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# 與大師對話

2018.11.28

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台北榮民總醫院 張豐基副教授

Presenter: R4 莊凱壹

# 規則

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- 依照臨床時序，請大師模擬一線放射科醫師；於未知診斷，或者有限度臨床線索之情形下，進行閱片及解讀。
- 鑑別診斷為主要，確定診斷為次要。
- 目的在於學習大師之影像判讀邏輯思考。
- 主題：神經影像
- 大師評論本院影像品質建議及改進 (Protocols, techniques...)

# Case 1

# Patient Profile

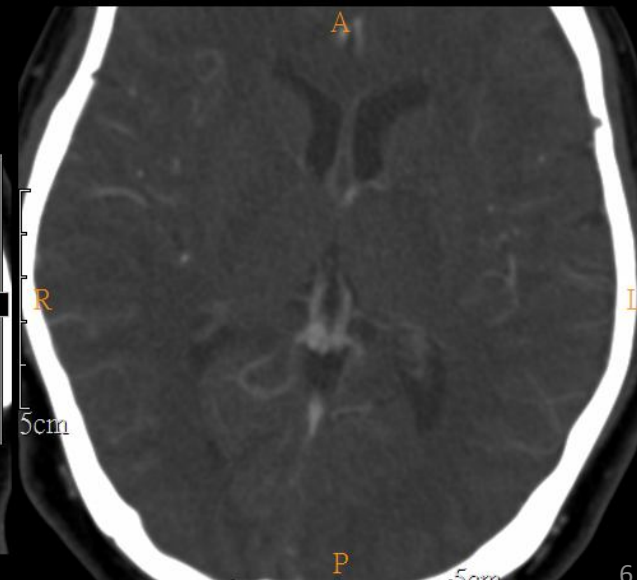
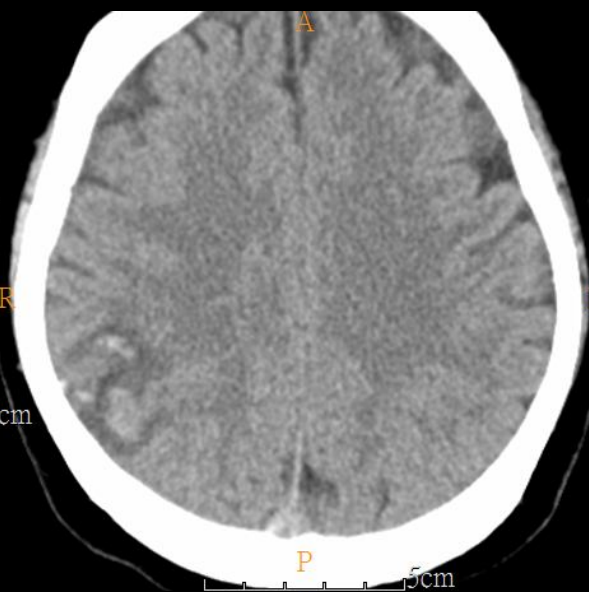
