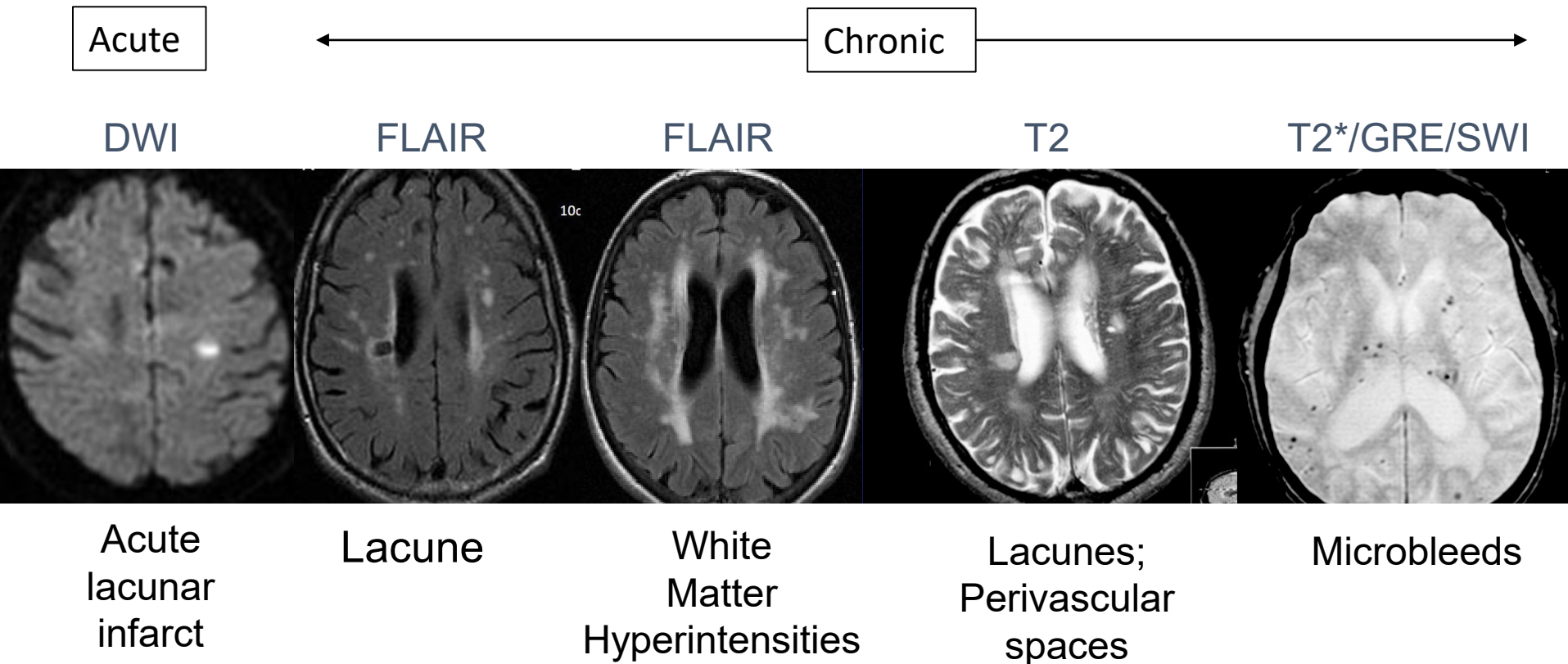




## Acute lacunar ischaemic stroke lesions on imaging

### Part B - MRI

# MRI: Important to get the following sequences

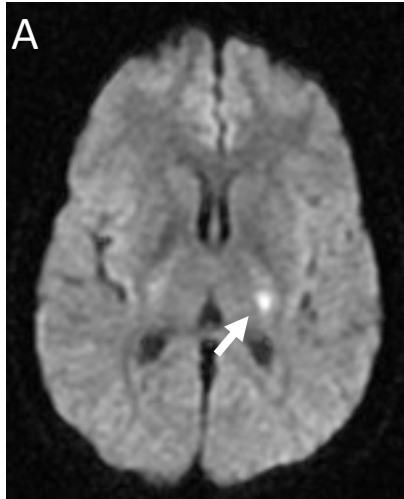


Otherwise you will miss

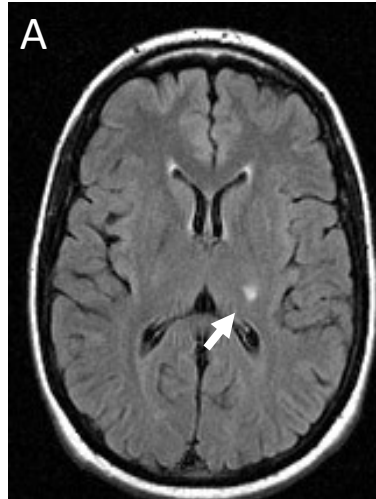
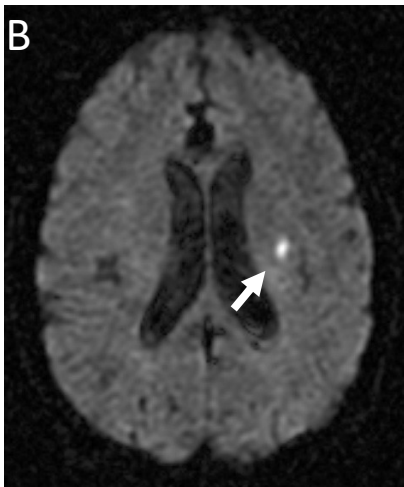
acute lesions (no DWI)  
WMH (no FLAIR),  
microbleeds (no T2\*/GRE/SWI),  
lacunes (no T2/T1)

