Neurointervention

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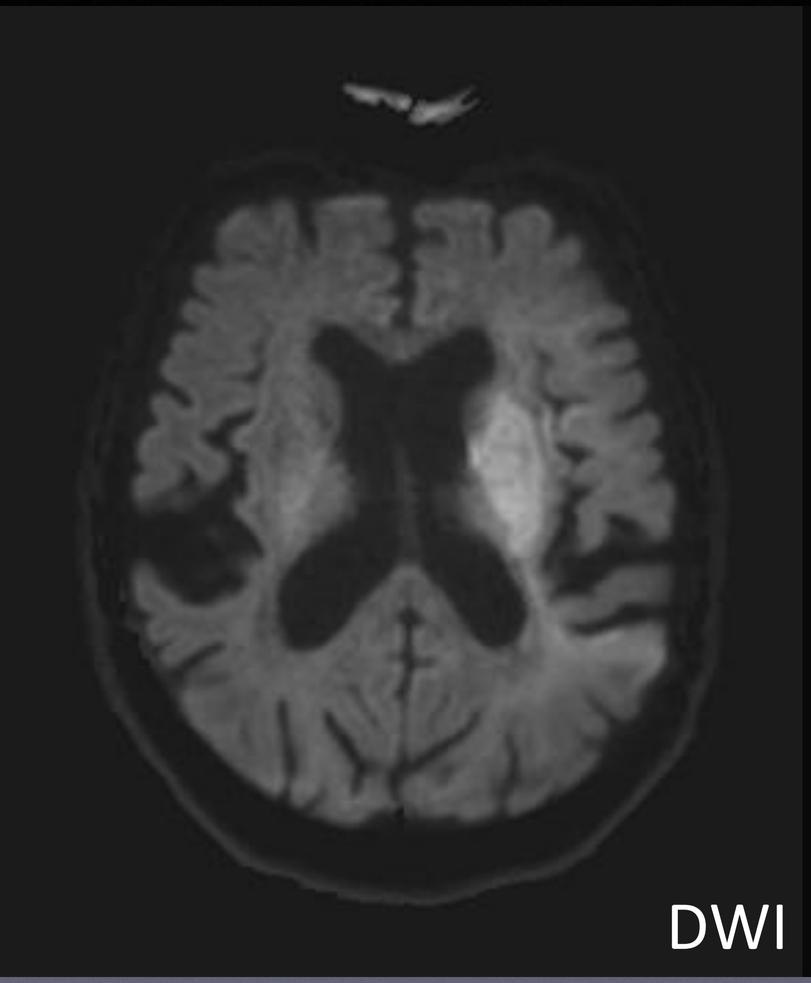
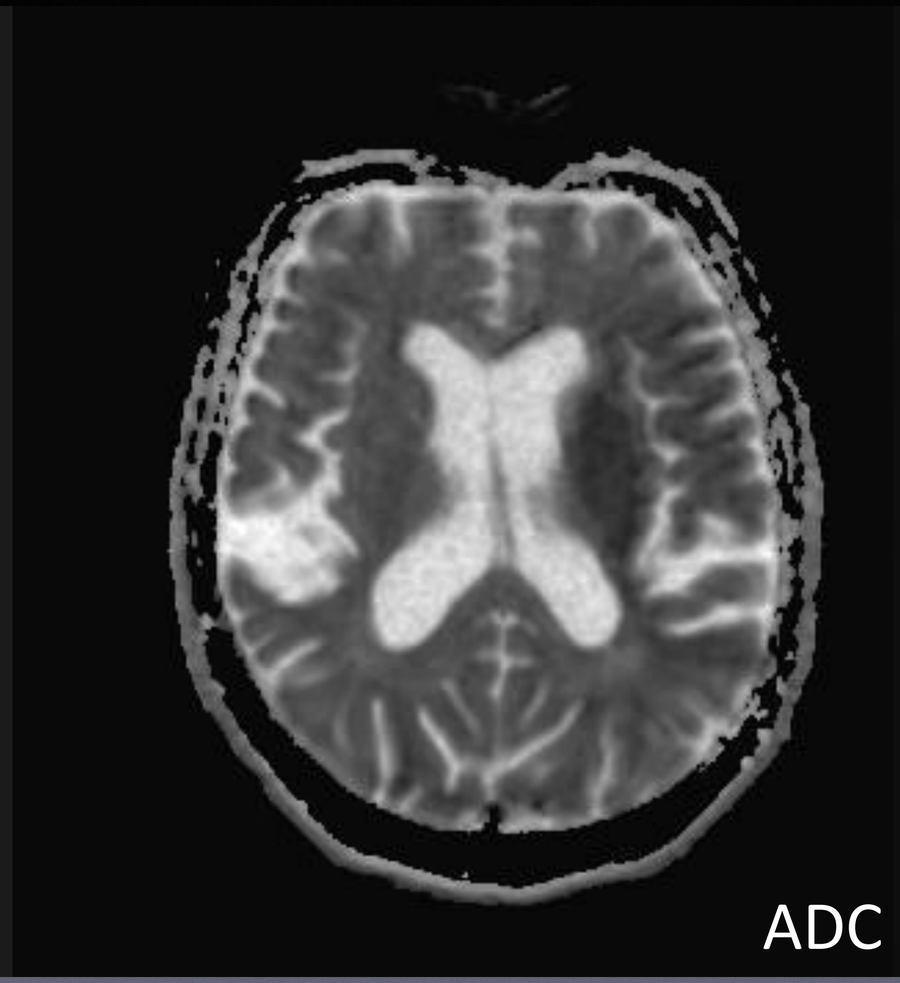
Let’s start with a case

- A 72 year old man is admitted as a stroke call
- Acute debut of right sided hemipareses, central VII pareses, global aphasia and deviation of gaze to the left
- NIHSS is around 20


