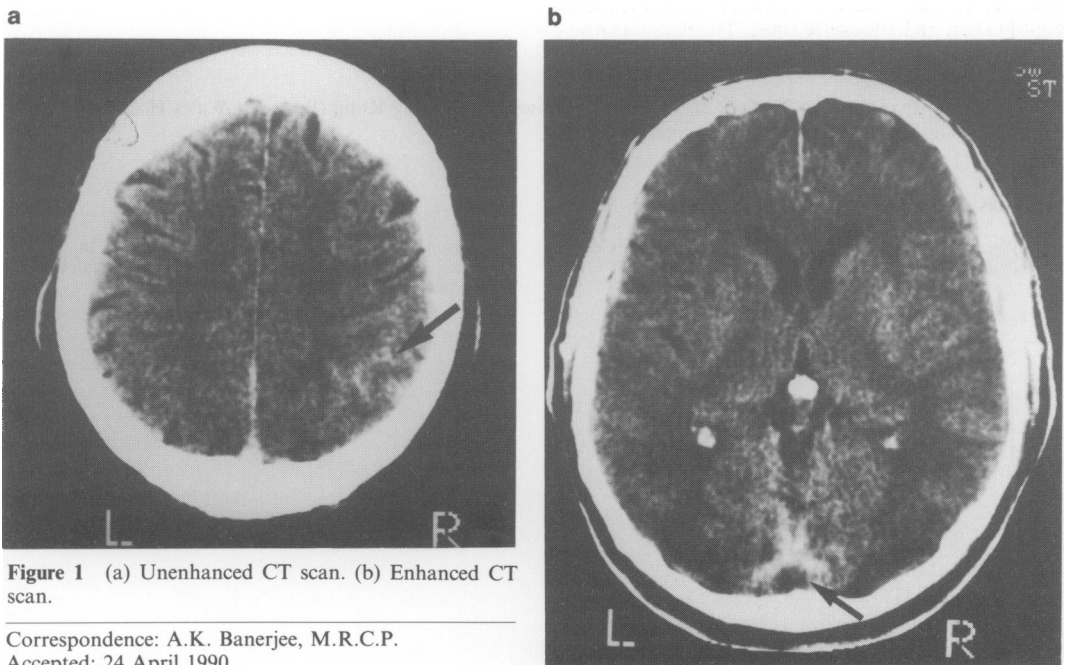
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### The patient

A 61 year old man was brought to the emergency department having suddenly collapsed a few hours earlier. He admitted to a 4-week history of worsening headaches and a fluctuating right sided paraesthesia. On examination bilateral papilloedema was noted. The rest of the general and neurological examination was unremarkable. The full blood count, electrocardiogram, chest radiograph and serum electrolytes were normal. A computed tomographic scan of the head was performed.

### Comment

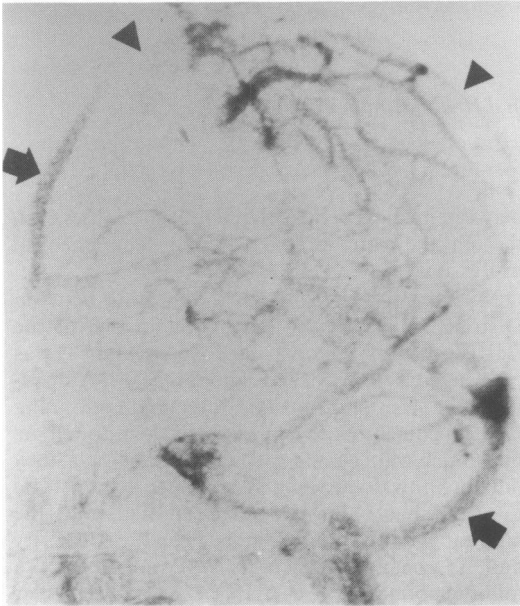
The CT scan (Figure 1) showed irregular high attenuation densities in the right posterior parietal lobe (Figure 1a) which were unchanged following intravenous contrast enhancement. The appearances were compatible with haemorrhagic venous infarction. On the enhanced images, a triangular shaped low density area with rim enhancement was noted in the superior sagittal sinus, the 'empty delta' sign (Figure 1b). This sign was first described in 1978 and is pathognomonic of superior sagittal sinus thrombosis.<sup>1</sup> The mechanism of the sign is thought to be due to increased uptake of contrast in the dural vascular collateral channels in the sinus contrasting with the paucity of uptake in the thrombus itself.<sup>2</sup> The 'empty delta' sign and haemorrhagic venous infarction are two of the commonest findings on the CT in superior sagittal sinus thrombosis.<sup>2</sup>



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Images may need to be viewed at wide window settings for the correct diagnosis to be made.<sup>3</sup> Confirmation of the diagnosis was achieved by selective intra-arterial digital subtraction angiography (Figure 2).

Causes of superior sagittal sinus thrombosis include pregnancy, oral contraceptives, polycythaemia, dehydration and malignancy. Although our patient had none of these risk factors, a high index of suspicion enabled the appropriate diagnosis to be made.



**Figure 2** Venous phase of intra-arterial digital subtraction angiography. Thick arrows show contrast in superior sagittal sinus and transverse sinus. Triangular arrows – filling defect in superior sagittal sinus noted.

#### References

1. Buonanno, F.S., Moody, D.M., Ball, M.R. & Laster, D.W. Computed cranial tomographic findings in cerebral sino-venous occlusion. *J Comput Assist Tomogr* 1978, **2**: 281–290.
2. Virapongse, C., Cazenave, C., Quisling, R., Sarwar, M. & Hunter, S. The empty delta sign: frequency and significance in 76 cases of dural sinus thrombosis. *Radiology* 1987, **162**: 779–785.
3. Brant-Zawadzki, M., Chang, G.Y. & McCarty, G.E. Computed tomography in dural sinus thrombosis. *Arch Neurol* 1982, **39**: 446–447.