# Appearance: Some typical acute appearances

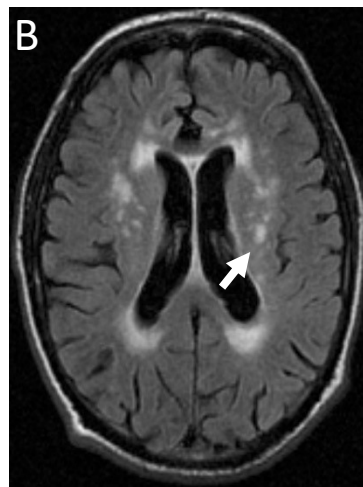
Round or ovoid



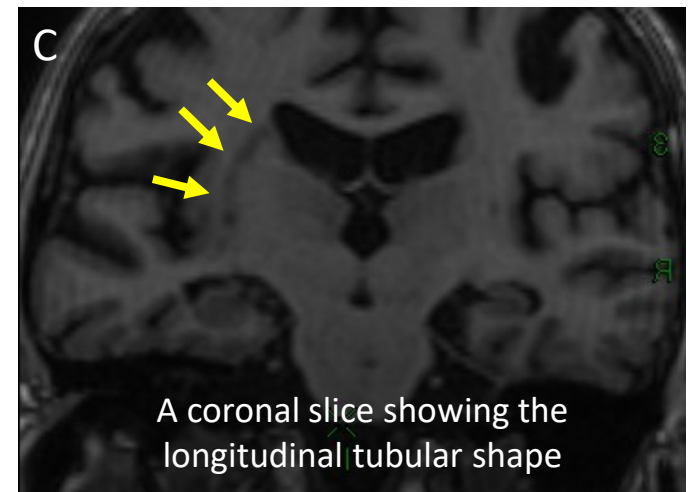
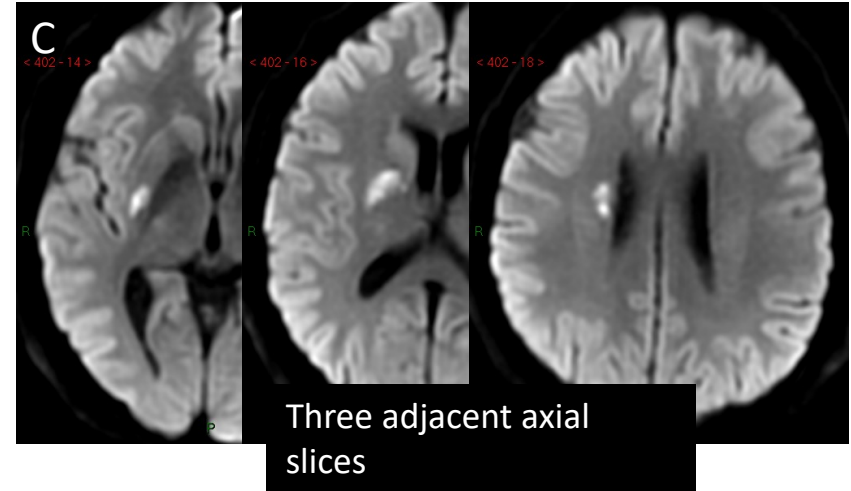
DWI



