stroke

Lecturer :
DR: Huda Hameed

- **Stroke is a sudden neurological deficit of vascular origin.**

- **<u>It is divided into :</u>**
  - Ischaemic stroke (80%)
  - Hemorrhagic stroke (15%) .
  - Subarachnoid hemorrhage (5%)

- **Ischemic stroke** is an episode of neurological dysfunction due to focal infarction in the central nervous system attributed to arterial thrombosis, embolization, or critical hypoperfusion.
- Risk factors:
- age,
- gender,
- family history, smoking
- hypertension
- hypercholesterolemia
- diabetes mellitus

ISCHEMIC STROKE

Causes:

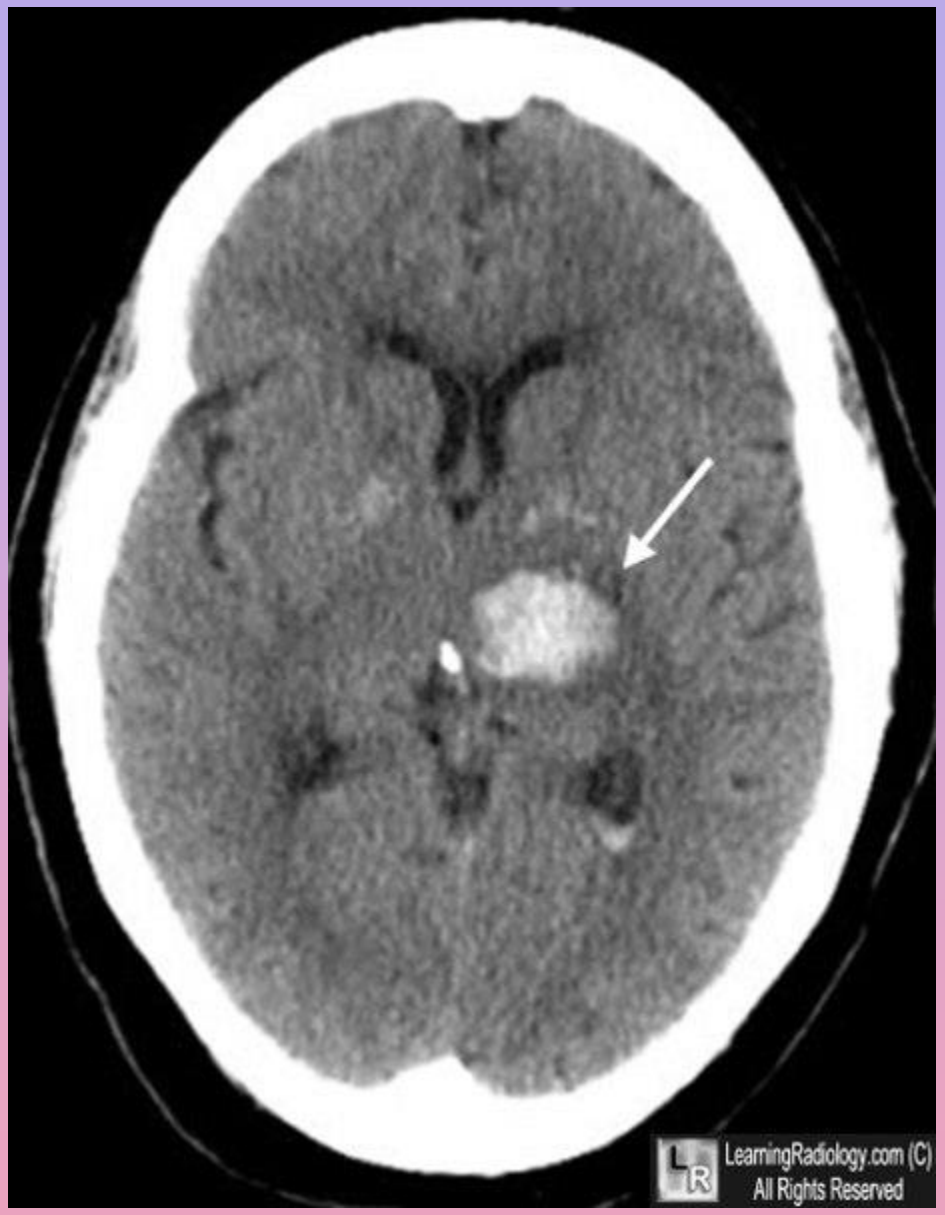
- Atherothrombotic arterial occlusion.
- Embolism from carotid or vertebral artery atheroma or the heart.
- Cervical arterial dissection, vasculitis, venous thrombosis and substance abuse.