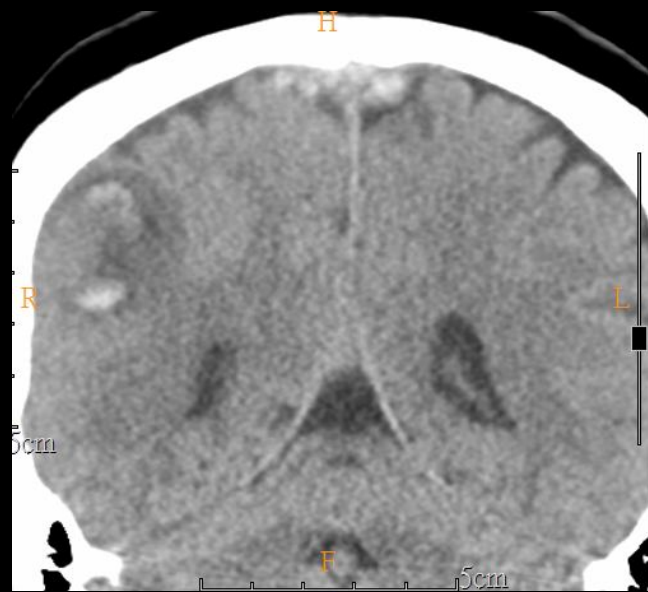
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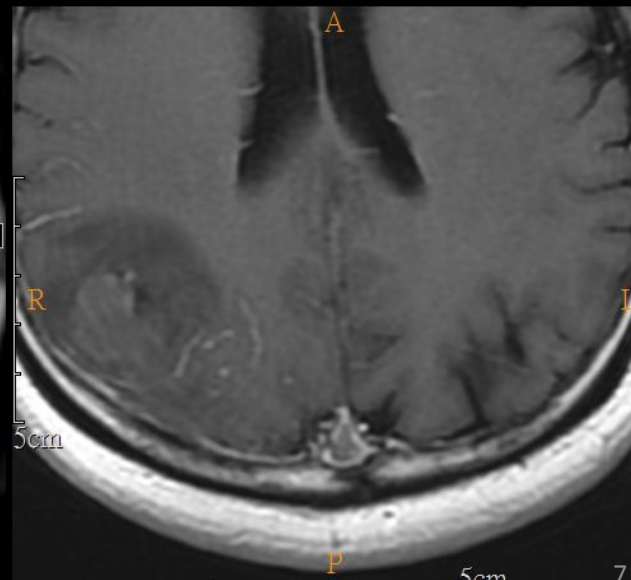
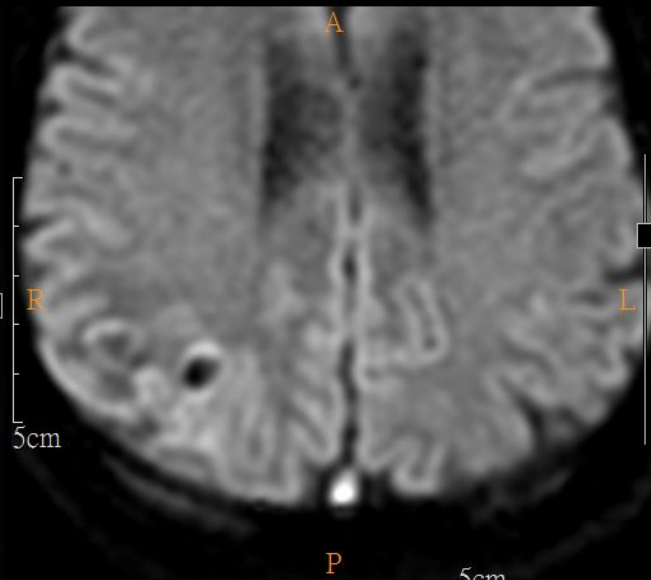
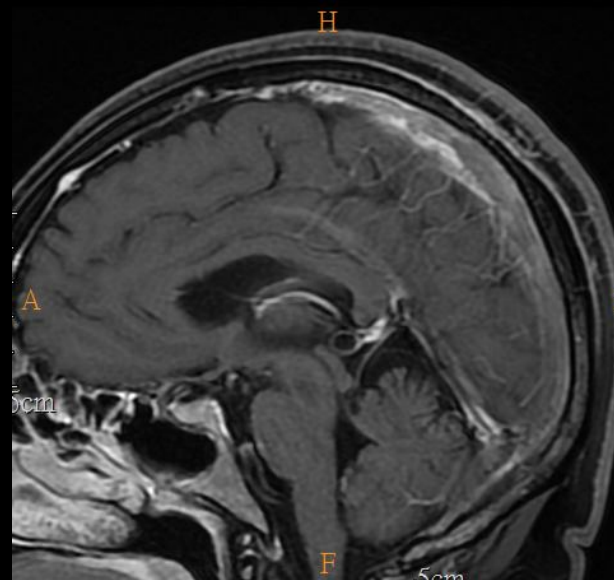
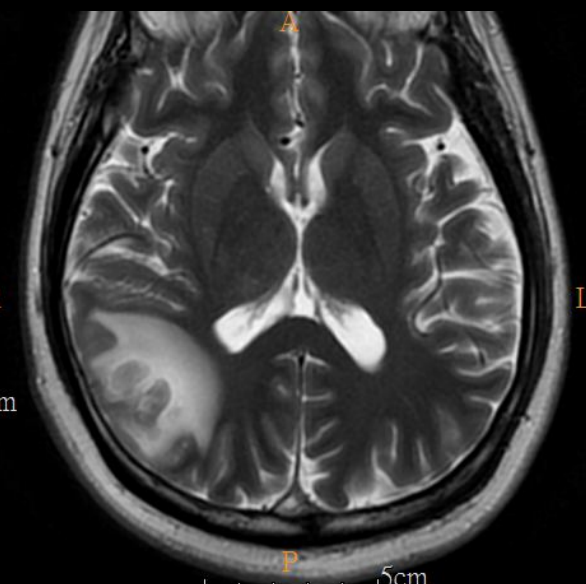
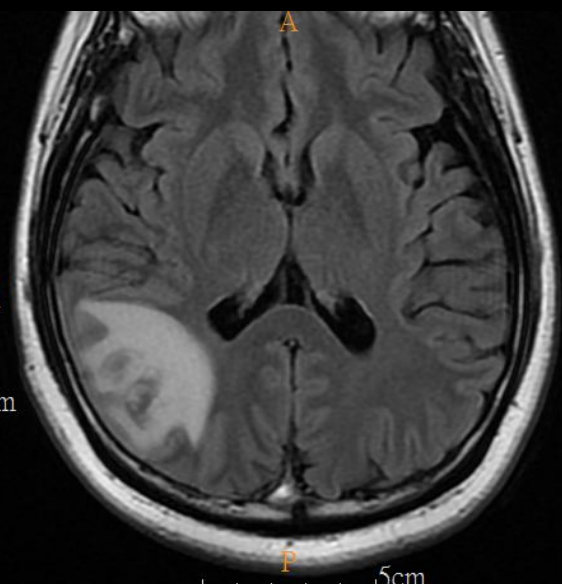
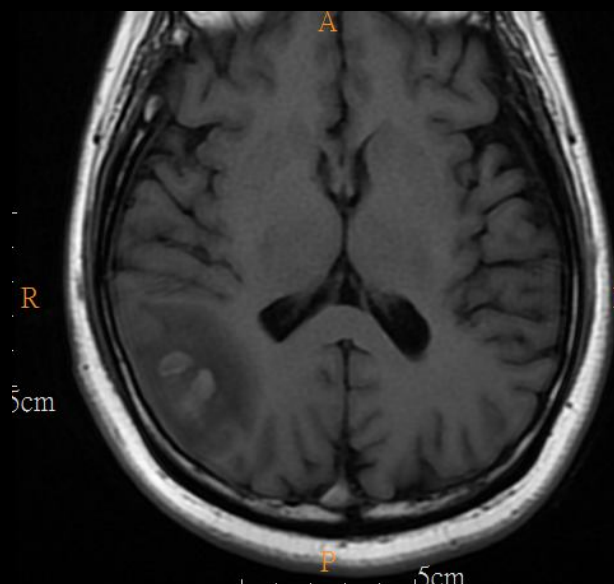
- 43 years old, female
- Chief complaint
  - Intermittent but severe headache for 1 week
  - No obvious neurologic focal sign
- Past history
  - nil