FLAIR

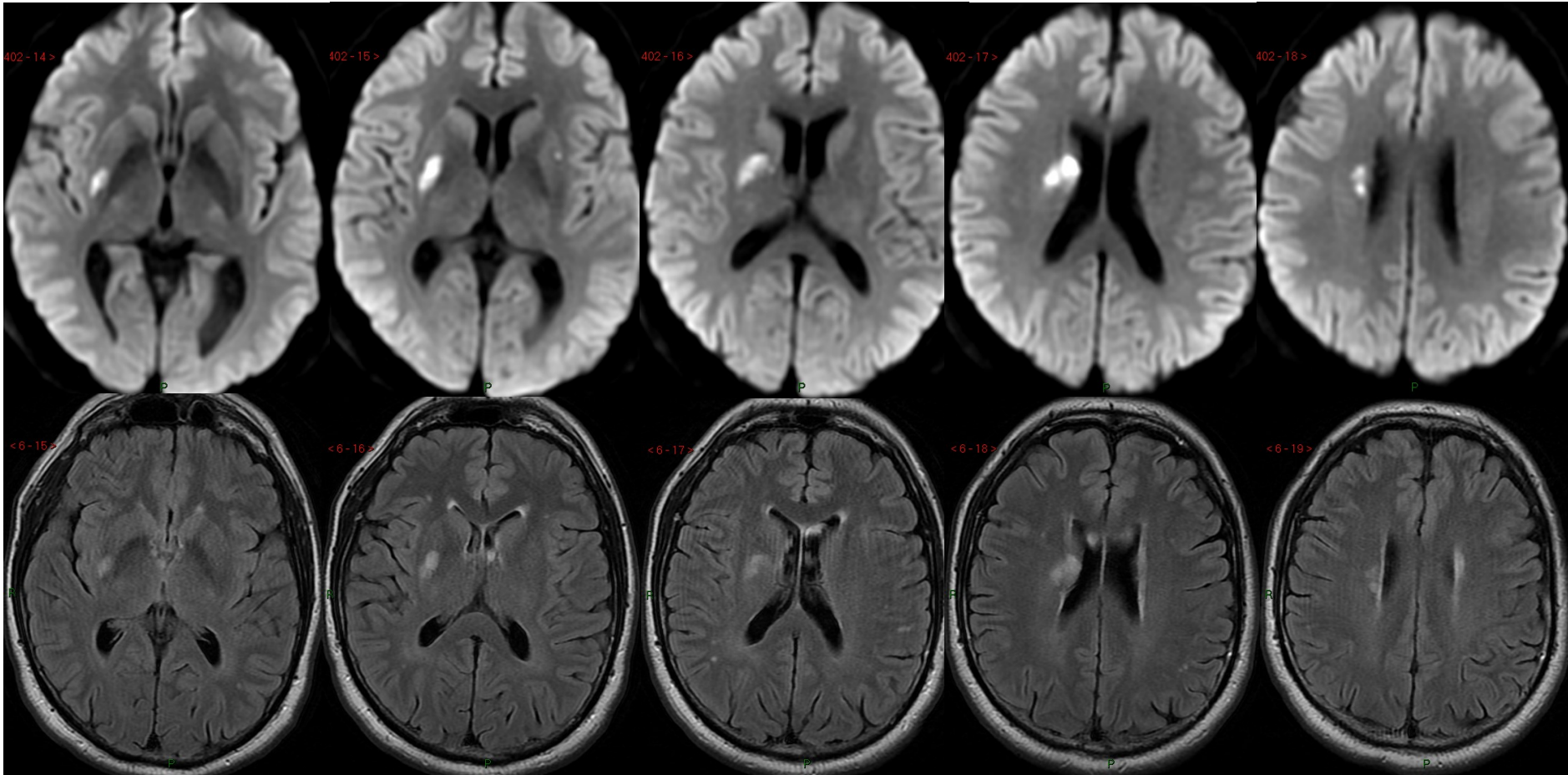


“Tubular” lesion



# Appearance: Some typical acute appearances

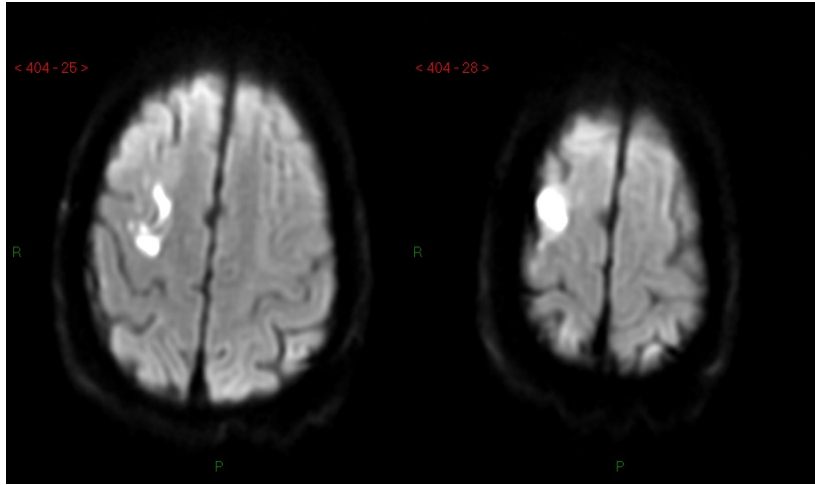
54 yrs, male; 2 days after R hemisphere lacunar symptoms



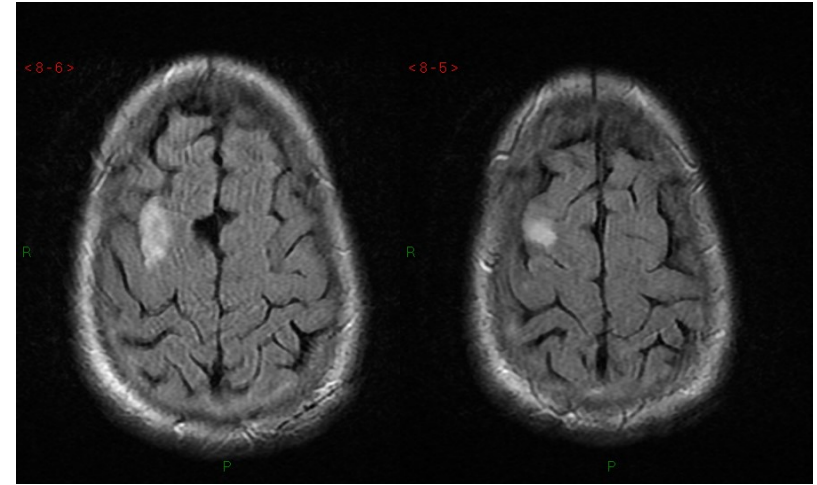
Series of images from case C on prior slide: large, “tubular”, lacunar infarct which follows the whole perforating arteriole over several axial slices.



