

## Cerebral Venous Thrombosis in 18 Iraqi Patients

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**Summary:**

**Background:** Cerebral venous thrombosis(CVT) is an uncommon but important cause of stroke that is often missed or delayed in diagnosis .

**Objective:** to describe the clinical and radiological features , aetiology and outcome of patients with CVT.

**Patients and Methods:** an observational study that enrolled 18 Iraqi patients with CVT admitted to Medical City Baghdad Teaching Hospital from January 2001 to December 2004. They were diagnosed as CVT according to clinical status and magnetic resonance venography(MRV).

**Results:** They were 13 females and five males with age range from 14-60 years(mean $30.27 \pm 6.9$ ). Acute presentation( over < 24 hours) was seen in 10 patients(56%) and subacute (<2weeks) in four patients(22%) and chronic(> 2weeks) in four patients(22%). The most common presenting symptoms in decreasing order of frequency: headache in 78%, seizures in 33%, hemiplegia and coma each in 22%, blurred vision in 17%, diplopia in 11%. Papilloedema was the commonest physical sign, was seen in 64% followed by left abducent palsy in 33%, meningism in 22% and fever in 17%. Commonest MRV findings were patchy thrombosis of major cerebral venous sinuses in 22%, followed by SSS, SSS and right TS, SSS and left TS each in 17%. Upon screening for the cause , a reasonable cause or risk factor was found in 78%. Full clinical recovery was seen in 61%, and three patients (17%) died.

**Conclusions:** CVT is a serious condition, not rare, has wide range of presentation, a reasonable cause is often found , and anticoagulants are the mainstay of treatment.

**Keywords:** Cerebral venous thrombosis ; magnetic resonance venography; anticoagulants

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**Introduction:**

Cerebral venous thrombosis(CVT) was first described by Ribes in 1825 as autopsy finding in a man who died after a six-month history of severe headache, epilepsy and delirium. Since then, several case reports and series led to the classical description of a rare severe disease characterized clinically by headache , papilloedema, seizures and focal deficits culminating into coma and death; and pathologically by hemorrhagic intarction that contraindicate the use of anticoagulants. In the last four decades , with the advent of conventional angiography and more recently magnetic resonance venography(MRV), this allowed frequent recognition of CVT cases that differ from this gloomy description. To illustrate this evidence, we presents a personal series of 18 patients with MRV -proven CVT.

**Patients and Methods**

This is an observational study that enrolled a personal series of 18 patients admitted to the neurological department in Medical City Baghdad

Teaching Hospital, whom were collected over a period of four years from Jauuary 2001 to December 2004. All the patients were diagnosed as cerebral venous thrombosis according to the clinical presentation and MRV showing thrombotic occlusion of one or more of the major cerebral venous sinuses with or without cerebral veins. All the patients were managed as inpatients and underwent detailed screening for local or systemic predisposing factors for CVT including XR of paranasal sinuses ,mastoid , chest, CBP, ESR, PT, PTT, ACL, Lupus anticoagulant, LFT, RFT. MRI of the Brain and MRV were done for all the patients within one week of presentation.

Mode of onset was arbitrarily classified into acute( where interval between first symptom and presentation in < 24 hrs) and subacute(<2weeks) and chronic(> 2weeks).

Lumbar puncture and csf analysis was done for 11 patients. It was not done in 7 patients either because of obvious aetiological diagnosis or because of a contraindication especially bleeding tendency or intracerebral hemorrhagic mass or SOL. CSF pressure was assessed in 3 of 4 patients with chronic course and in the forth patient it was not done because of occipital meningioma.

**Results:**

The patients were 5 males and 13 females with sex ratio of 0.38:1. They aged from 14 - 60 years(mean  $30.27 \pm 6.9$ ). The mode of onset was

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acute in 10 patients(56%)and subacute or chronic each in four patients(22%). The presenting symptoms are shown in table(1).

Table (1) Presenting symptoms of 18 patients with CVT

Symptom	No. of patients	%
Headache	14	78
Seizures	6	33
Hemiplegia	4	22
Coma	4	22
Blurred vision		17
Diplopia	1	11

Patients with chronic course( four patients, 22%) presented with features of raised intracranial pressure with headache and visual impairment. Bilateral papilloedema was the commonest physical sign , was seen in 11 patients(61%). Table (2) shows the main physical signs. The commonest radiological finding on MRV was patchy thrombosis of all major cerebral venous sinuses including superior sagittal sinus(SSS), inferior sagittal sinus(ISS) and both tranverse sinuses(TS) in four patients(22%).

Table(2) Physical signs in 18 patients with CVT

Physical signs	No. of patients	%
Bilateral papilloedema	11	64
Left abducent palsy	6	33
Meningism	4	22
Fever	3	17

The commonest cerebral sinus implicated is SSS, was involved in 14 patients(78%). The main MRV findings are shown in table(3).

MRV of brain showed patchy cerebral infarcts, or hemorrhagic infarct, or intracerebral hematoma each in 2 patients( 11%), occipital meningioma in one patient(6%), periventricular T<sub>2</sub> hyperintense lesions in one patient(6%), normal in seven patients(38%) and undetermined in 3 patients.