# Image

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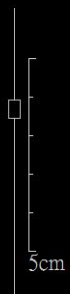
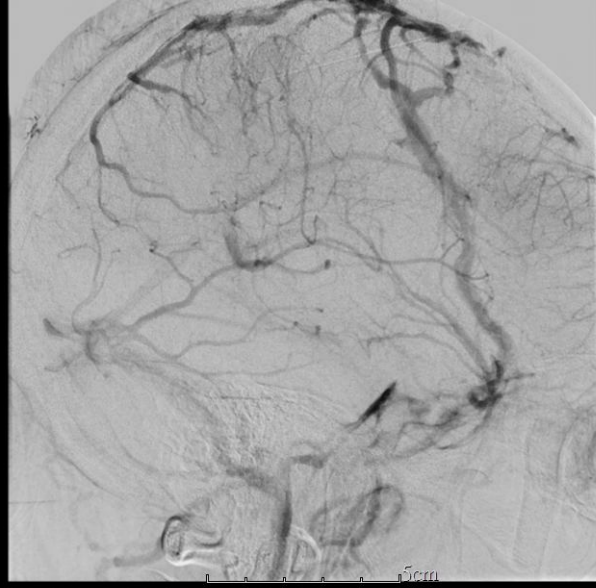
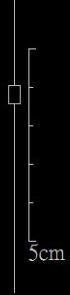
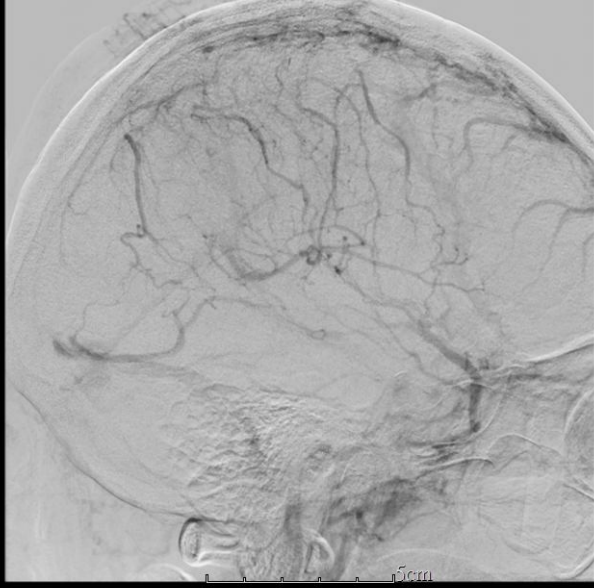
- 2018-11-12 Brain CT, CTA
- 2018-11-15 Brain CT, MRI
- 2018-11-19 Angiography
- 2018-11-20 Brain MRI