# Location: Example of non-lacunar (cortical) infarct



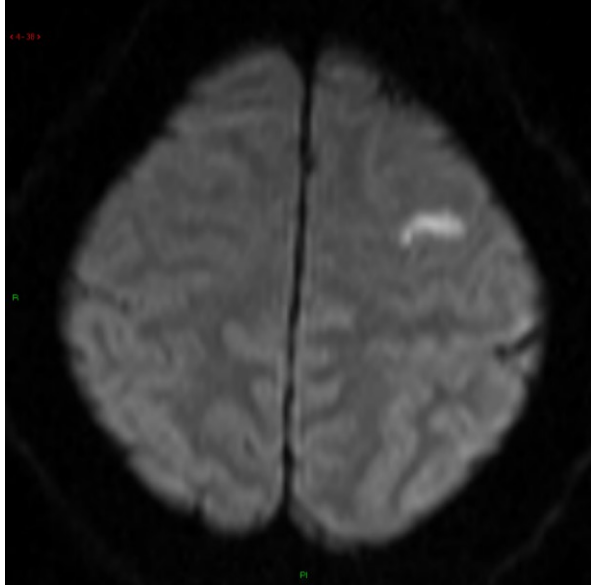
MRI DWI



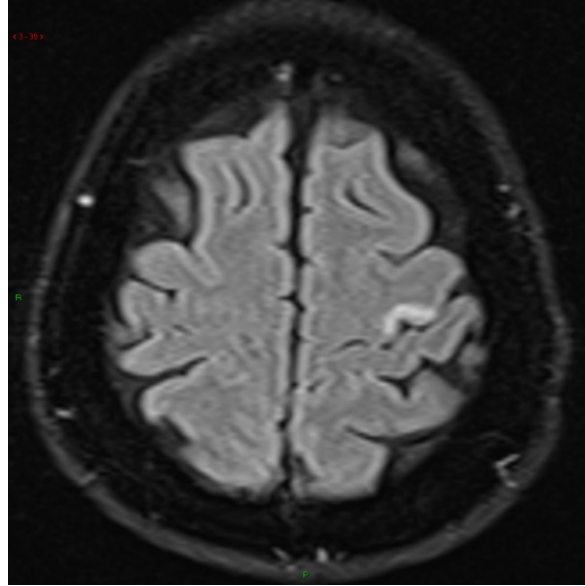
MRI FLAIR

This acute infarct goes right up to the outer edge of the brain.  
It is in the cortex.  
It is not a lacunar infarct.

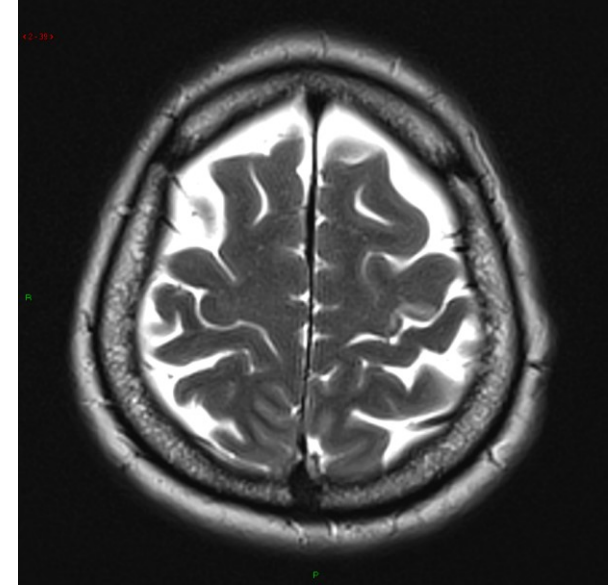
# Location: Example of non-lacunar (cortical) infarct