DWI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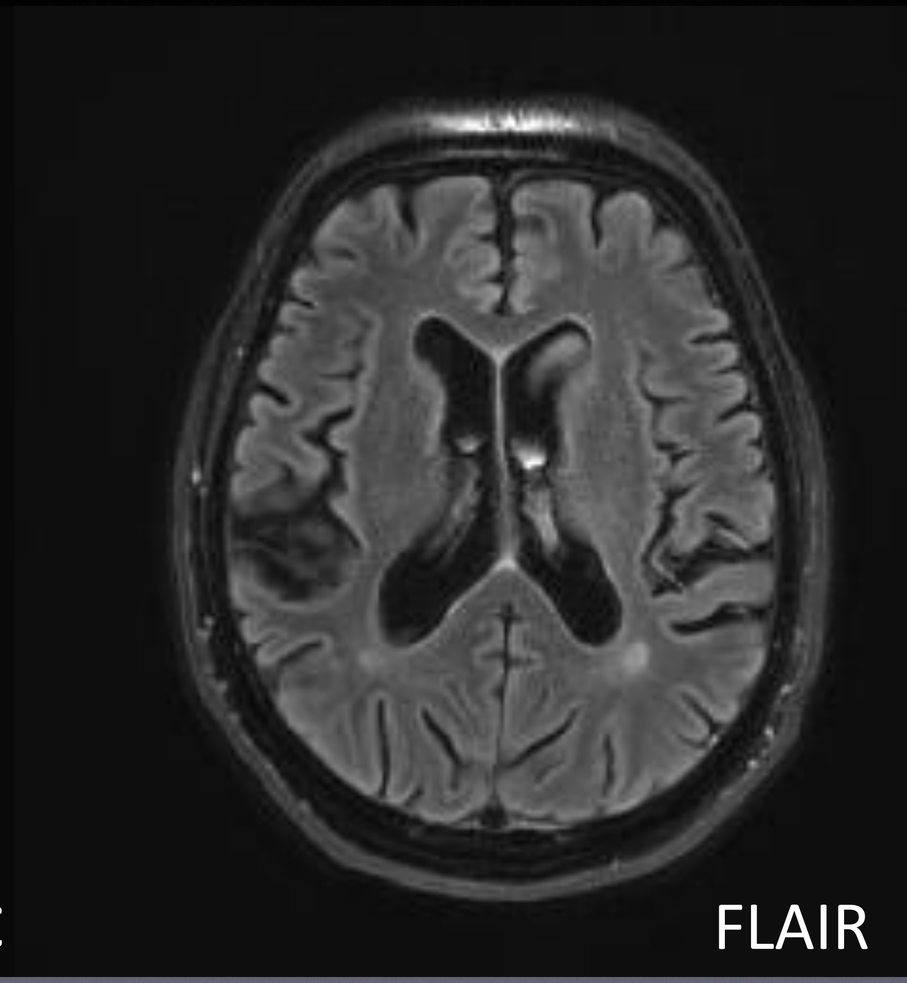
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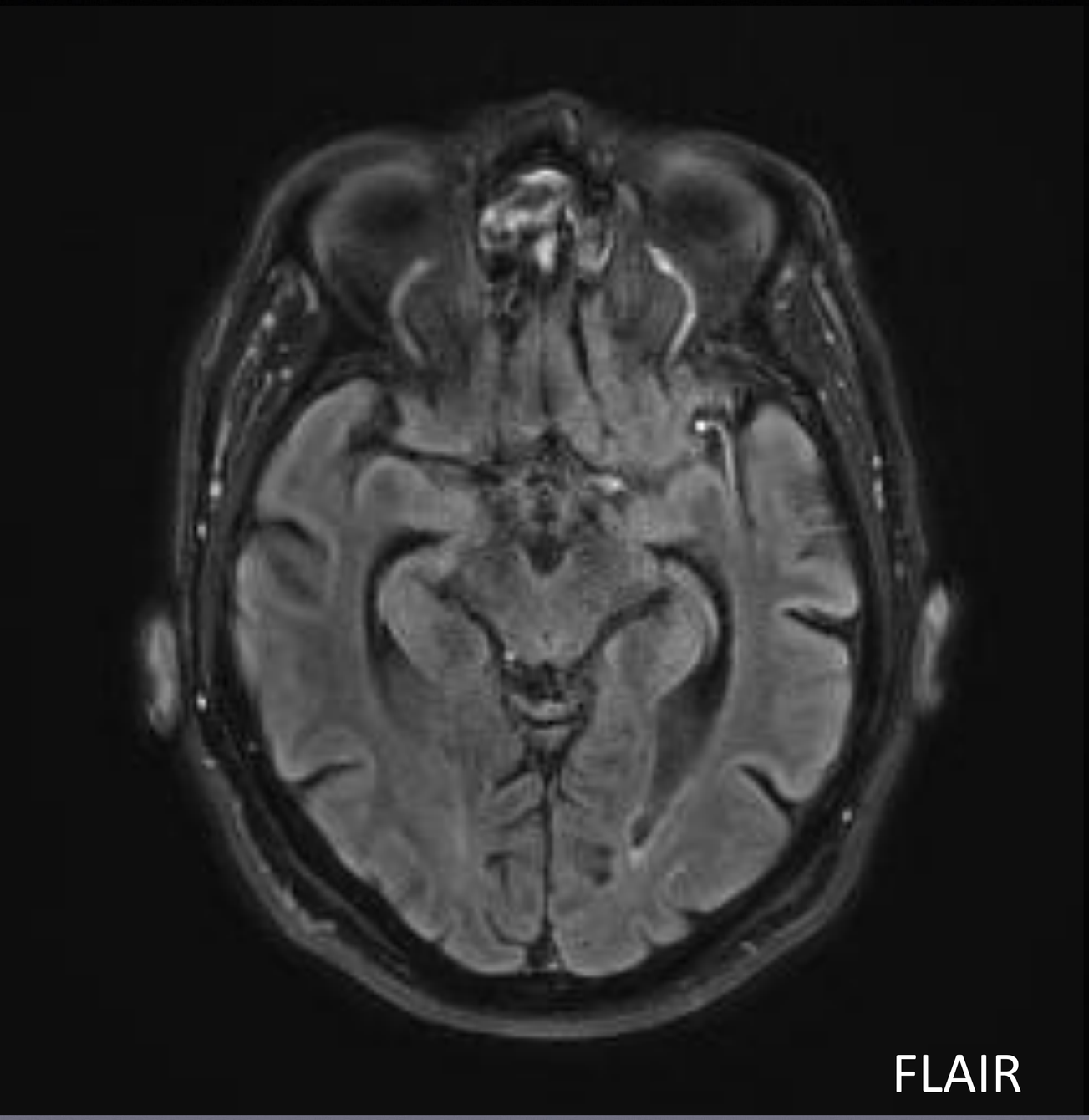