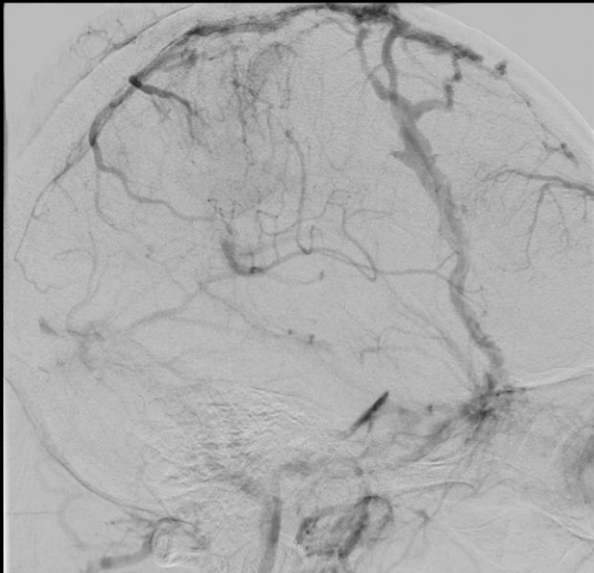




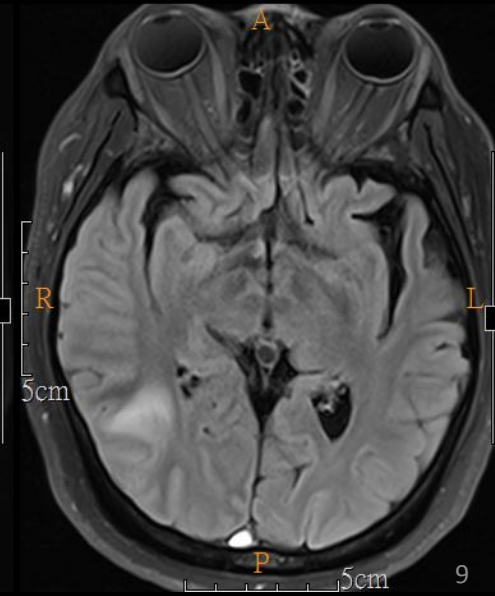
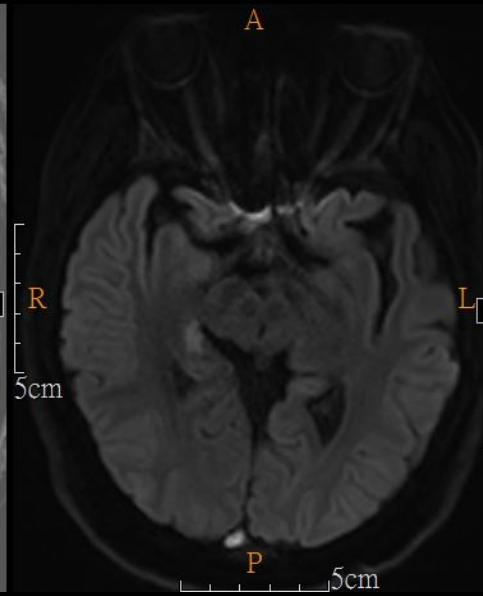
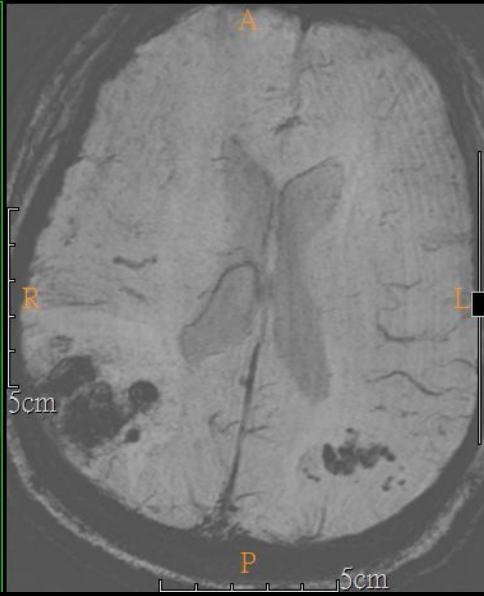
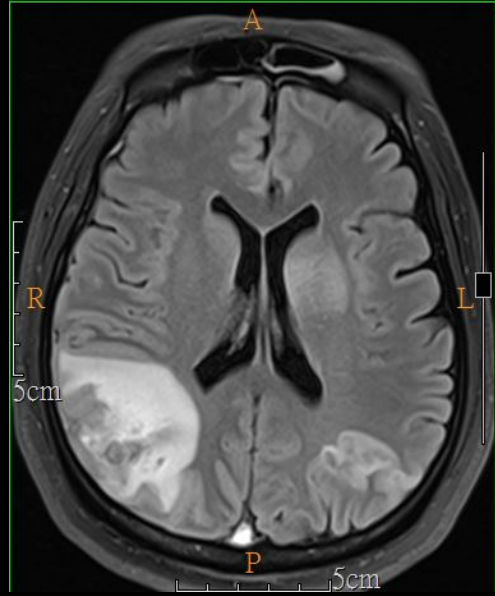