Diffusion imaging



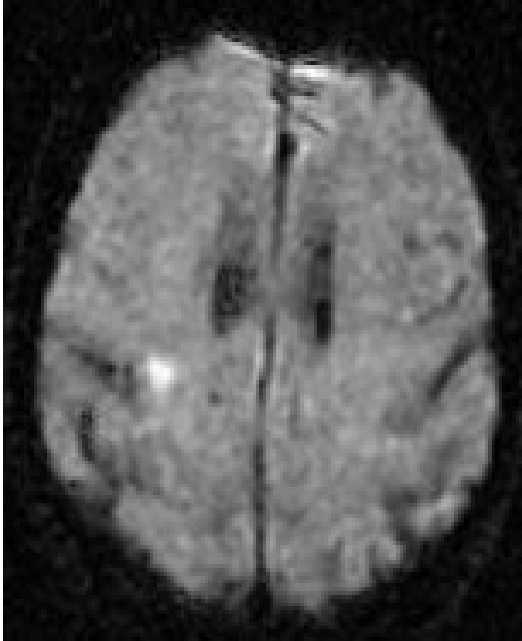
FLAIR



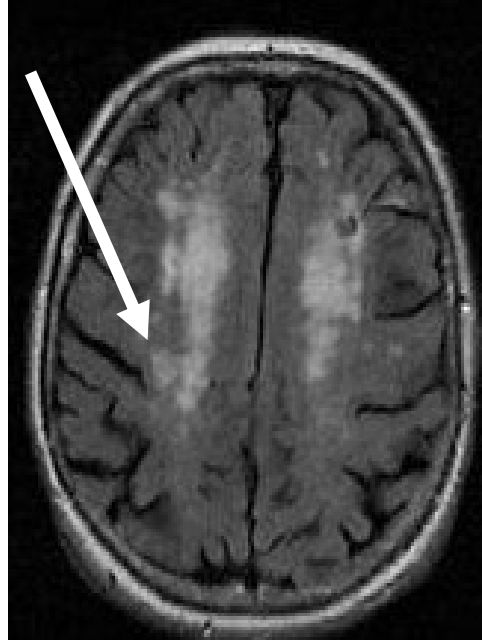
T2

MRI taken three days after stroke; major symptom was hand weakness. The infarct is in the cortex; the anatomy is most clearly seen on the FLAIR and T2. The symptoms suggest a cortical infarct and the MRI confirms a small cortical infarct. This is NOT a lacunar infarct.

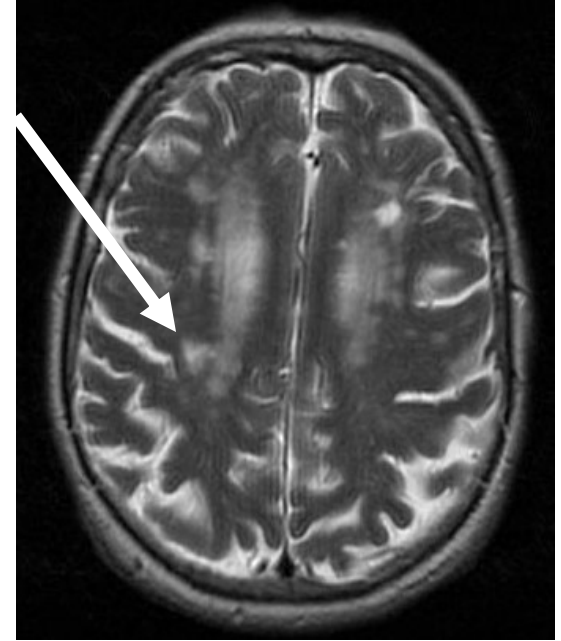
# Location: Lacunar infarcts can be located in white matter *close to cortex*



