

# TRANSVERSE SINUS THROMBOSIS

## A CASE REPORT

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**Cerebral venous thrombosis is an uncommon presentation of stroke and subarachnoid haemorrhage. Cerebral venous thrombosis may present with headache, seizures, cranial nerve involvement or focal neurological deficit. Venous thrombosis may also be associated with pre-existing medical problems, which need to be diagnosed and treated.**

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A 48-year-old lady presented with acute onset of weakness of left upper and lower limbs. She had suffered from a gradual onset of frontal headache for two weeks. Her husband noted that she had been confused for 24 hours.

She had a medical history of deep vein thrombosis eight years ago. She was receiving treatment for anxiety and depression (propranolol and escitalopram respectively). She had had investigations for megaloblastic anaemia and had a biopsy showing diagnosis of cirrhosis of liver, having a history of previous alcohol excess.

On examination, vital signs were normal except for mild pyrexia of 37.8°C. There was no neck stiffness or photophobia. Neurological examination revealed left hemiparesis with power of 3/5 and brisk reflexes and upgoing plantar on the left. There was no evidence of cranial nerve involvement, and fundoscopy was unremarkable.

A differential diagnosis including stroke, brain abscess and encephalitis was made. Treatment started with IV aciclovir and cefotaxime.

A computerised tomography (CT) scan of the brain, with and without contrast, showed generalised atrophy of brain and a thrombus in the right internal jugular vein. No evidence of haemorrhage or mass lesion seen. Lumbar puncture (twelve hours after presentation) following the CT scan did not show any evidence of infection or subarachnoid haemorrhage.

A CT brain scan was repeated on the fourth day which, in addition to the filling defect in the right internal jugular vein, showed a filling defect of the right transverse sinus consistent with right transverse sinus thrombosis.

Antibiotics and aciclovir were stopped. She was started on a therapeutic dose of heparin. The patient improved, gradually regaining power back to normal and was discharged on warfarin. A thrombophilia screen was negative.

## DISCUSSION

Thrombosis of venous channels in the brain is an uncommon cause of cerebral infarction. Incidence is more common in

females; 61% of cerebral venous thrombosis in women occur in those aged 20-35 years. There is a uniform distribution in all ages in men.

### Anatomy<sup>(1)</sup>

Dural venous sinuses are spaces between the endosteal and meningeal layers of the dura. They contain venous blood that originated for the most part from the brain or cranial cavity. Sinuses contain endothelial linings that are continuous with the veins that are connected to them. The important sinuses are superior and inferior sagittal sinuses, straight sinus, cavernous sinuses, superior and inferior petrosal sinuses and sigmoid sinus.

### Pathophysiology of cerebral venous sinus thrombosis<sup>(2)</sup>

Primarily due to partial thrombosis or extrinsic compression leading to subsequent complete occlusion by a thrombus. Secondary impairment of cerebrospinal fluid absorption leading to stasis is also a cause of thrombus formation.

### Usual Predisposing factors<sup>(3)</sup>

Mechanical – head injury, neurosurgery

Prothrombotic conditions – protein C and S deficiency, Factor V Leiden, antithrombin III deficiency, nephrotic syndrome, antiphospholipid antibodies

Haematological – thrombotic thrombocytopenic purpura, paroxysmal nocturnal haemoglobinuria, polycythaemia

Inflammatory diseases – Crohn's, ulcerative colitis, Behcet's syndrome

In women – pregnancy, puerperium, oral contraceptive pills

Systemic diseases – congestive cardiac failure, liver disease, dehydration, cancer

Infections – sinusitis, mastoiditis, meningitis

Idiopathic in 20-35%

### Clinical presentation<sup>(4)</sup>

The presentation is variable. Diagnosis is frequently delayed by ten days. Common presentations are with headache (may be thunderclap), nausea, vomiting and focal neurological deficit depending on the area involved. Aphasia, ataxia, dizziness, chorea and hemianopia have also been associated. Cranial nerve involvement is another common feature with pulsatile tinnitus, unilateral deafness, diplopia, facial weakness and visual disturbance being the mode of presentations. Paraparesis in superior sagittal sinus thrombosis is an interesting presentation. Cerebral venous thrombosis (CVT) should be considered in the workup of subarachnoid haemorrhage (SAH).

### Diagnosis: imaging

Magnetic resonance imaging (MRI) combined with MR venography is the most sensitive imaging though CT is often the first imaging modality used. CT is entirely normal in 10-20% of proven CVT.

#### Diagnostic workup of CVT – when to suspect CVT

Sudden severe headache with lack of evidence of SAH should prompt MR venography in patients with risk factors

Recent sinusitis presenting with focal neurology/headache/seizure with an abscess excluded by CT

Work up of SAH, especially when basal cisterns are not involved

Any patient with stroke symptoms and prothrombotic conditions

CT/MRI finding of an infarct not following an arterial occlusive distribution and no obvious risk factors

Laboratory investigations for thrombophilia, vasculitis, urinary protein, liver function and D-dimer need to be undertaken.

#### Treatment<sup>(4)</sup>

Thrombosis is treated with heparin and warfarin. It is also treated by thrombolysis with local instillation by microcatheter and surgical thrombectomy in specialised

centres. It is essential to diagnose and treat the primary cause, if any.

#### REFERENCES

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<http://www.emedicine.com/NEURO/topic642.htm>. (Last Updated: October 18, 2005)
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