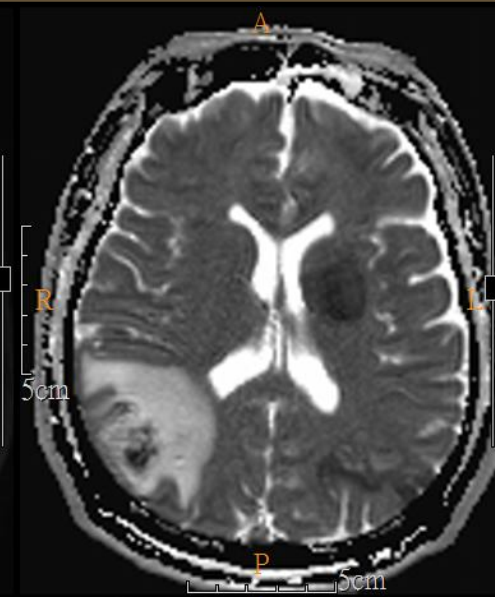
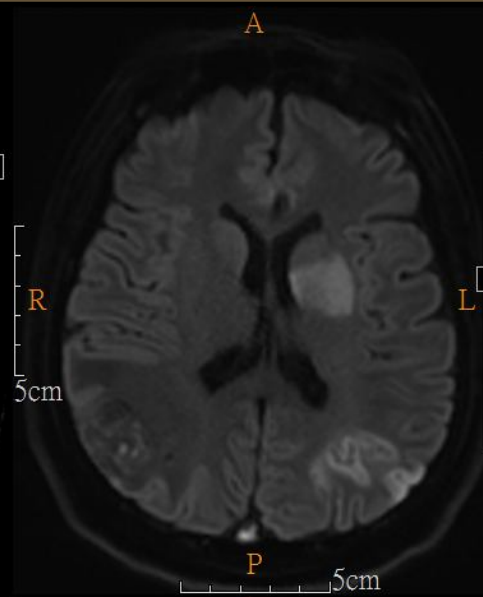
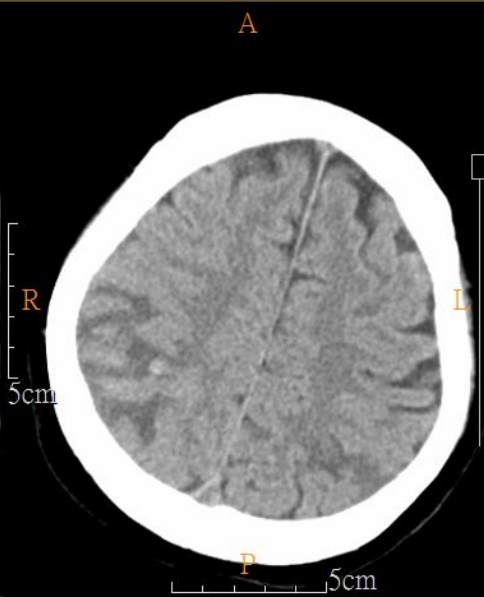
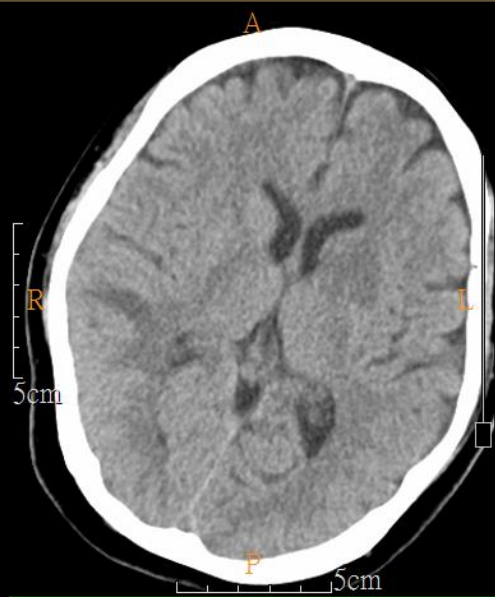
5cm