Diffusion imaging



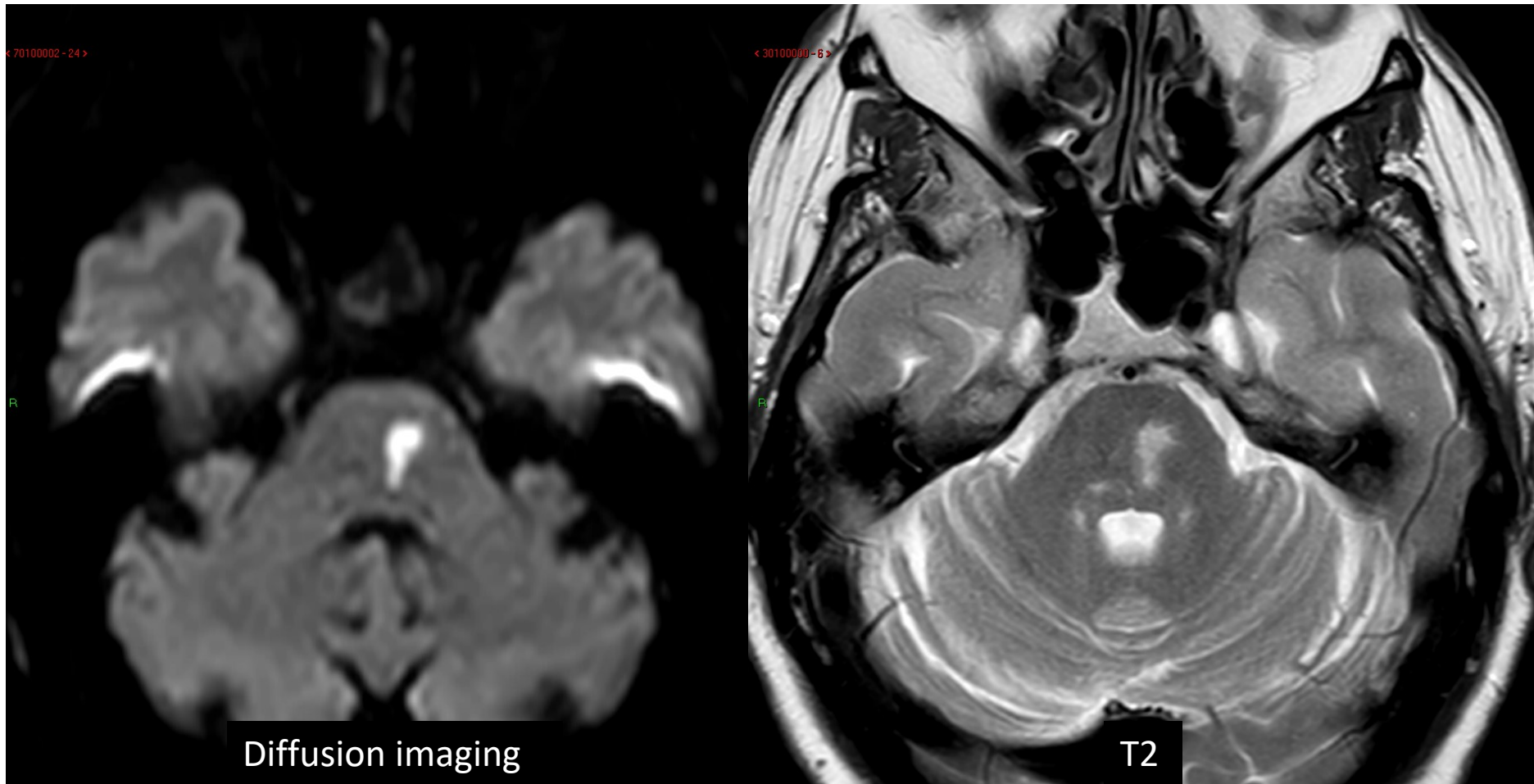
FLAIR



T2

As long as the infarct does not involve the cortex, and meets the other appearance criteria for lacunar infarction, then it is lacunar and not cortical.

# Location: Lacunar infarct in the pons

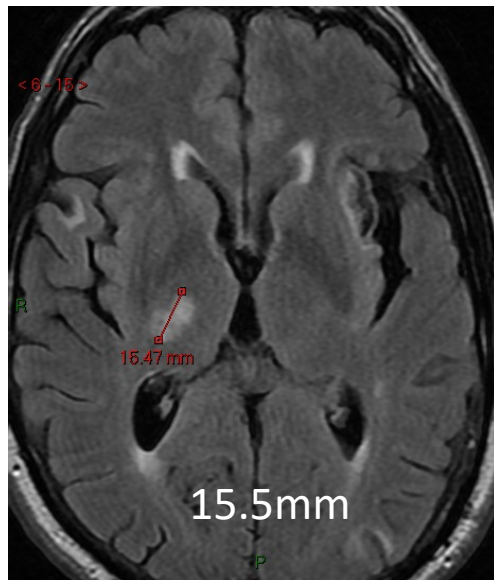


This acute lacunar infarct is a few days old. It is obvious on DWI and T2.



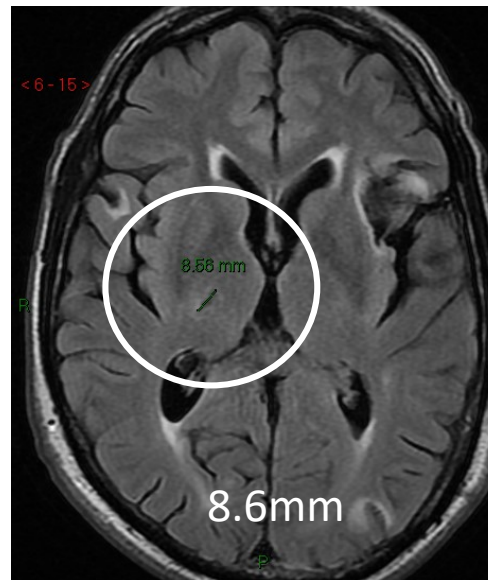
# Size: Acute infarcts are larger than old lacunar infarcts

