Cerebral venous and sinus thrombosis:

- Cerebral venous thrombosis is a pathologic condition characterised by thrombosis of cortical and deep cerebral veins and dural sinuses. It is a rare condition. The estimated incidence from autopsy studies is **0.03%.**The incidence is higher in females age 20-40 (pregnancy and OCP)
- Aetiology:

1. Idiopathic in 40%
2. Vascular injury due to trauma
3. Hypercoagulable states (protein C,S deficiency " vitamin K dependent factors ,protein S is a cofactor that increases the anticoagulation properties of protein C by 100000 time" and antithrombin III deficiency, factor5 and 2 gene mutations , anticardiolipin antibodies, lupus anticoagulant antibodies
4. Infection (cavernous and lateral sinus thrombosis can develop secondary to sinus or middle ear infections).
5. Systemic malignancy
6. Oral contraceptives. In one study 8% were due to OCP.

- Clinical presentations: patients present with signs of raised ICP (headaches, vomiting, papilledema, and 6th nerve palsy), focal deficit due to venous infarction or ICH, seizures in 30%. Patients with **cortical venous thrombosis** are more likely to present with **focal deficit** while those with **sinus thrombosis** with **increased ICP**. Patients with **deep cerebral venous thrombosis present with coma and decerebrate posturing. Cavernous** sinus thrombosis can cause periorbital swelling and ophthalmoplegia.
- Diagnostic evaluation:

1. CT scan can show venous ICH, dense vein and cord sign in 20%, precontrast scan shows delta sign and postcontrast CT scan can show empty delta sign in case of sagittal sinus thrombosis
2. MRI, MRA, MRV is the diagnostic method of choice in diagnosing CVT. False positive results (congenitally hypoplastic or absent sinus and false negative results when the signal of methaemoglobin can mimic flowing blood.
3. Cerebral angiogram venous phase is done when MRI is not conclusive or as part of neuroradiologic intervention.

- Treatment :

1. Treat the underlying cause such as infection, dehydration
2. Antithrombotics: heparin to increase APTT to 2-2.5 times then warfarin to maintain INR 2-3 for 6 months
3. Thrombolytics t-plasminogen activator, urokinase and streptokinase. This can be given systemically or locally through transfemoral or direct route (burr hole). Case series showed that this procedure is safe and effective in opening venous occlusions and that patients treated successfully has better outcome
4. Surgery is indicated to treat increased ICP (EVD) and for getting access to the sinus (burr hole)

- Outcome: **mortality 30-80%** in old series dropped to **20%** in new series. Mortality is higher in patients presenting with coma, extreme ages, thrombosis of deep veins, cerebellar vein thrombosis and in those with sepsis and malignancy. **86%** of those who survive have no neurological deficit,

recurrence rate is 10-15%, and recurrent seizures developed in 10% of those who presented with seizures.