5cm



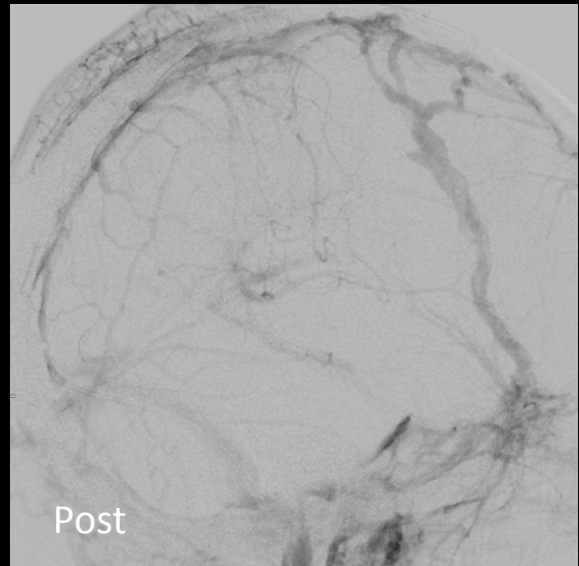
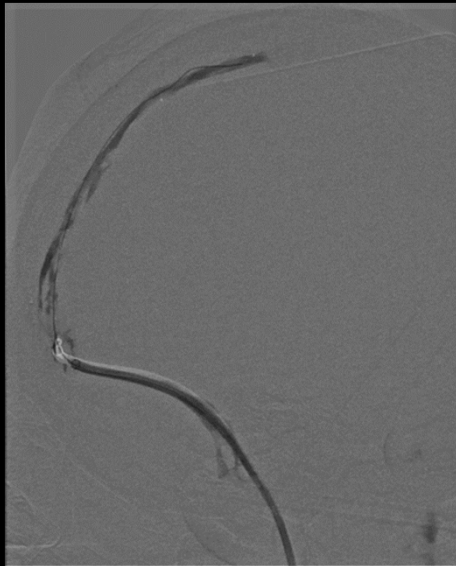
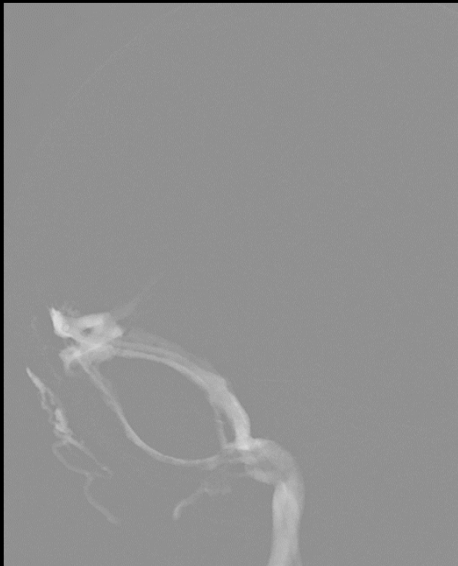
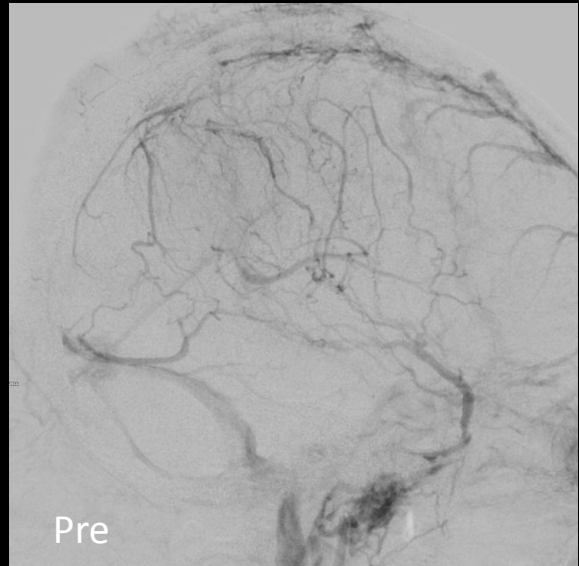




# Image

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- 2018-11-22 Mechanical thrombectomy



# Diagnosis

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- Superior sagittal sinus thrombosis with bilateral venous infarction and hemorrhage, involving bilateral parietal lobe, right hippocampus, and left anterior basal ganglion
- S/P endovascular mechanical thrombectomy