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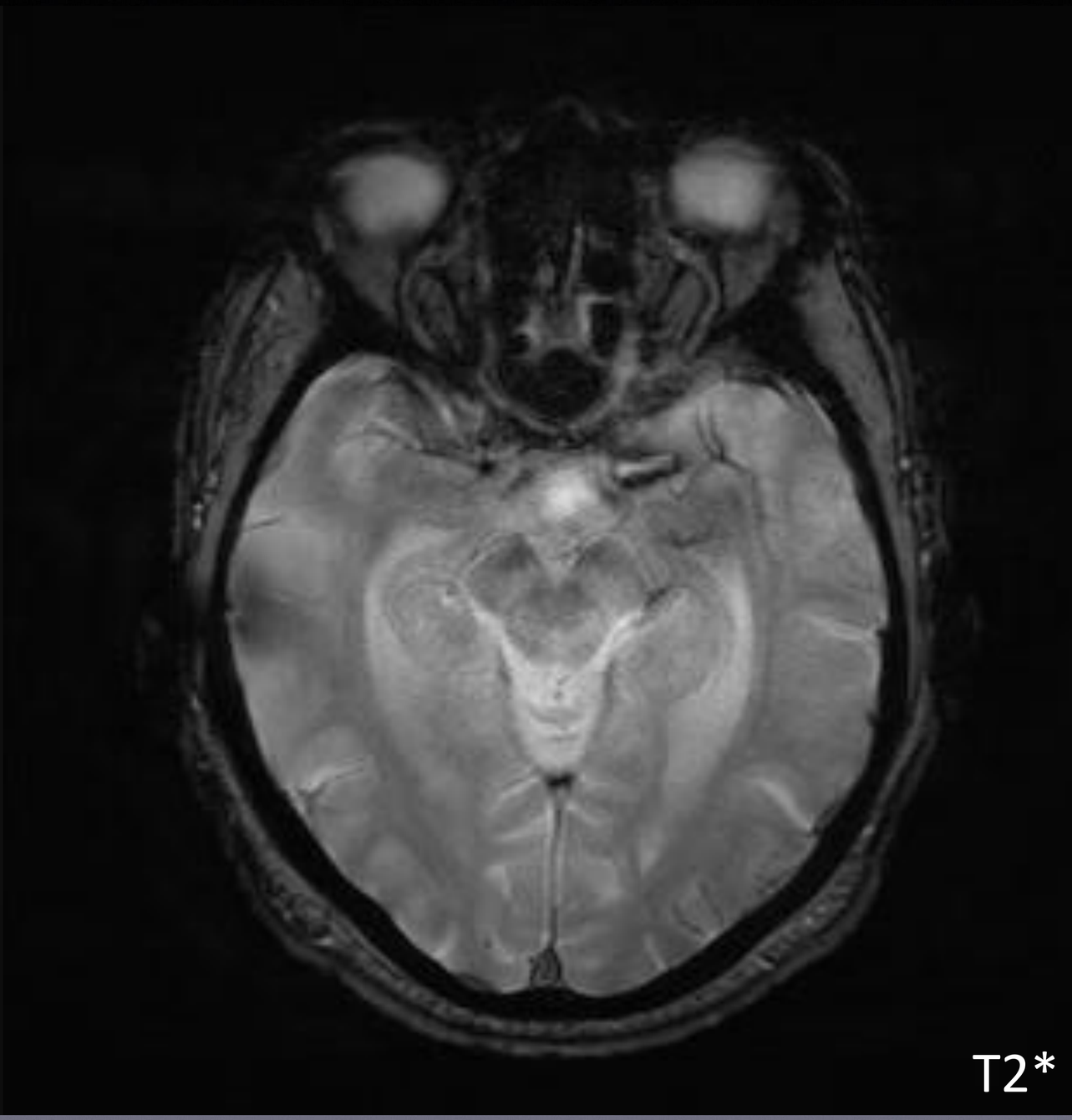
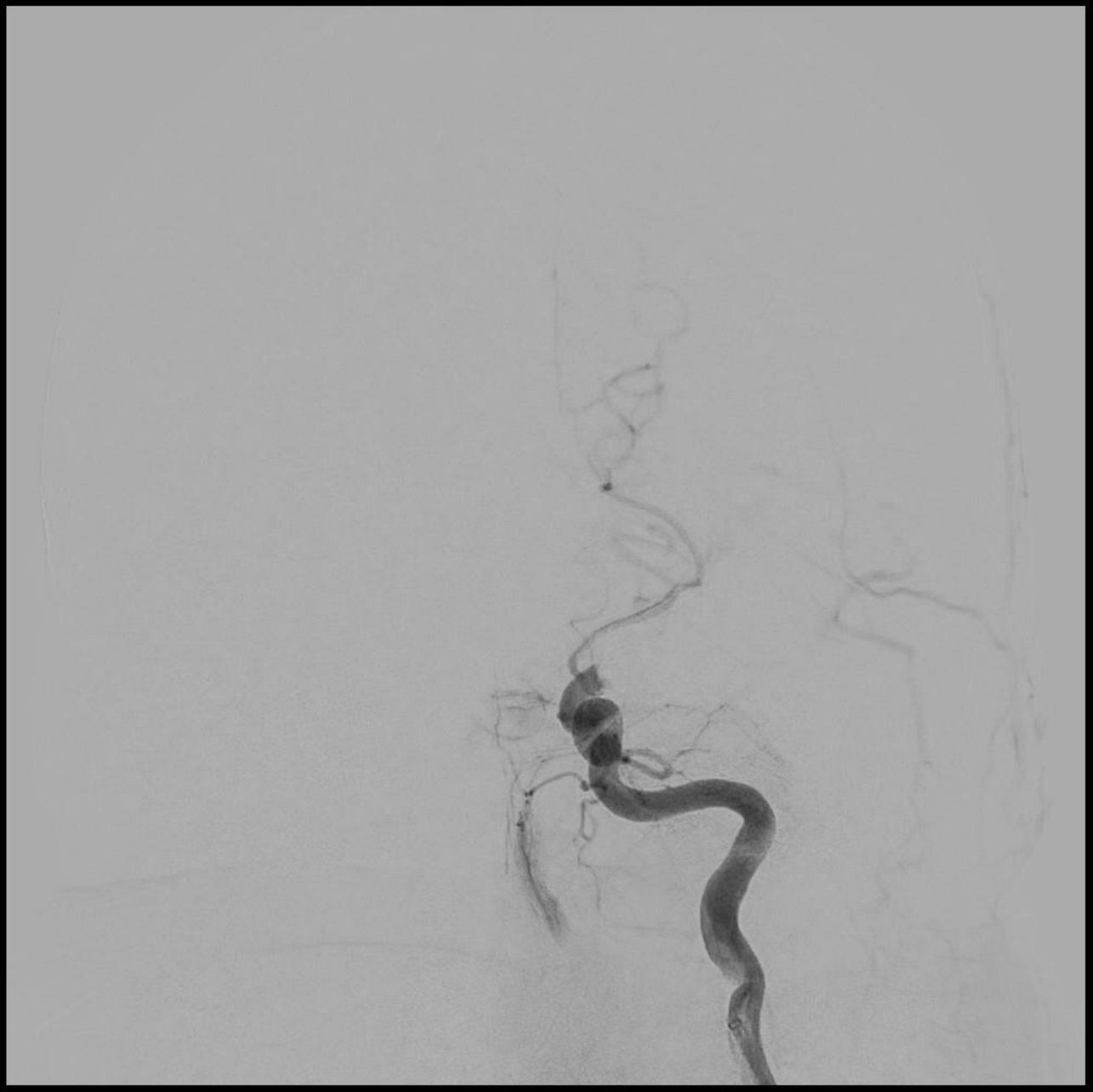
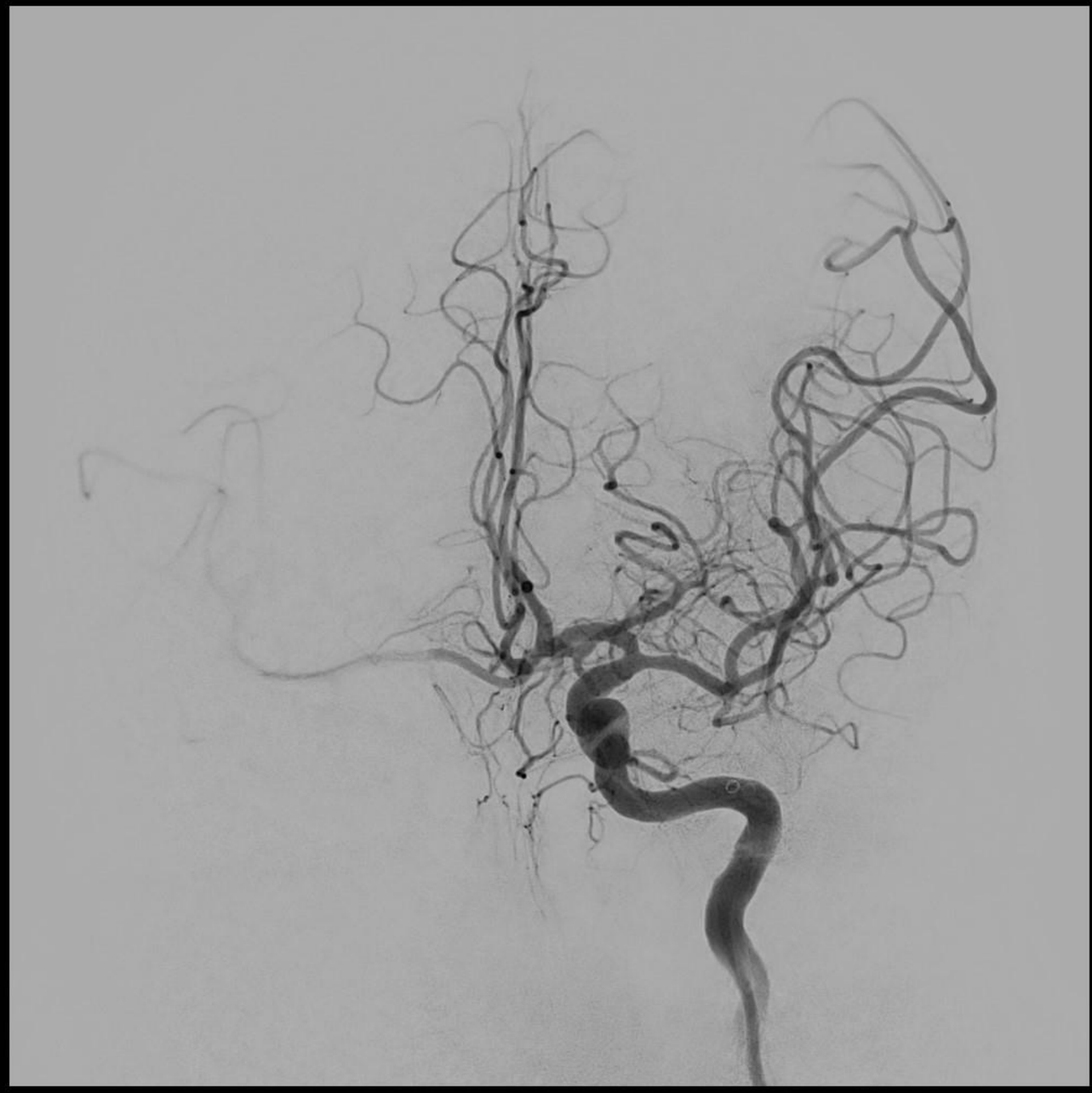
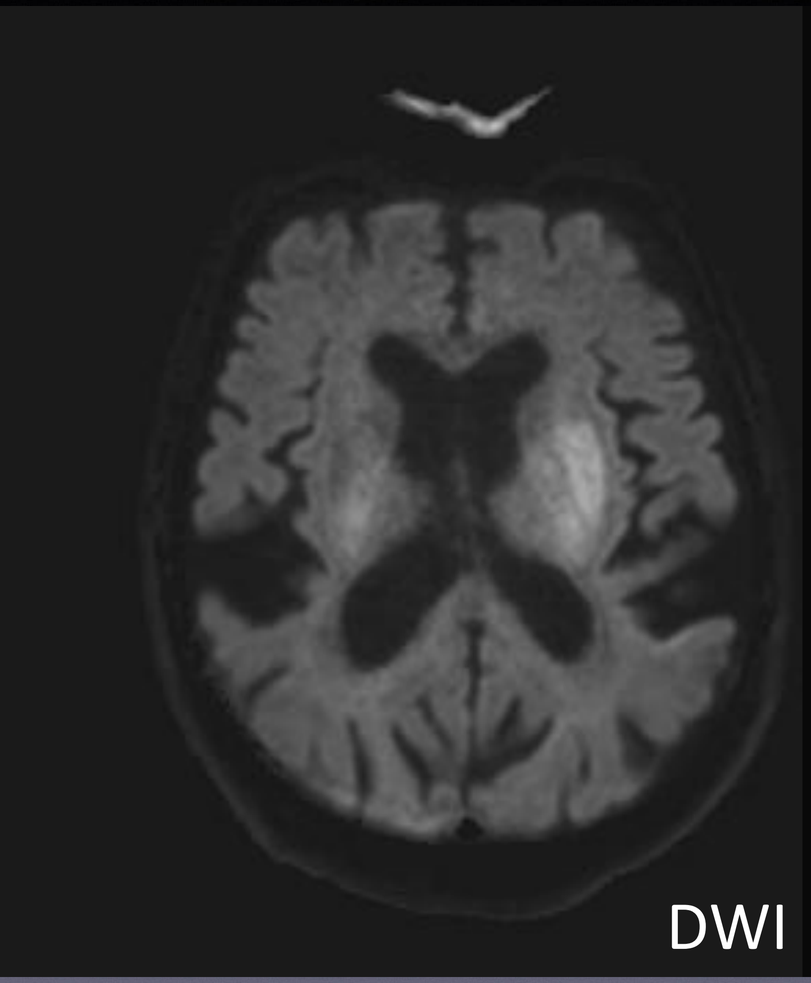

