Cerebral venous thrombosis presenting as unilateral headache and visual blurring in a man with nephrotic syndrome

KH Chan, RTF Cheung, W Mak, KM Au-Yeung, SL Ho

INTRODUCTION

Cerebral venous thrombosis (CVT) is an uncommon but serious and potentially fatal type of stroke (Bousser et al, 1985; Mak et al, 2001; Breteau et al, 2003). Thrombosis may affect the cortical or deep cerebral veins or the straight, sagittal, transverse, sigmoid and/or cavernous sinus. Diffuse or localized headache, features of raised intracranial pressure (ICP), focal or generalized seizures, lethargy or coma, non-specific visual obscurations, transient visual loss, and alternating hemiparesis or paraparesis may be seen (Ameri and Bousser, 1992). These clinical features are non-specific and can be caused by other disorders such as idiopathic intracranial hypertension, viral encephalitis, dural arteriovenous fistula, other causes of cerebral infarcts and intracerebral haemorrhages (Bousser et al, 1985; Mak et al, 2001; Breteau et al, 2003). Early diagnosis is important because delayed treatment leads to an unfavourable prognosis (Bousser et al, 1985). A high index of suspicion is needed when risk factors of CVT are present, computed tomography (CT) of the brain may be normal, and magnetic resonance imaging (MRI) plus venography (MRV) of the brain is diagnostic. This article reports a man with nephrotic syndrome complicated by CVT.

CASE REPORT

A 44-year-old man presented with persistent left-sided headache for 2 weeks. His ankylosing spondylitis was in remission following a course of sulphasalazine and methotrexate in the past. Six months before admission, he developed nephrotic syndrome as a result of minimal change glomerulopathy. Prednisolone was started at 60 mg daily and later tailed down to 15 mg daily plus azathioprine 50 mg daily. His 24-hour urinary protein decreased from 5.89 to 1.08 g/day. He ran out of prednisolone for 1 week before he developed persistent throbbing headache over his left temporal and occipital regions together with mild neck pain and stiffness. The headache was worse in the morning and aggravated by straining and sneezing. He also noticed more than 20 episodes of transient visual blurring without diplopia, each episode lasting up to 30 seconds. There was no visual aura, photophobia or phonophobia. He did not have any fever, nausea, vomiting or temporal tenderness.

He was afebrile. Neck stiffness and loss of physiological cervical lordosis could be attributed to his ankylosing spondylitis. Mild facial puffiness and ankle oedema were caused by his nephrotic syndrome. Apart from bilateral papilloedema, his neurological examination was normal. Complete blood count, erythrocyte sedimentation rate, liver and renal function tests, autoantibodies, serum complement levels and serum immunoglobulins were normal except for the serum albumin of 36 g/litre. Computed tomography brain scan was normal. X-ray of the cervical spine revealed spondylitic changes. Magnetic resonance imaging brain scan was normal, but magnetic resonance venography (MRV) revealed a loss of venous flow over the right transverse and sigmoid sinuses, indicating cerebral venous thrombosis (*Figure 1*).

Anticoagulation was commenced initially with subcutaneous low-molecular weight heparin and followed later with warfarin. His headache gradually subsided after 2 days of anticoagulation. Warfarin was continued for 6 months with the international normalized ratio kept between 2 and 2.5. Repeated MRV after completion of anticoagulation showed recanalization of the thrombosed cerebral venous sinuses. Subsequent screening was negative for deficiency in protein C, protein S or antithrombin III, resistance to activated protein C, and anti-cardiolipin antibodies. In the past 4.5 years, the patient remained well with no evidence of malignancy or relapse of nephrotic syndrome.

DISCUSSION

Recent onset of persistent headache warrants a full assessment. Morning worsening, aggravation by straining and sneezing, episodic visual blurring and bilateral papilloedema indicate raised ICP and mandate further investigations such as neuroimaging. MRV confirmed the diagnosis of CVT. Although both CT and MRI of the brain were normal in this patient, CT or MRI of the brain may reveal bilateral or multifocal cerebral oedema with or without haemorrhages affecting both the gray and white matters to suggest venous infarcts.

Thrombosis of the right transverse and sigmoid sinuses is probably a complication of nephrotic syndrome in this patient. Sudden withdrawal of prednisolone for 1 week may aggravate his CVT symptoms as steroid withdrawal can raise the ICP. Generalized or local infection is the primary aetiology in less developed countries, and non-infectious causes include hypercoagulable states, haematological disorders, chronic inflammatory diseases, systemic or local neoplastic conditions, dehydration or flow disorders, drug or hormonal use (e.g. oral contraceptives, L-asparaginase, androgens), pregnancy, postoperative state and head trauma (Bousser et al, 1985; Mak et al, 2001; Breteau et al, 2003).