# Discussion

Dural Venous Sinus Thrombosis

# Dural Venous Sinus Thrombosis

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- **Epidemiology**

- Any age 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**

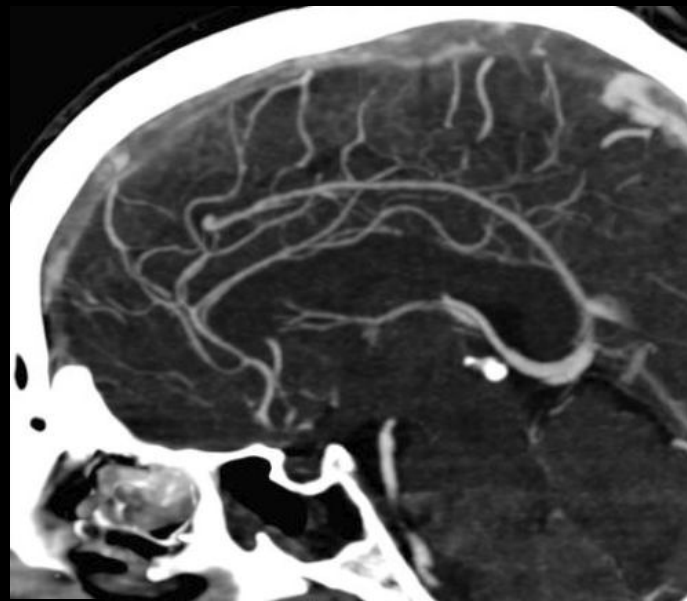
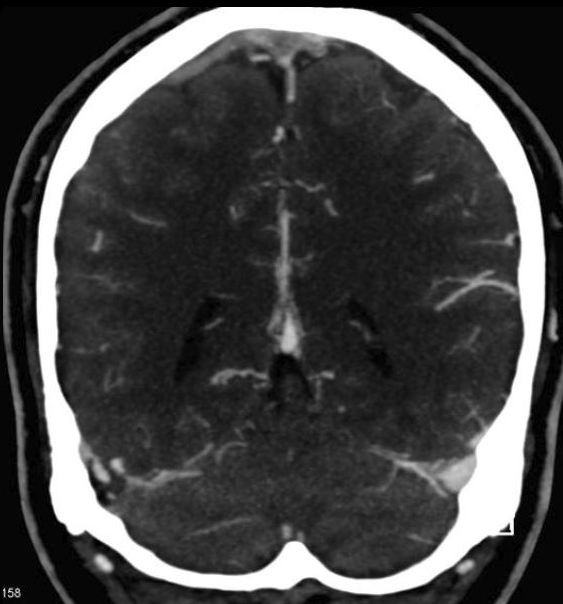
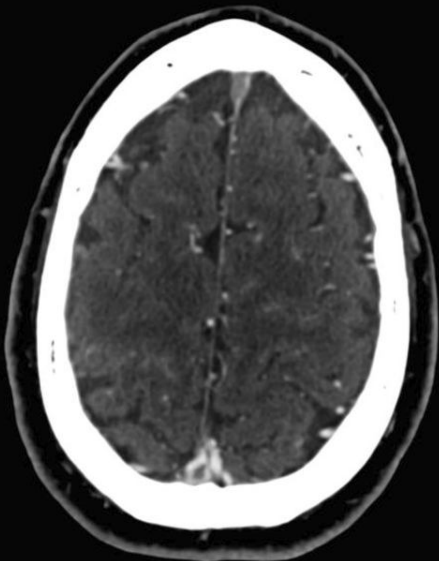
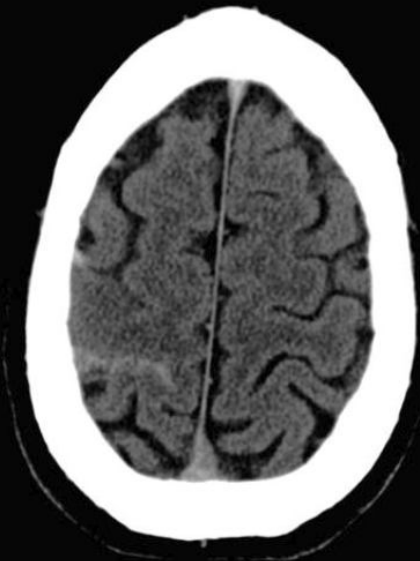
- Superior sagittal sinus or the dominant transverse sinus thrombosis can affect the arachnoid granulation absorption of cerebrospinal fluid
- Consequent cerebral swelling
- Venous hypertension can lead to edema and hemorrhage

# Dural Venous Sinus Thrombosis

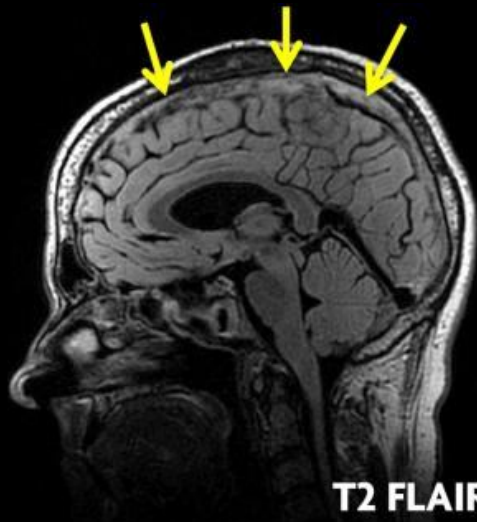
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- General features
  - "Empty delta" sign on CECT, T1WI C+ MR
- CT
  - Hyperdense sinus on NECT (usually > 70 HU)
  - ± hyperdense cortical veins ("cord" sign)
  - CTV: Filling defect (thrombus) in dural sinus
- MR
  - Hypointense thrombus "blooms" on T2\* GRE
  - Absence of flow in occluded sinus on 2D TOF MRV
- Protocol recommendations
  - NECT, CECT scans ± CTV as initial screening
  - If CTs negative, MR + MRV (T2\*, DWI, T1WI C+)
  - If MRV equivocal, DSA is gold standard