T2*

Contrast boosted angio



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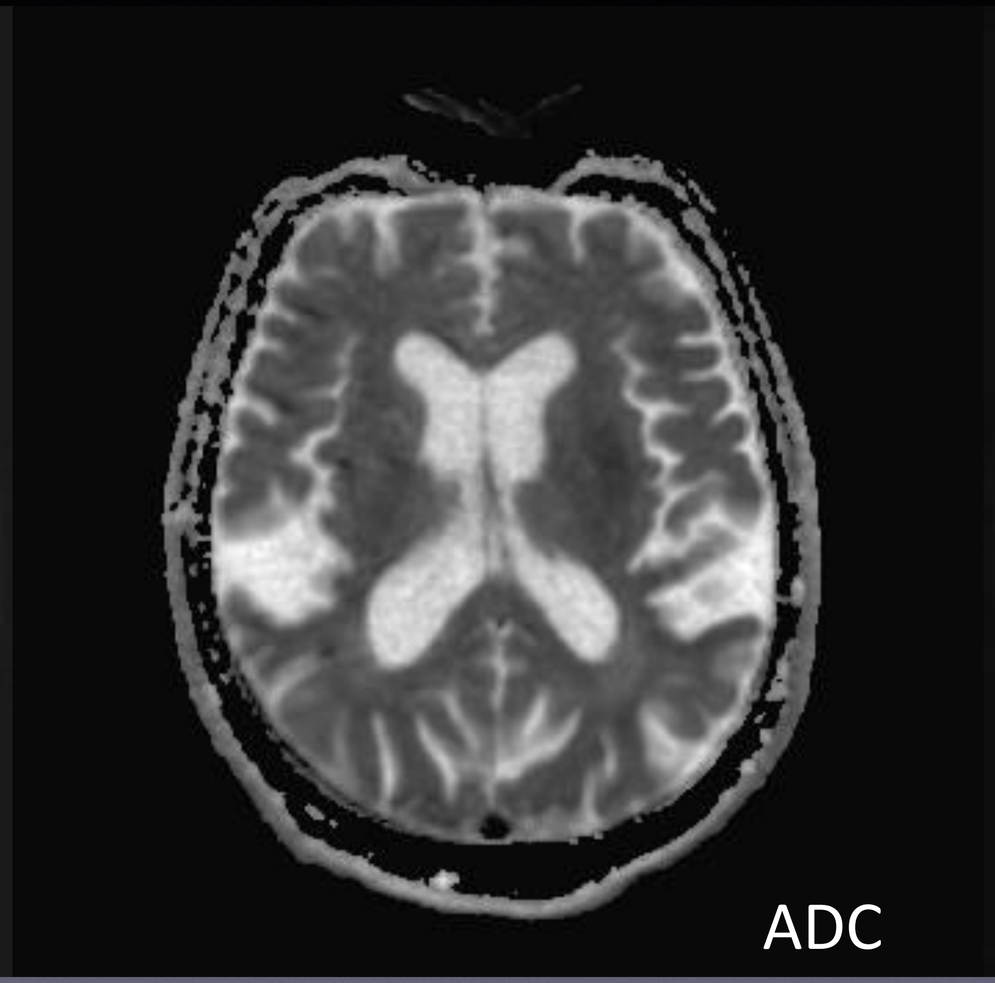
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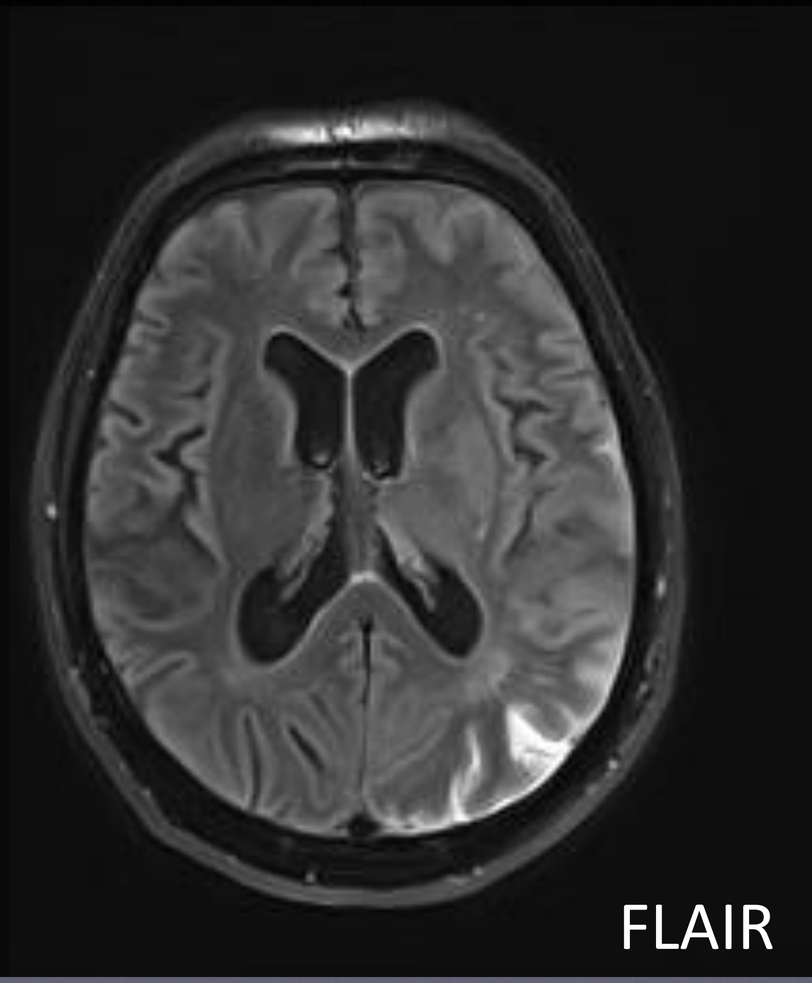
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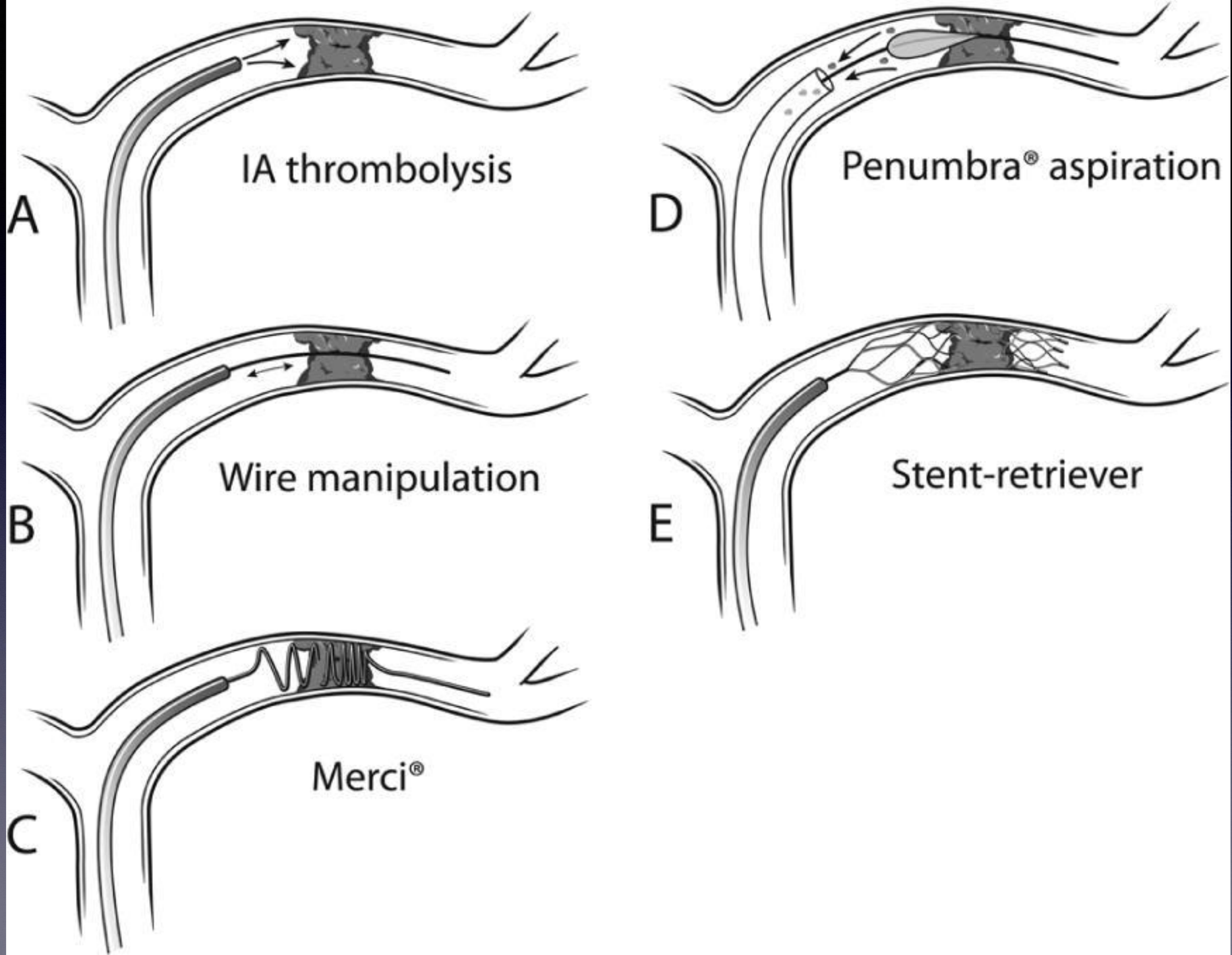
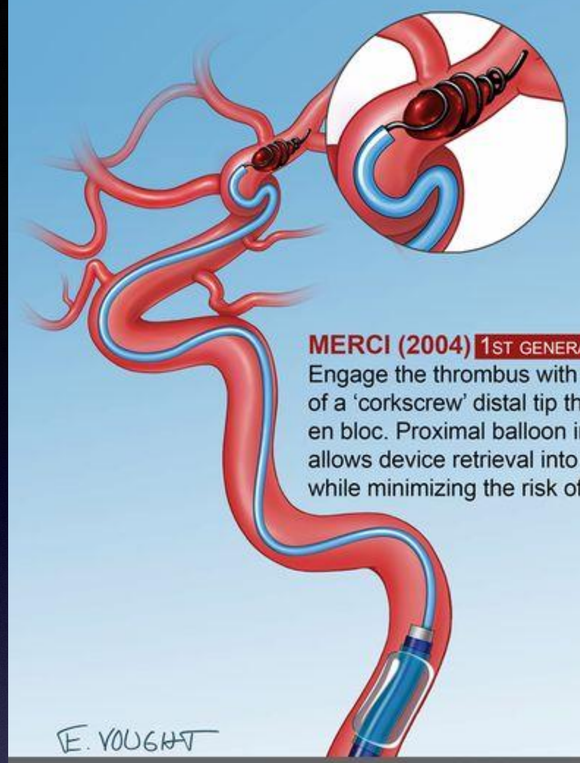
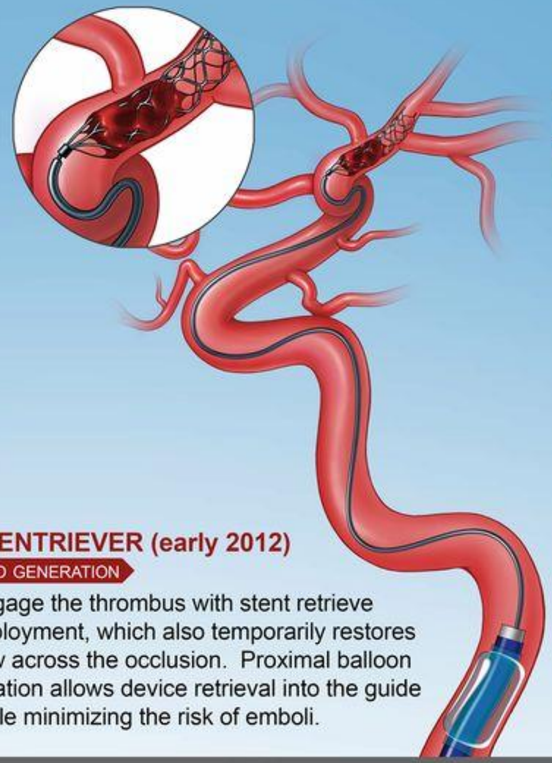

A
IA thrombolysis
B
Wire manipulation
C
Merci®
D
Penumbra® aspiration
E
Stent-retriever



MERCI (2004) 1ST GENERATION

Engage the thrombus with deployment of a 'corkscrew' distal tip then remove en bloc. Proximal balloon inflation allows device retrieval into the guide while minimizing the risk of emboli.

