

## A case of intracranial sinus thrombosis

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### ABSTRACT

A male patient, 26 years old, presented at internal medicine clinic at GMC hospital with severe headache, blurred vision and double vision. He was given medical treatment and was referred to a neurologist the next day. After re-evaluation he gave a past history of repeated gastroenteritis which he claimed as typhoid, and recurrent sinusitis with right side mastoiditis, with frequent oral aphthous ulcers. His father had recurrent lower limb DVT. General examination was normal, while the neurological examination showed injury of left sixth cranial nerve, and horizontal diplopia with convergent squint. Fundus examination showed papilledema. This clinical picture was suggestive of increased intracranial pressure. Urgent CT brain was done, which showed right transverse and superior sagittal sinus thrombosis. The patient was hospitalized as a case of superior and transverse sinus thrombosis. MRI brain and MRV showed right mastoiditis, and thrombosis of right transverse sinus without secondary hydrocephalic changes. Laboratory investigations were normal apart from low antithrombin three with normal protein S & C. Collagen battery, was within normal range. Treatment was started immediately with low molecular weight heparin, oral anticoagulant and antiplatelets. The patient subjectively showed improvement as regards clarity of vision, headache and diplopia. But his frequent fundus examination showed progression of papilledema and involvement of the right medial rectus muscle, which explained why diplopia was less at this stage. Urgent follow up MRI brain and MRV showed stationary course of disease with failure of canalization of the sinuses, yet no hydrocephalic changes. The future plan involves increasing and adjusting the dose of anticoagulant and diuretics, and considering lumbar puncture for decreasing optic nerve compression. Diagnosis: Antithrombin three dysfunction with sinus thrombosis.

**Key words:** sinus thrombosis, convergent squint, increased intracranial pressure, papilledema, Antithrombin three dysfunction.

### INTRODUCTION

Cerebral venous sinus thrombosis (CVST) is rare, with estimated 3-4 cases per million annual incidences in adults. While it may occur in all age groups, it is most common in the third decade. 75% of the patients are female. Given that older studies show no difference in incidence between men and women, it has been suggested that the use of oral contraceptives in women is behind the disparity between the sexes. A 1995 report from Saudi Arabia found a doubled incidence at 7 cases per 100,000; this was attributed to the fact that Behçet's disease, which increases risk of CVST, is more common in the Middle East.

### CASE REPORT

A male patient, 26 years old, presented at internal medicine clinic at GMC hospital with severe headache, blurring OF vision and double vision. He was given empirical medical treatment and was referred to the

neurologis the next day.

On re-evaluation, the past history of the patient was irrelevant apart from repeated gastroenteritis which he claimed as typhoid, and recurrent sinusitis with right side mastoiditis, with frequent oral aphthous ulcers, There was a family history of his father having had recurrent lower limb DVT.

While general examination was normal, the neurological examination showed injury of left sixth cranial nerve, and horizontal diplopia with convergent squint. Fundus examination showed papilledema. This clinical picture was suggestive of increased intracranial pressure.

### INVESTIGATIONS

Urgent CT brain that was done showed normal brain tissue, but right transverse and superior sagittal sinus thrombosis was present. The patient was hospitalized

as a case of superior and transverse sinus thrombosis. MRI brain and Magnetic resonant venography MRV were done, which showed, right mastoiditis, and thrombosis of right transverse sinus without secondary hydrocephalic changes. The laboratory investigations were normal apart from low antithrombin therewith normal protein S & C. Collagen battery done was within normal range. (Figure 1-3)



Figure 1. CT brain showed right transverse sinus thrombosis



Figure 2. MRV showed sinus thrombosis



Figure 3. MRV showed right transverse sinus thrombosis

**TREATMENT**

The patient was hospitalized and treatment started immediately with low molecular weight heparin (Clexane 60 units /S.C), oral anticoagulant (Warfarin 3mg /day) and antiplatelets. The patient subjectively showed improvement as regards clarity of vision, headache and diplopia. Corticosteroids were questionable because of the negative Collagen battery laboratory results.