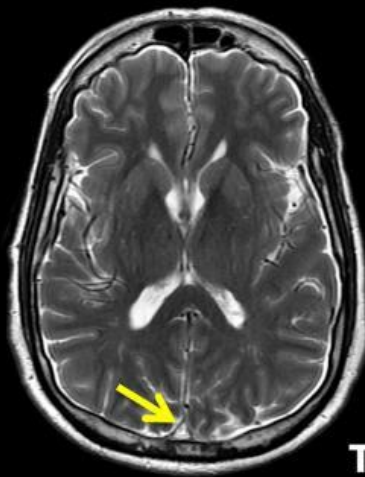




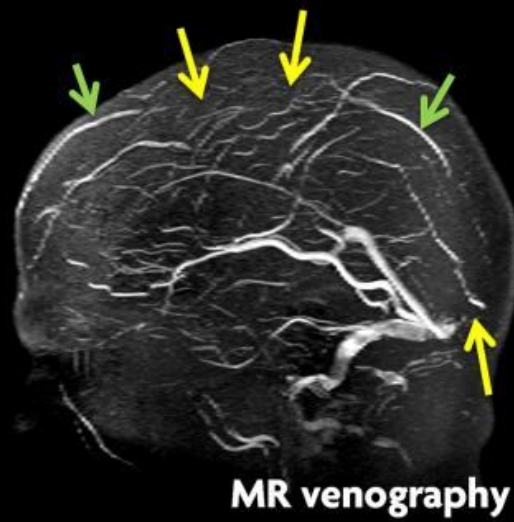
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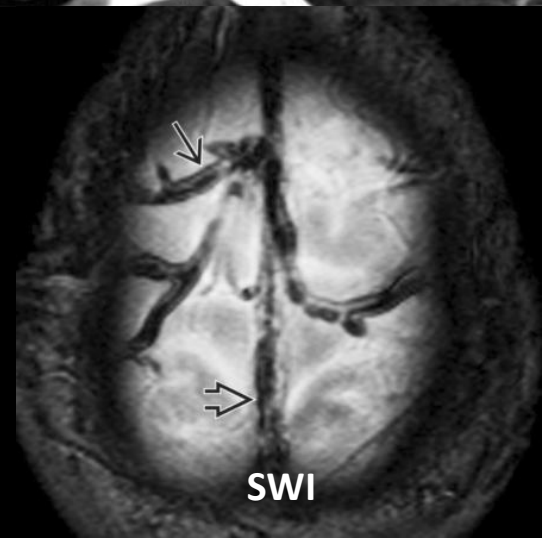
T2 FLAIR



T2WI



MR venography



SWI

# Endovascular Treatment

Mechanical thrombectomy in cerebral venous thrombosis: systematic review of 185 cases

*Stroke*. 2015 May;46(5):1263-8. doi: 10.1161/STROKEAHA.114.007465. Epub 2015 Apr 21

# Patient Profile

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- Identified 42 studies and 185 patients with CVT who were treated with mechanical thrombectomy
- Many of the patients were severely ill
  - Pretreatment intracerebral hemorrhage was present in 60 percent
  - Stupor or coma in 47 percent
- AngioJet rheolytic catheter, balloon angioplasty, stents, and microsnares

# Conclusion

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- A good outcome was reported for 84 percent of patients
- Mortality rate: 12 percent
- New or worsened intracerebral hemorrhage: 10 percent
- A high recanalization rate (95 percent, 21 percent partial) was achieved
- Conclusion
  - MT is reasonably safe in the majority of cases, but controlled studies are required to provide a definitive answer on the efficacy and safety of MT in patients with CVT

# Limitation

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- The results of this study should be approached with caution, because its data are mainly based on **retrospective case reports** and **case series**.
- Clinicians and researchers alike tend to publish data with positive outcome more readily.
- A randomized control trial on endovascular treatment for patients with CVT is currently underway.
- Hopefully, this study will provide more solid data on the safety and efficacy of this procedure.

# The Only RCT Trial

Thrombolysis or anticoagulation for cerebral venous thrombosis:  
rationale and design of the TO-ACT trial

*Int J Stroke*. 2013 Feb;8(2):135-40. doi: 10.1111/j.1747-4949.2011.00753.x. Epub 2012 Feb 20.

# Conclusion

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- Comparing anticoagulation with endovascular treatment (thrombectomy with or without chemical thrombolysis)
- In patients with acute CVT and at least one risk factor for clinical deterioration (coma, mental status disturbance, CVT involving the deep venous system, intracerebral hemorrhage)

**• Prematurely stopped for futility in 2017**



# Back to 2008

Endovascular thrombectomy and thrombolysis for severe cerebral sinus thrombosis: a prospective study

*Stroke*. 2008 May;39(5):1487-90. doi: 10.1161/STROKEAHA.107.502658. Epub 2008 Mar 13.

# Conclusion

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- 20 patients with CVT who were treated with endovascular thrombolysis
- 8 patients (40 percent) died or became dependent
- The disappointing outcomes seen in this series after endovascular thrombolysis may be a more accurate reflection of actual outcomes with this technique in clinical practice when used to treat patients with clinically severe CVT.