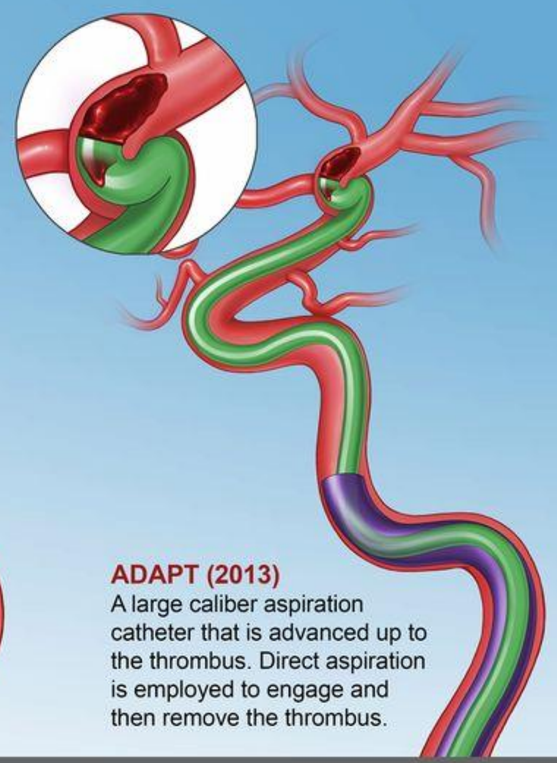
E. VOUGHT



STENTRIEVER (early 2012)

3RD GENERATION

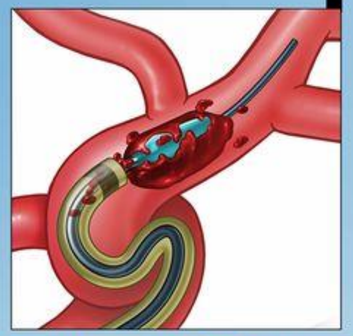
Engage the thrombus with stent retrieve deployment, which also temporarily restores flow across the occlusion. Proximal balloon inflation allows device retrieval into the guide while minimizing the risk of emboli.



ADAPT (2013)

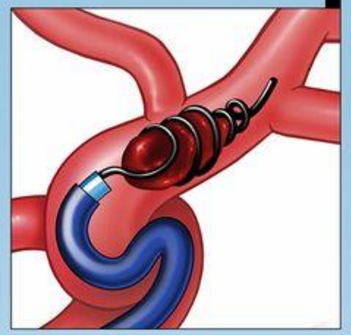
A large caliber aspiration catheter that is advanced up to the thrombus. Direct aspiration is employed to engage and then remove the thrombus.

2004 2009 2010 2012 2013



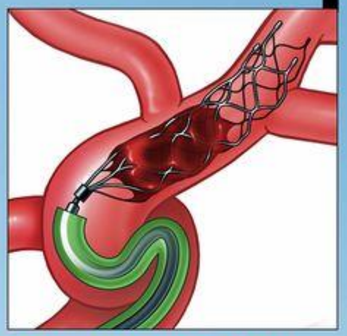
PENUMBRA (2009) 2ND GENERATION

The penumbra aspiration system involves maceration of the thrombus with a separator under direct aspiration to prevent showering of fragments. Once the catheter system is delivered to the target vessel, ongoing clot maceration is performed without the need to re-access.



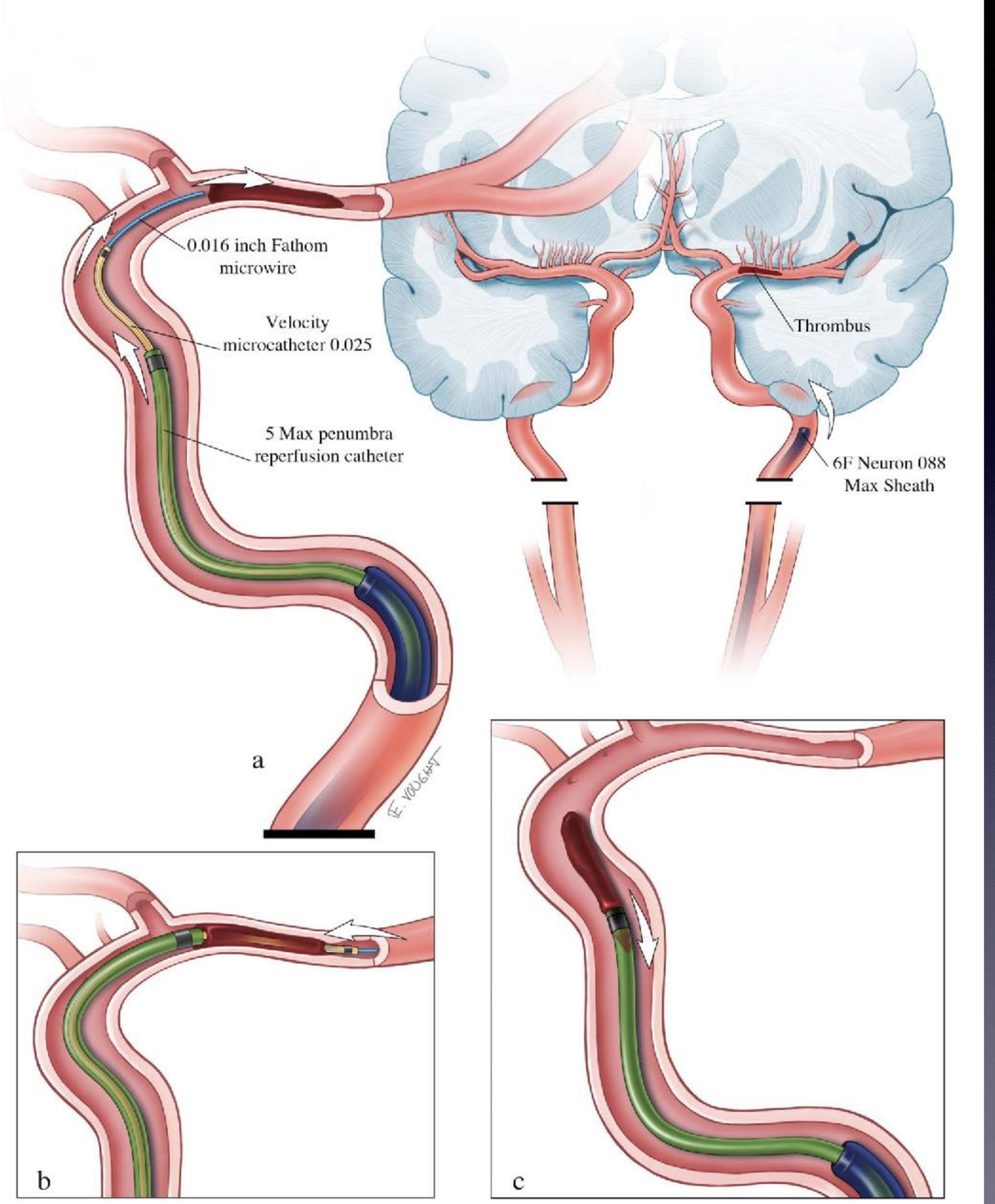
DAC (2010)

The DAC is positioned immediately adjacent to the thrombus and aspiration is applied to minimize emboli and optimize the vectors during pulling of the device.



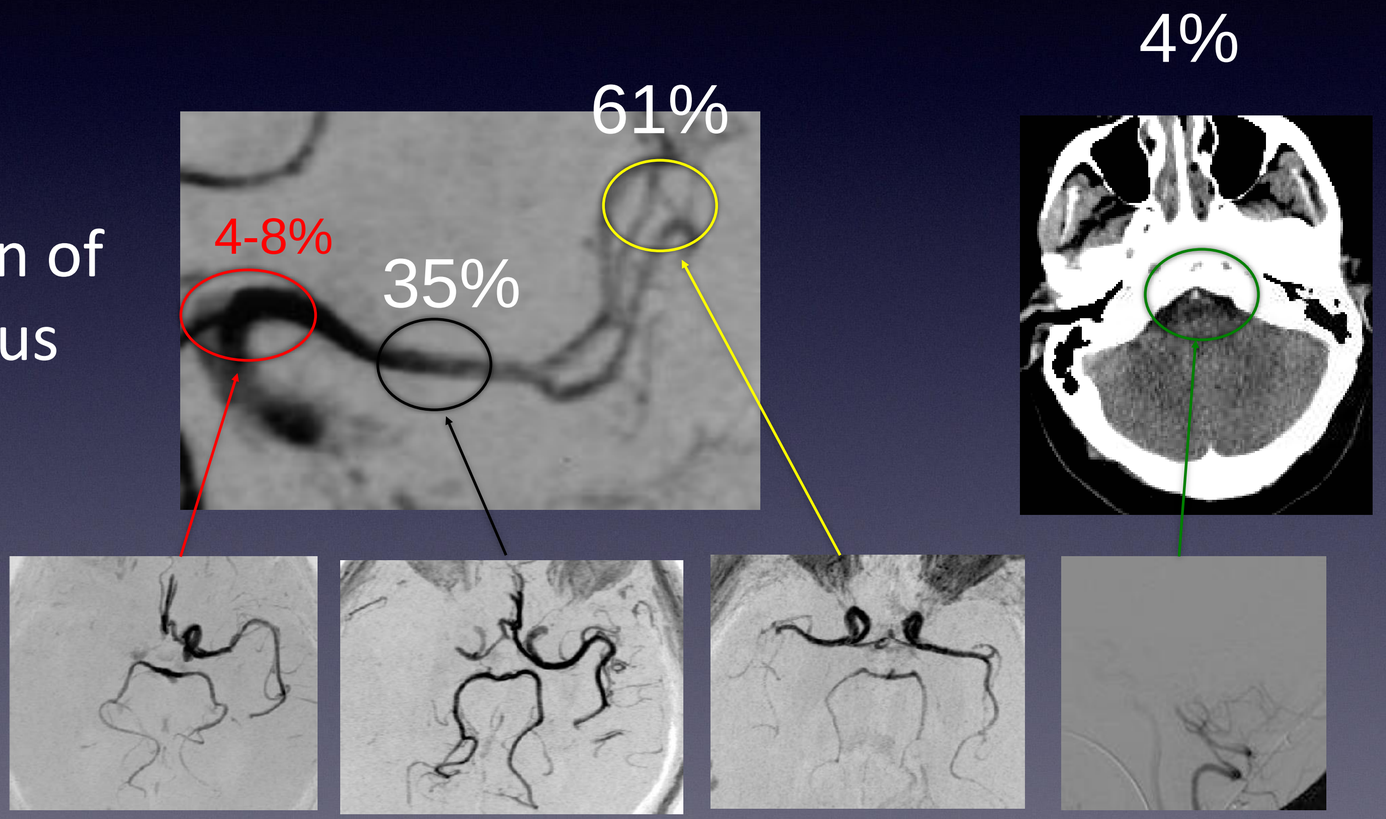
SOLUMBRA (late 2012)

To minimize the distance the stent retriever must travel while engaging the thrombus and mitigate the possibility of losing purchase of the clot, the stent retriever is then pulled directly into a large bore intermediate catheter while maintaining aspiration.