The patient's frequent fundus examination showed progression of papilledema and involvement of the right medial rectus muscle, which explains why diplopia was less later. (Figure 4-7)



Figure 4. Fundus examination showed papilledema



Figure 5. One week later with more papilledema



Figure 6. Two weeks later with more papilledema



Figure 7. Papilledema with optic atrophy

Urgent follow up MRI brain and MRV showed, stationary course of disease with failure of canalization of the sinuses yet no hydrocephalic changes (Figure 8).

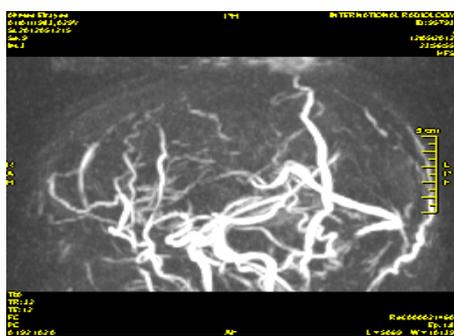


Figure 8: Follow up MRV with failure of re-canalization

The future plan involves increasing and adjusting the dose of anticoagulant and diuretics, and considering lumbar puncture for decreasing optic nerve compression.

## DISCUSSION

Cerebral venous sinus thrombosis (CVST) is a rare form of stroke that results from thrombosis (a blood clot) of the dural venous sinuses that drain blood from the brain. Symptoms may include headache, abnormal vision, any of the symptoms of stroke such as weakness of the face and limbs on one side of the body, and seizures. The diagnosis is usually by computed tomography (CT/CAT scan) or magnetic resonance imaging (MRI) employing radiocontrast to demonstrate obstruction of the venous sinuses by thrombus<sup>1</sup>. As there is along list of causes of CVST, at least 85% of the patients have at least one of these risk factors<sup>1</sup>:

- Thrombophilia, a tendency to develop blood clots due to abnormalities in coagulation, e.g. factor V Leiden, deficiency of protein C, protein S or antithrombin, or related problems.
- Nephrotic syndrome, a kidney problem causing protein loss in the urine
- Chronic inflammatory diseases, such as inflammatory bowel disease, lupus and Behçet's disease
- Pregnancy and puerperium (the period after giving birth)
- Blood disorders, especially polycythemia vera and paroxysmal nocturnal hemoglobinuria
- Use of estrogen-containing forms of hormonal contraception
- Meningitis and infections of the ear, nose and throat area such as mastoiditis and sinusitis
- Direct injury to the venous sinuses
- Medical procedures in the head and neck area

In our case the patient had three main risk factors, which were mastoiditis, antithrombin three deficiency and history suggestive of Behçet disease with recurrent oral ulcers.

A question that may be asked is how the patient was improving subjectively (i.e. diplopia disappeared) while objectively by fundus examination he was deteriorating. The explanation is that involvement of the medial rectus muscle makes diplopia less than before, which gave the false impression of improvement. Progressive papilledema is an invitation for urgent follow up MRV which would show partial re-canalization of the intracranial sinuses.

**Treatment** is with anticoagulants (medication that suppresses blood clotting), and rarely thrombolysis (enzymatic destruction of the blood clot).

Given that there is usually an underlying cause for the disease, tests may be performed to look for these. The disease may be complicated by raised intracranial pressure, which may warrant surgical intervention such as the placement of a shunt<sup>1</sup>. There are several other terms for the condition, such as cerebral venous and sinus thrombosis, (superior) sagittal sinus thrombosis, dural sinus thrombosis and intracranial venous thrombosis as well as the older term cerebral thrombophlebitis.

## **CONCLUSION**

Antithrombin three, local ear infection could be one of the most causes of cerebral venous sinus thrombosis.

## **REFERENCES**

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