Lumbar puncture and CSF analysis was done for 11 patients and showed normal analysis in six patients(33%) and lymphocytic pleocytosis suggestive, along with the clinical picture, of tuberculous meningitis in one patient(6%), bloody CSF in one patient, and nonspecific slight increase of cells and protein in three patients(17%).

Upon screening for the aetiology, a reasonable cause or risk factor was found in 14 patients(78%). There are shown in table(4).

Table(3) MRV findings of 18 patients with CVT

MRV finding	No. of patients	%
Patchy thrombosis of all major sinuses SSS*	43	2217
SSS and Rt** TS***	3	17
SSS and Lt #TS	3	17
Bilateral TS	2	11
SSS and bilateral TS	1	6
Lt# TS	1	6
Undetermined	1	6

\*SSS = superior Sagittal sinus \*\*Rt = right

\*\*\*TS = transverse sinus #Lt = left

Table(4).Aetiology of CVT in 18 patients.

Cause	No. of patients	%
Pregnancy and hyperemesis	2	11
Contraceptive pills	2	11
Postpartum	2	11
Leukemia	2	11
Vasculitis	1	6
Behcet's disease	1	6
Tuberculous meningitis	1	6
Nephrotic syndrome	1	6
Mastoiditis and Occipital meningioma(compresses Venous sinuses)	1	6
Unknown	4	22

Treatment revolved around use of anticoagulants(heparin and warfarin), steroid and antibiotics accordingly.

Anticoagulants were mainstay of treatment for 10 patients(eight of them recovered and only one died because of intracerebral hemorrhage into hemorrhagic infarct) and one left with neurological deficit and he was a case of Behcet's disease.

Upon discharge, 11 patients (61%) showed full clinical recovery, four patients(22%)were left with variable degrees of neurological deficits and three patients( 17%) died.

#### Discussion:

This study tries to throw light on a cerebrovascular condition that often received little emphasis and hence often underdiagnosed , that is cerebral venous stroke .It enrolled 18 patients over four years which suggests that CVT is not uncommon, given the fact that these patients were seen in a single neurological department and that they represent a personal series.Nagbal RD collected 80

patients over a period of 16 years. Bousser MG et al reviewed 38 cases over a period of eight years. There is obvious female preponderance (0.38:1) which is comparable to Cantu et al who found that more than half of adult CVT is related to pregnancy and puerperium, while Nagbal found equal sex ratio probably because he included young age group. The evolution of clinical symptoms is variable from acute (apoplectic) in 56% simulating arterial stroke to subacute in 22% simulating meningitis, encephalitis, brain abscess, to chronic in 22% simulating brain tumor, depending on the specific cerebral venous structures involved and on the rapidity of the thrombotic process. Bousser et al found acute onset in 37%, subacute in 26% and chronic in 37%<sup>1</sup>, the higher incidence of chronic in his series may be related to the high incidence of idiopathic intracranial hypertension in his series (10 patients out of 38 patients). The main neurological symptoms and signs encountered in this series were those classically described in CVT, headache (78%) is in all series the most frequent and often the earliest symptom.<sup>3,4,8,10</sup> Focal deficits, seizures, and coma were present in 22-33% which is comparable to the 25-35% of Bousser et al<sup>8</sup>, and slightly less frequent than older studies (more than 50%)<sup>1</sup>, possibly because of earlier diagnosis. Bilateral papilloedema is the commonest physical sign (64%) which is higher than in other series, 45% in Bousser<sup>8</sup> and 15% in Kryanbuhl<sup>4</sup> and 34% in Bansal et al series. MRV is non-invasive and

sensitive tool to detect CVT<sup>1,4</sup> and hence was used to detect CVT in our study. Upon modest screening, a reasonable cause or risk factor was found in 78% and the cause remains unknown in 22% which is comparable to the 26% mentioned by Bousser. Like all other series, the present one represents a selected group of patients not representative of the numerous causes that have been described.<sup>4,10,13</sup> However, it confirms the fact that the frequency of septic CVT (1/18) has markedly declined with the advent of antibiotics. This conclusion has been shared by Bousser (4/38). Pregnancy, postpartum and contraceptive pill intake are responsible for 33% of our series which may explain the female preponderance and this is supported by Cantu et al<sup>(9)</sup> who found that about half of cases are related to pregnancy and puerperium and Nagbal who found that the commonest causes are postpartum, pregnancy and contraceptive pills and anemia.<sup>(7)</sup>

Short-term prognosis is relatively good with 61% of patients showed full recovery, 17% of patients died. Bousser et al similarly

showed good prognosis with 27 out of 38 cases showed full recovery and only 4 out of 38 died. This is in contrast to Nagbal series where 37 out of 80 patients died (46%). This may be explained by the positive attitude in Bousser and our studies towards early use of anticoagulants in contrast to Nagbal who did not use anticoagulants because it was the prevailing attitude at that time.

### Conclusions:

- 1-CVT is not rare.
- 2-No age or sex is exempted from the condition, given the diverse aetiology.
- 3-Clinical presentation is protean.
- 4-A reasonable cause or risk factor is found in most cases with pregnancy, postpartum, cc pills are the most common.
- 5-MRV is very useful non-invasive tool to include or exclude CVT in suspected cases.
- 6-Most patients have a good prognosis, although it carries significant mortality.
- 7-Early judicious use of anticoagulants is very useful to decrease morbidity and mortality.

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