0.016 inch Fathom microwire
Velocity microcatheter 0.025
5 Max penumbra reperfusion catheter
Thrombus
6F Neuron 088 Max Sheath
a
b
c

Why not just use thombolysis

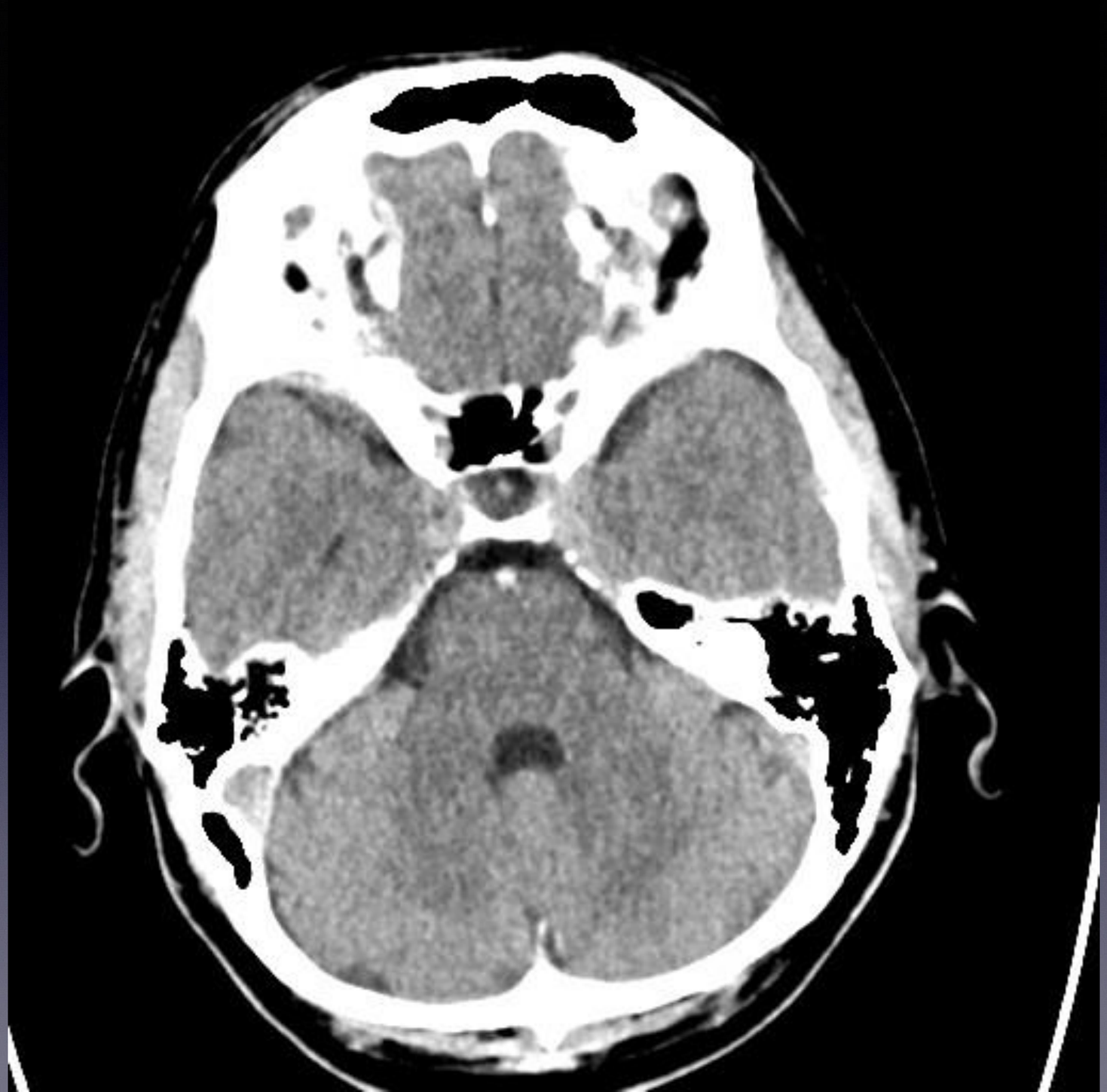
Localization of the thombus

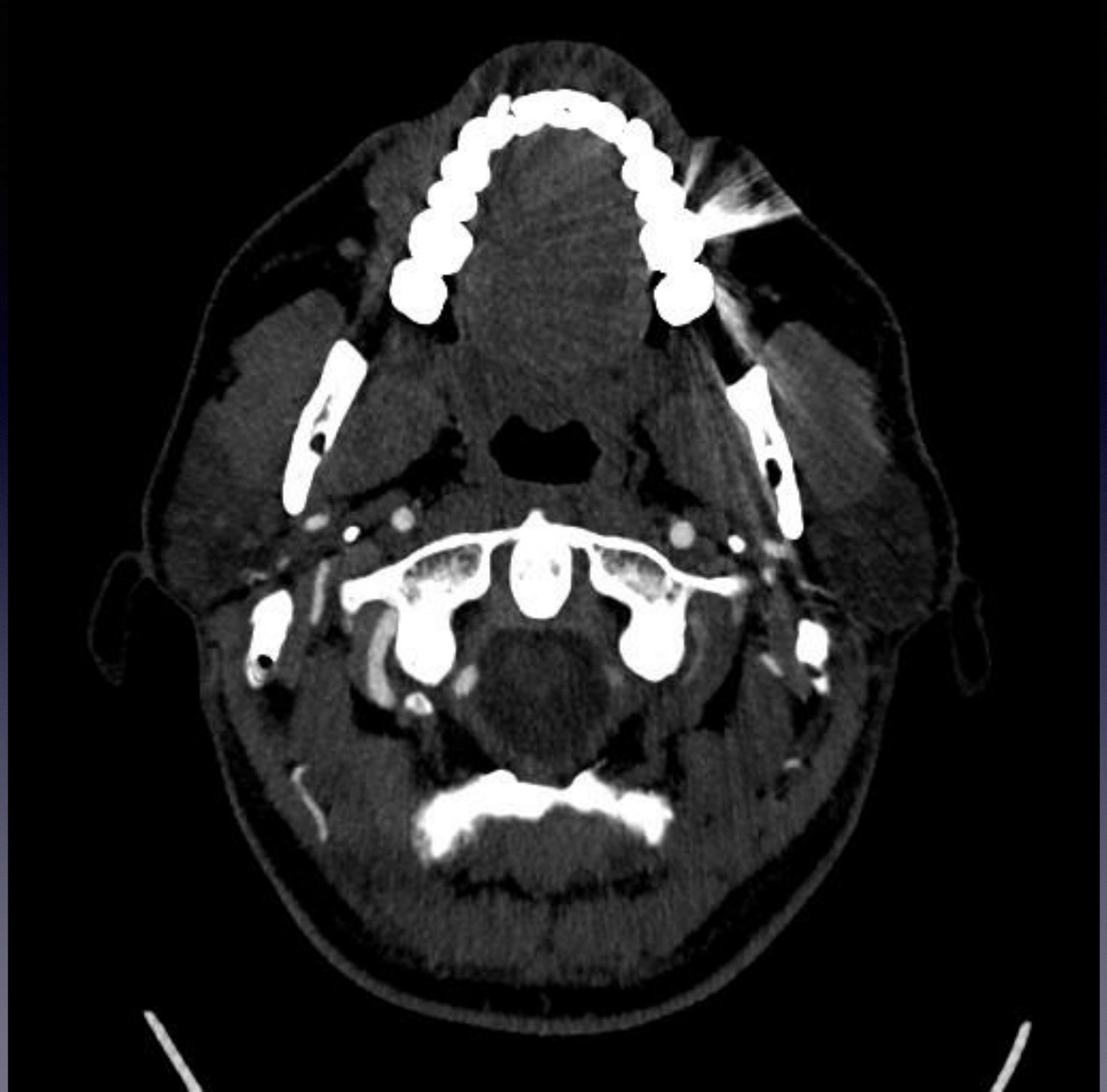


Low Rates of Acute Recanalization with iv tPA, Bhatia et al. Stroke 2010;41:2254-8

Another case

- 48 year old man woke up with dizziness, nausea and neck pain
- Objectively the patient has slight right sided weakness but is alert and responsive
- NIHSS is hard to estimate but around 6





