Dural venous sinus thrombosis

Dural venous sinus thrombosis is a subset of cerebral venous sinus thrombosis, often coexisting with cortical or deep vein thrombosis, and presenting in similar fashions, depending mainly on which sinus is involved.

As such, please refer to cerebral venous sinus thrombosis.

Epidemiology

Any age, however, women on the contraceptive pill are over-represented.

Clinical presentation

Presentation is variable, and can range from asymptomatic to coma and death. Typically patients complain of headache nausea and vomiting. Neurological deficits are variable. Pathology

Superior sagittal sinus or the dominant transverse sinus thrombosis can affect the arachnoid granulations absorption of cerebrospinal fluid; consequently increase of cerebral swelling may occur. The subsequent venous hypertension can lead to oedema, and even haemorrhage.

Risk factors

Hormones, e.g. oral contraceptive pill, pregnancy, puerperium, steroids, hyperthyroidism

Prothrombotic haematological conditions, e.g. protein S deficiency, polycythaemia

Local factors, e.g. skull abnormalities, infections (especially mastoid sinus - dural sinus occlusive disease), head injury (especially skull fractures that extends to a dural venous sinus)

Systemic illness, e.g. dehydration, sepsis, malignancy, connective tissue disorders

Idiopathic: ~12.5%

Diagnosis

Dural venous sinus thrombosis diagnosis.

Treatment and prognosis

Systemic anticoagulation (e.g. heparin and warfarin) is still the first-line treatment for dural venous thrombosis. Anticoagulation is usually required even in the setting of venous haemorrhage.

Interventional management includes microcatheter thrombolysis or thromboplasty.

Dural arteriovenous fistula and increased CSF pressure have been reported as possible complications after dural venous sinus thrombosis.

Differential diagnosis

asymmetric anatomy: hypoplasia or atresia of the transverse sinus. The right transverse sinus is larger than the left in most patients. If the sinus is small or absent, then the ipsilateral sigmoid sinus and jugular fossa should also be small.

arachnoid granulations: usually characterised as well-defined focal filling defects within the dural venous sinuses (measuring 2–9 mm in diameter). These are more commonly in the lateral aspects of the transverse sinuses and should follow CSF signal intensity of all MRI sequences. asymmetric flow in the transverse or sigmoid sinus can mimic a dural venous thrombosis

Practical points

infarction in a non-arterial location, especially when bilateral or haemorrhagic

cortical or peripheral haemorrhage, especially when heterogeneous and gyriform

cortical oedema

direct signs of a thrombus (e.g. dense clot sign, cord sign, empty delta sign)

anatomy variations commonly occur can mimic sinus thrombosis or occlusion.

Case reports

A 35-year-old woman developed associated complications of cranial sinus thrombosis that included intracranial hypertension caused by an expanding intracranial hematoma, pulmonary embolism treated by placement of filters in superior and inferior vena cava to eliminate intra- and extracranial sources of emboli, and procedure-related retroperitoneal hematoma that necessitated peripheral vascular intervention. After the failure of several common devices during mechanical thrombolysis, a thrombectomy catheter (typically for peripheral vascular intervention to aide in the clot removal) was used. This case highlights the fine balance of anticoagulation and thrombolysis and the proactive, aggressive approach used by our multispecialty team to manage concurrent factors [1)].

1)
Khan SH, Adeoye O, Abruzzo TA, Shutter LA, Ringer AJ. Intracranial dural sinus thrombosis: novel use of a mechanical thrombectomy catheter and review of management strategies. Clin Med Res. 2009 Dec;7(4):157-65. doi: 10.3121/cmr.2009.847. Review. PubMed PMID: 20048139; PubMed Central PMCID: PMC2801689.