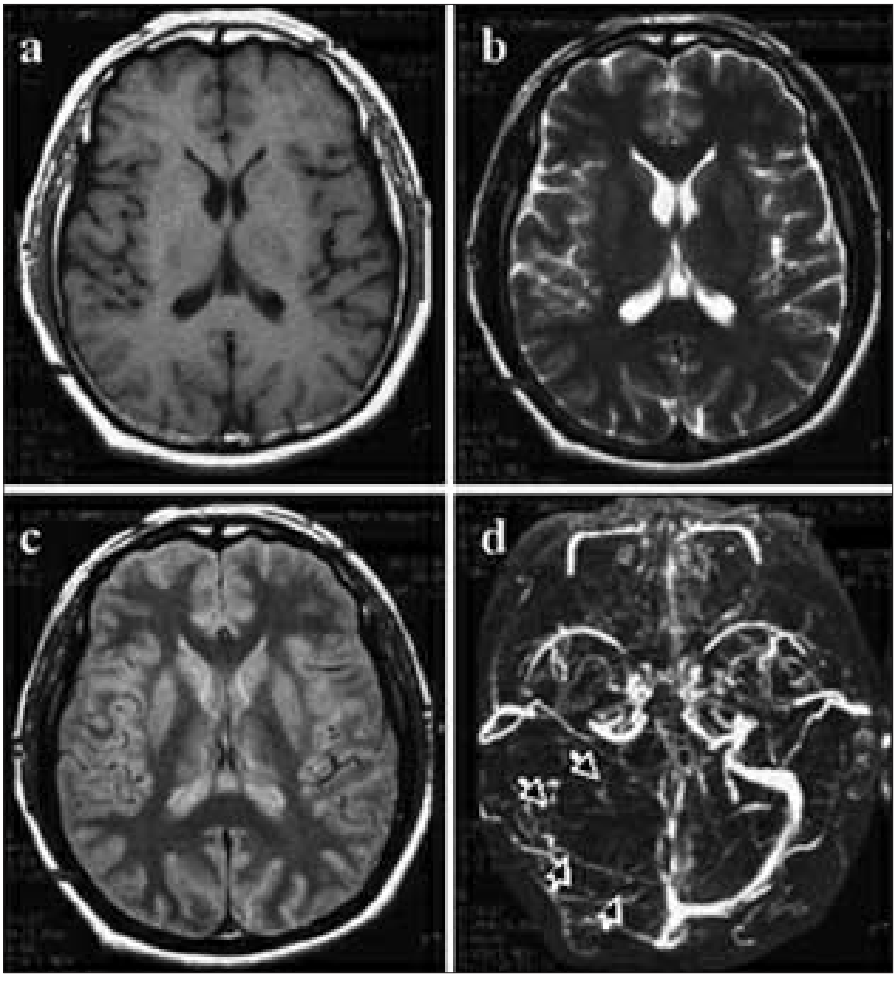
This patient responded well to anticoagulation. Anticoagulation is beneficial and safe in CVT even in the presence of cerebral haemorrhages (Bousser et al, 1985; Einhaupl et al, 1991). Other options include consideration of use of anticonvulsants, control of

Dr KH Chan is Medical Officer, **Dr W Mak** is Associate Consultant, **Dr RTF Cheung** is Associate Professor and **Dr SL Ho** is Associate Professor, Division of Neurology in the University Department of Medicine, and **Dr KM Au-Yeung** is Senior Medical Officer in the Department of Radiology, University of Hong Kong, Queen Mary Hospital, Pokfulam, Hong Kong

Correspondence to: Dr RTF Cheung

markedly raised ICP, other supportive measures and management of the underlying cause (Bousser et al, 1985; Ameri and Bousser, 1992; Mak et al, 2001; Breteau et al, 2003). Patients with recurrent CVT or an underlying prothrombotic state may require lifelong anticoagulation. The overall mortality rate of CVT is about 10%. Long-term neurological deficits include hemiparesis, hemisensory loss, paraparesis, epilepsy and optic atrophy (Preter et al, 1996). There is a strong link between outcome and the level of consciousness (Mehraein et al, 2003). Focal deficits and cancer at time of diagnosis were reported to be independent predictors of dependence or death at 3 years while an isolated increase in ICP was shown to be an independent predictor of survival and independence (Breteau et al, 2003).

Figure 1. a. Normal axial T1-weighted magnetic resonance imaging (MRI) of the brain. b. Normal axial T2-weighted MRI of the brain. c. Normal axial proton density MRI of the brain. d. Contrast-enhanced magnetic resonance venography of the brain showing absence of venous flow over the right transverse and sigmoid sinuses (arrows).



CONCLUSIONS

CVT should be considered in patients with clinical features of raised ICP and risk factors for CVT. MRI plus MRV is a reliable and non-invasive diagnostic tool for CVT. Prompt diagnosis and early treatment with anticoagulation are important to reduce long-term neurological deficits and mortality. HM

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