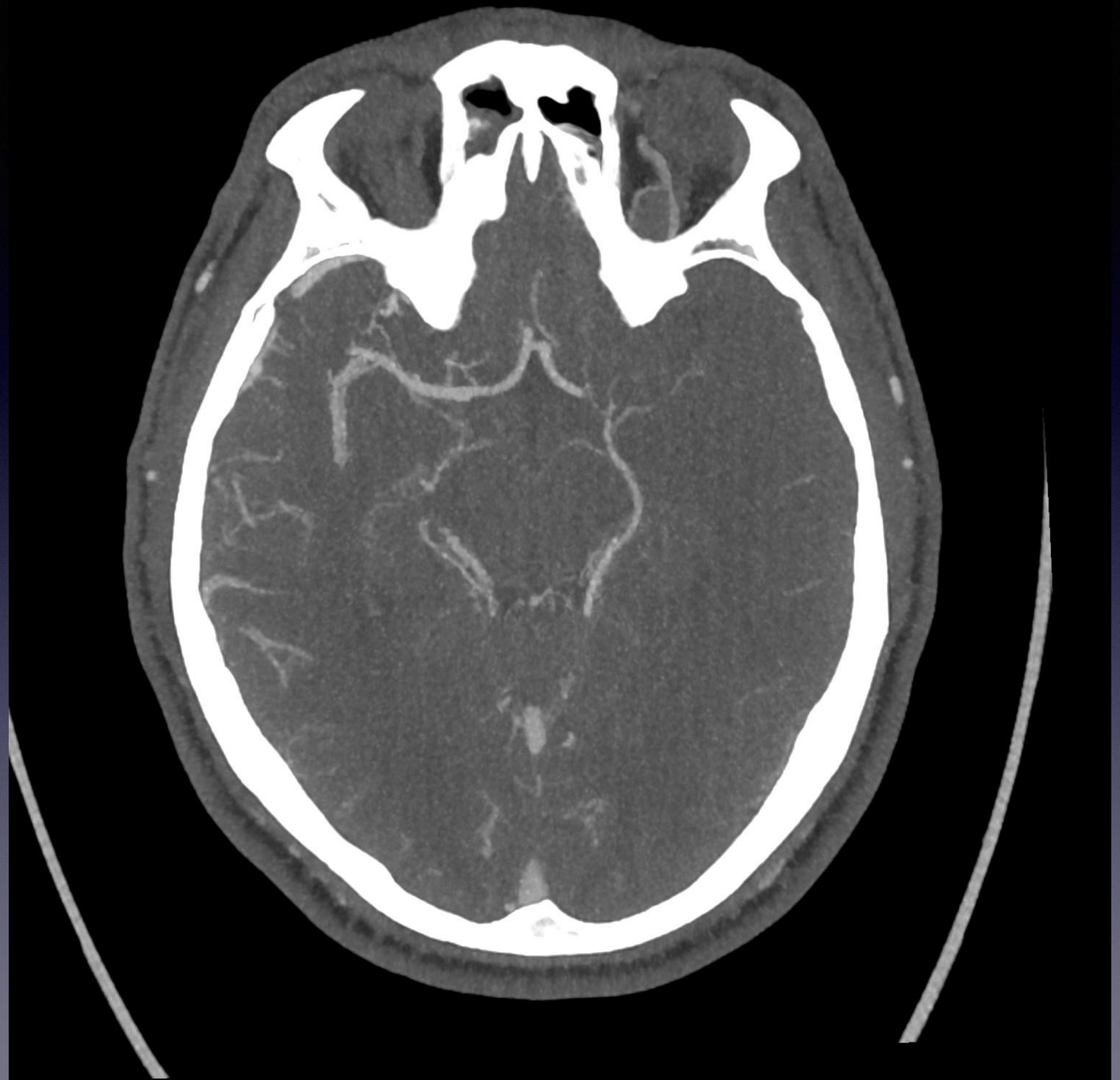

Præ
Vert sin

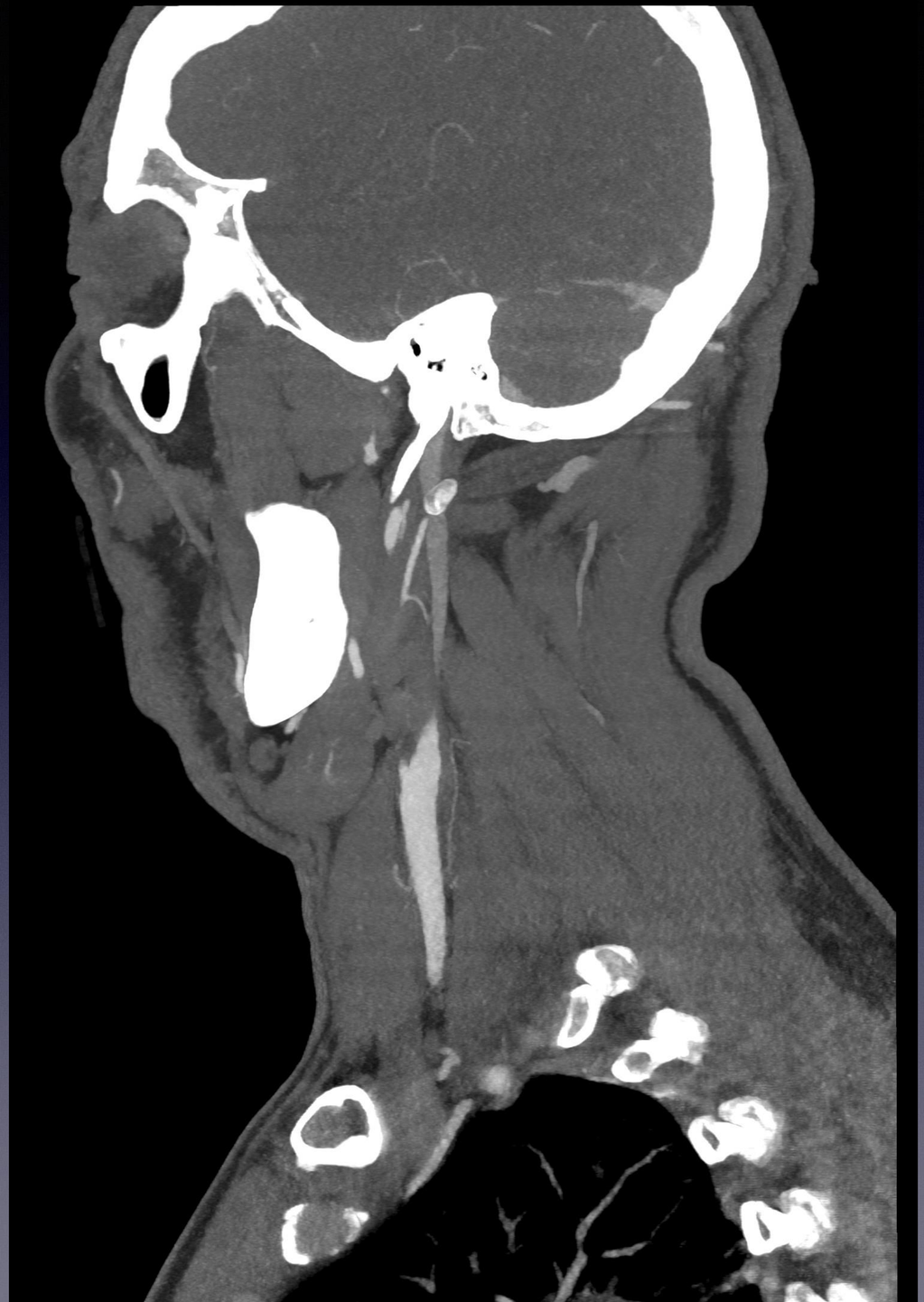

Præ
Vert sin

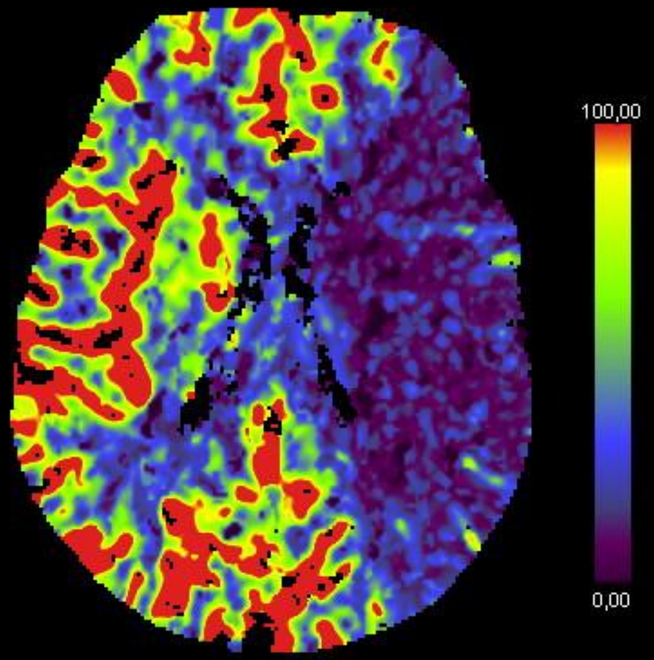

Kontrol
Vert sin

Last Case!