Acute

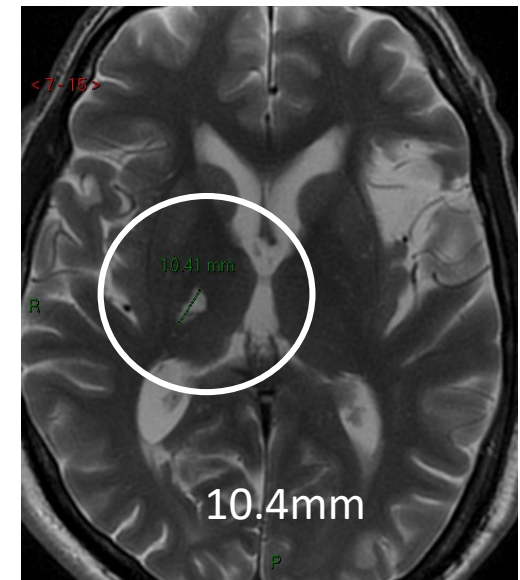


FLAIR

1 year later



FLAIR



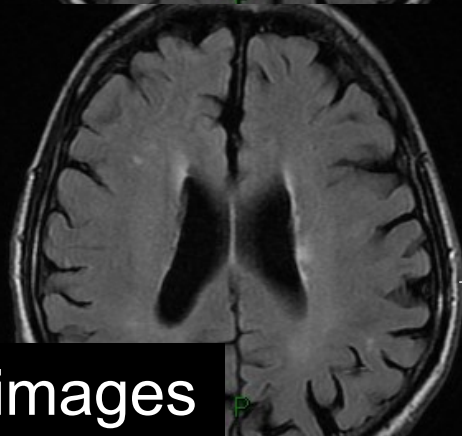
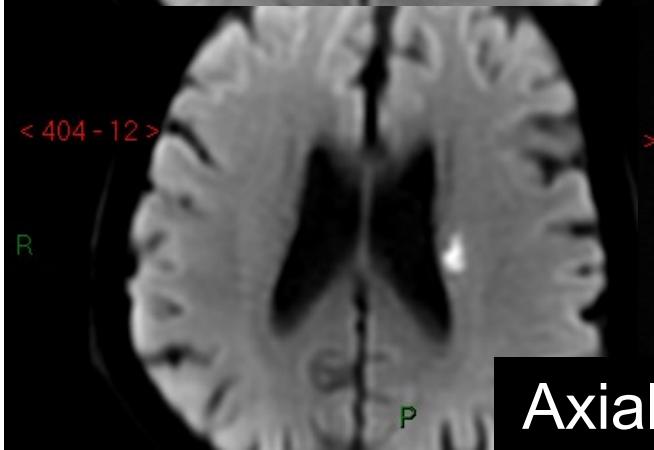
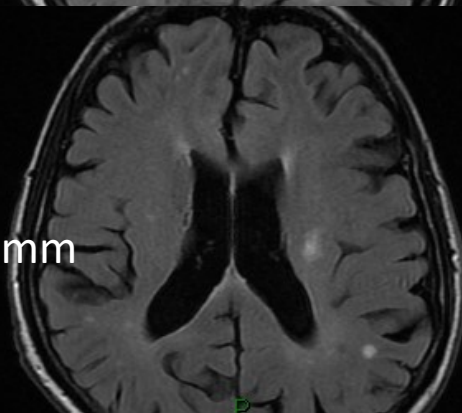
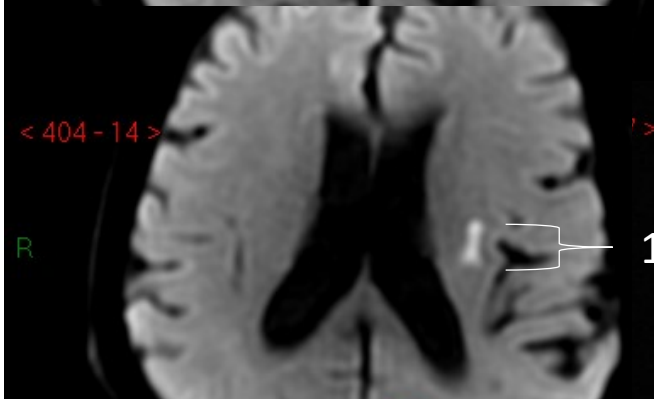
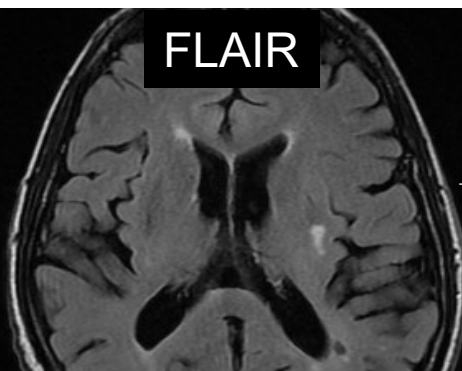
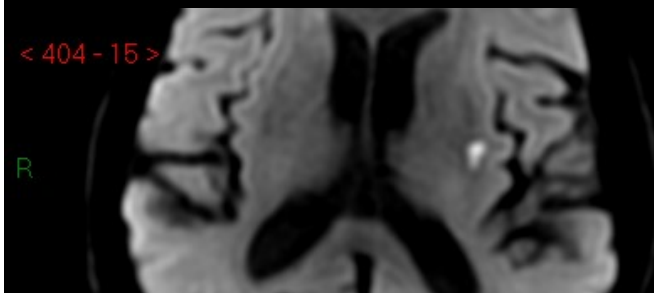
T2

# Size: Tubular infarcts

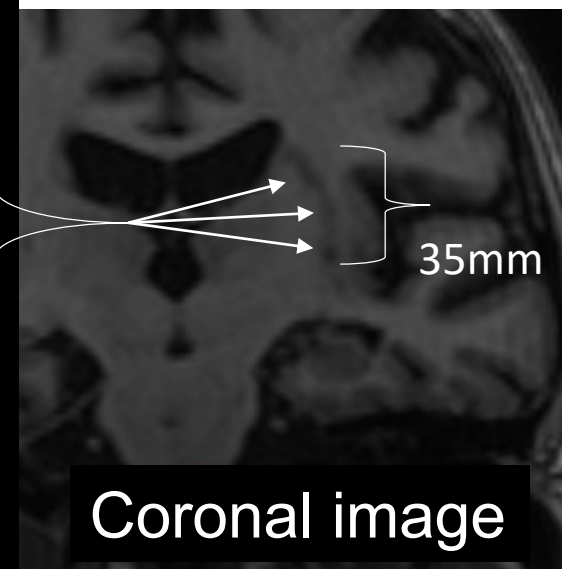
Diffusion Imaging

FLAIR

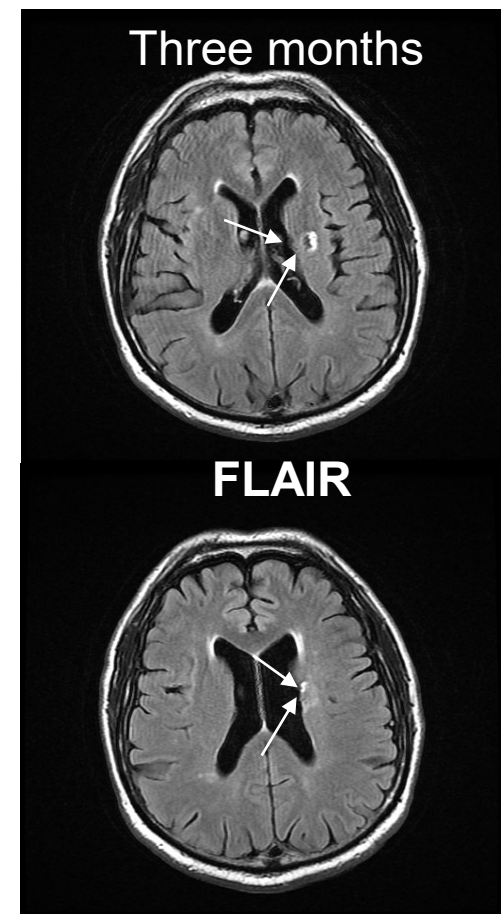
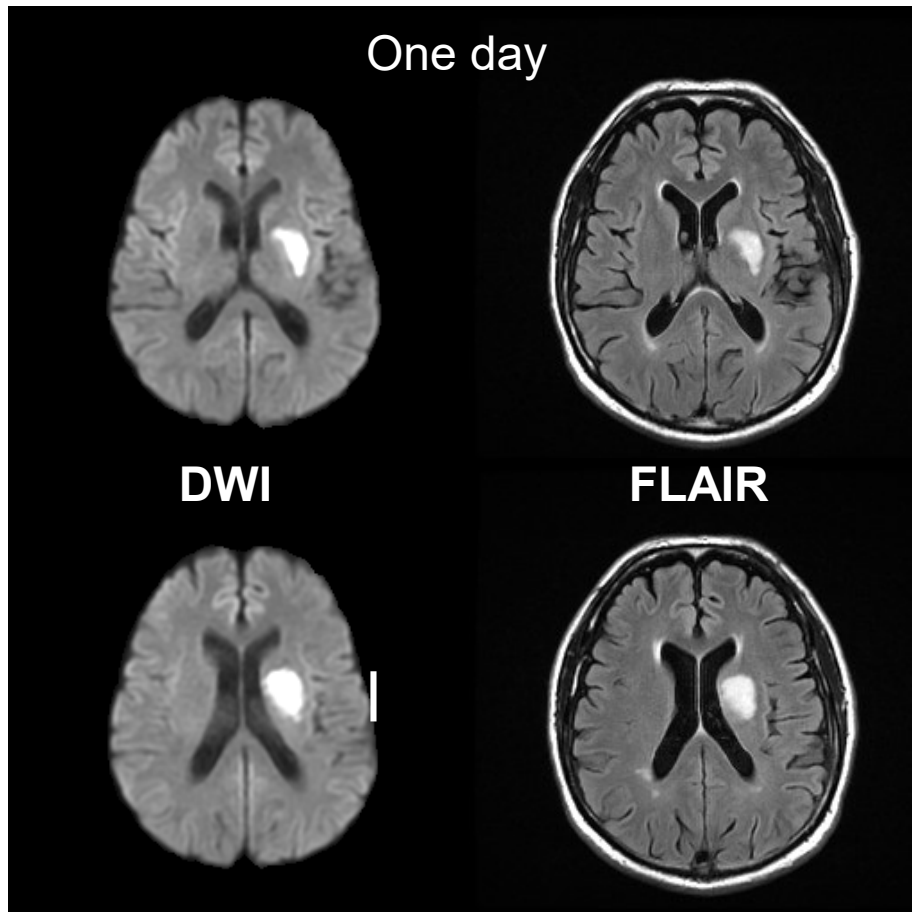
When lacunar infarcts are tubular, like this one, the maximum size is measured in the axial plane (15mm).



Axial images



# Size: When is an infarct too big to be lacunar?



This acute infarct is more than 3cm diameter. It is *much too big* to be lacunar. This is a *striatocapsular* infarct, due to embolism from large artery atheroma or the heart. At 3 months, it has shrunk to about 1cm diameter; the clue that it was *not a lacunar infarct* originally is that the ventricle has expanded where the brain has been destroyed by the infarct (arrows).

# Long term appearance

In the long term, acute lacunar infarcts can turn into lacunes (holes), but they can also disappear, or almost disappear.

It is very hard to see this lacunar infarct 1 year later