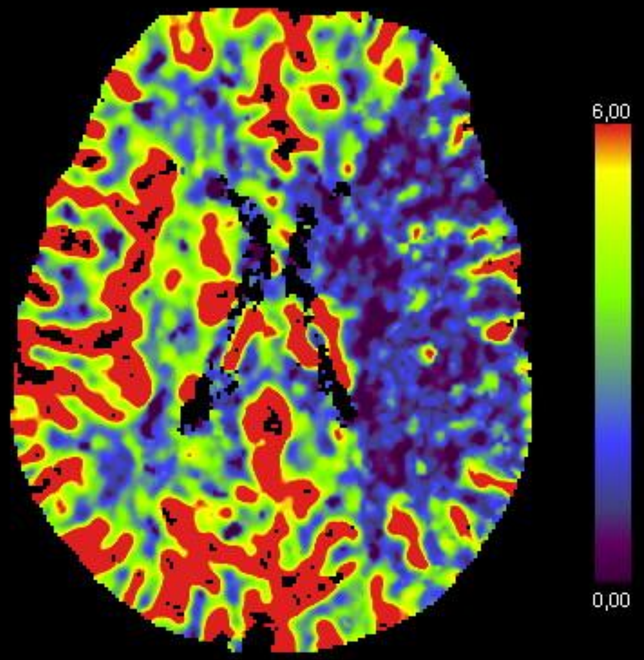
- 44 year old man with acute debut af right hemiparesis 3 hours prior
- Had been feeling unwell for the last 3 days prior
- NIHSS around 16



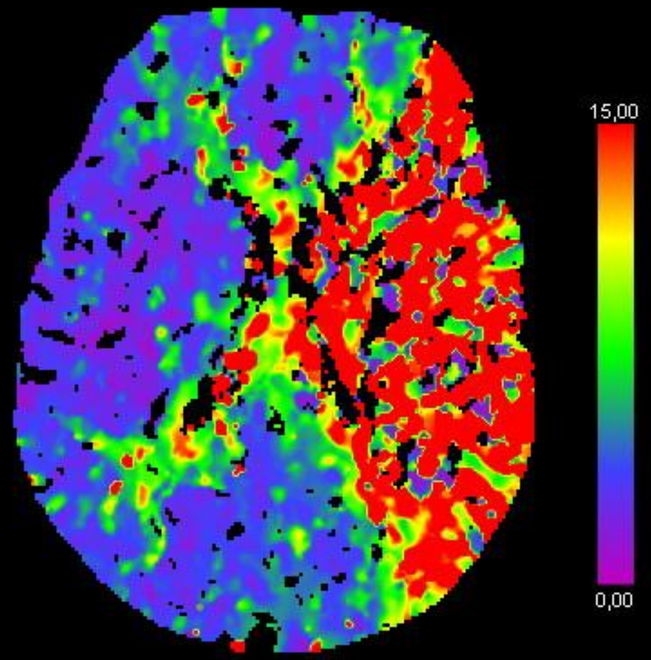




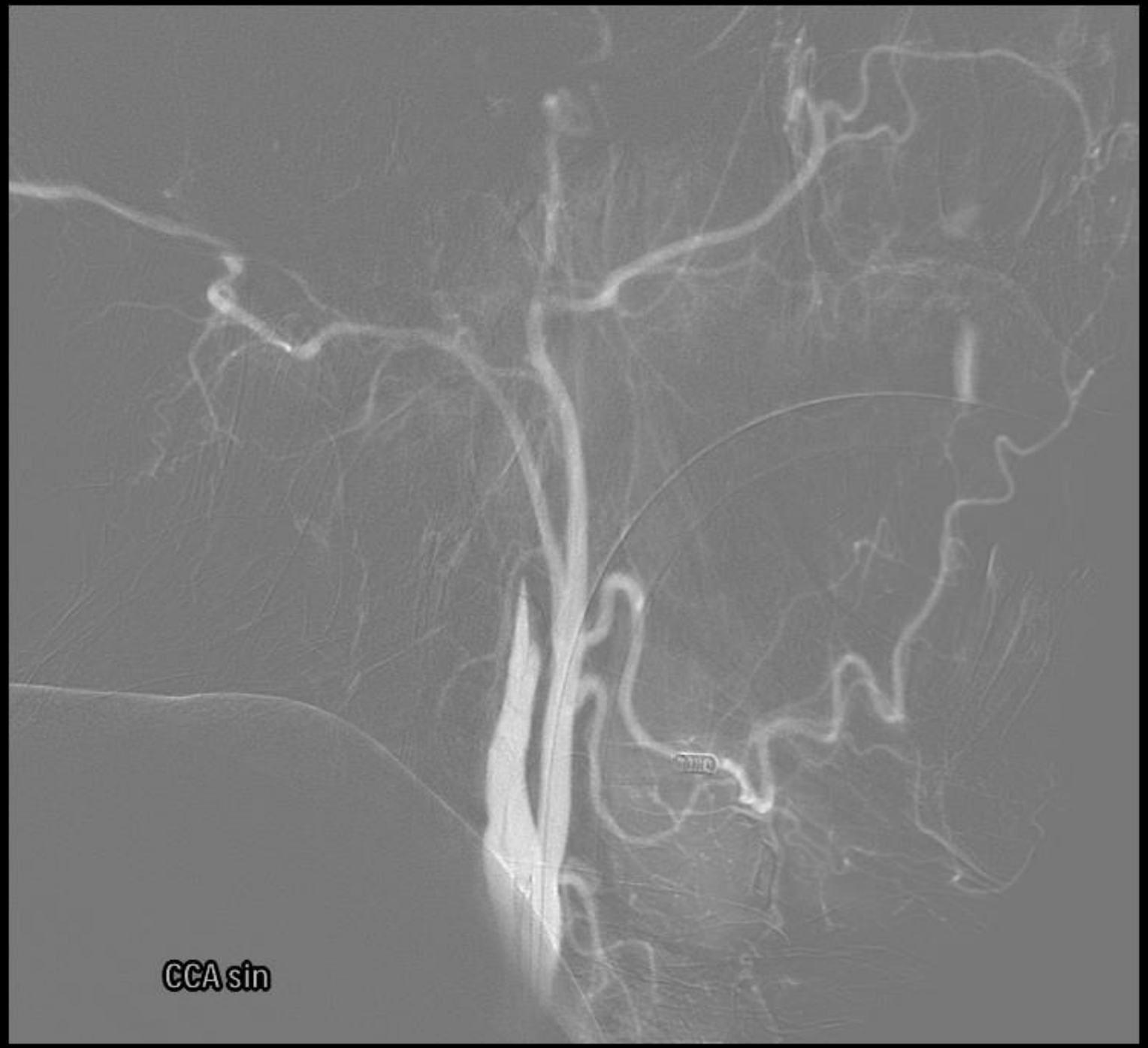
CBF



CBV



Tmax


CCA sin

Præ

ICA sin

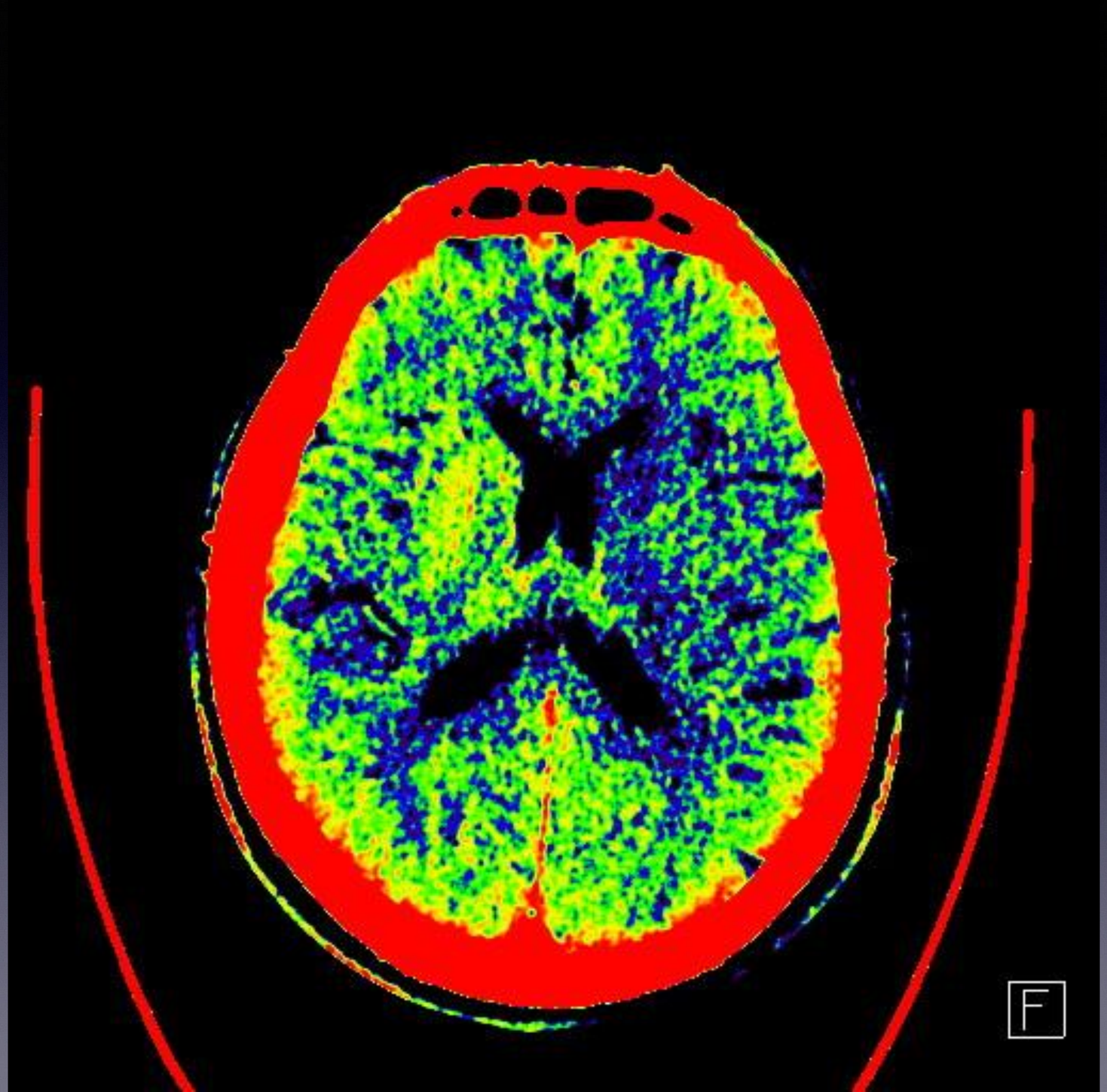
Post 2. asp. + stent ret

ICA sin

Control CT - 2 days later

Take-Home

- Mechanical Thrombectomy is an evolving field
- Boundaries for time and seize of infarct core have progressed
- This underlines the need for CT-angio capability in the ED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