The goals of CT in the acute setting are:

1. Exclude intracranial haemorrhage, which would preclude thrombolysis.
2. Look for any "early" features of ischaemia.
3. Exclude other intracranial pathologies that may mimic a stroke, such as tumour.

Hemorrhagic stroke

- Hemorrhage occurs in about 15% of strokes
- Hemorrhage is associated with a higher morbidity and mortality than ischemic stroke
- In the majority of cases, there is associated hypertension
- About 60% of hypertensive hemorrhages occur in the basal ganglia
- Other areas involved are the thalamus, pons and cerebellum
- The decision to utilize thrombolytic therapy is based on algorithms formulated by the initial non-enhanced CT scan findings.
- Treatment should be initiated within one hour after the patient arrives at the hospital to provide its maximum benefit.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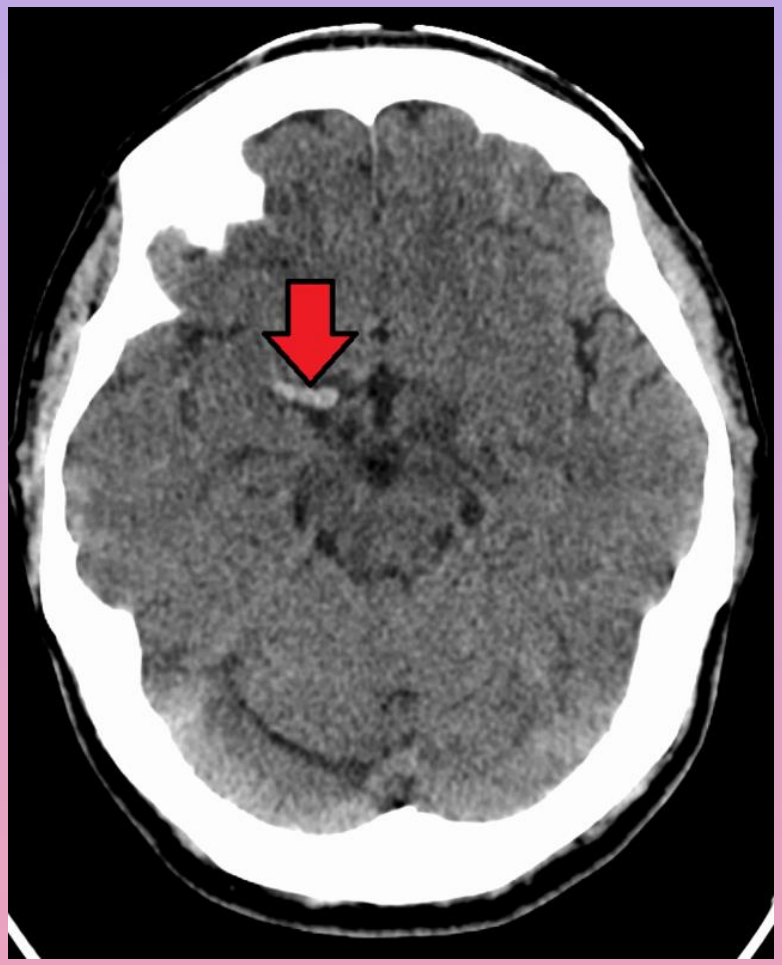
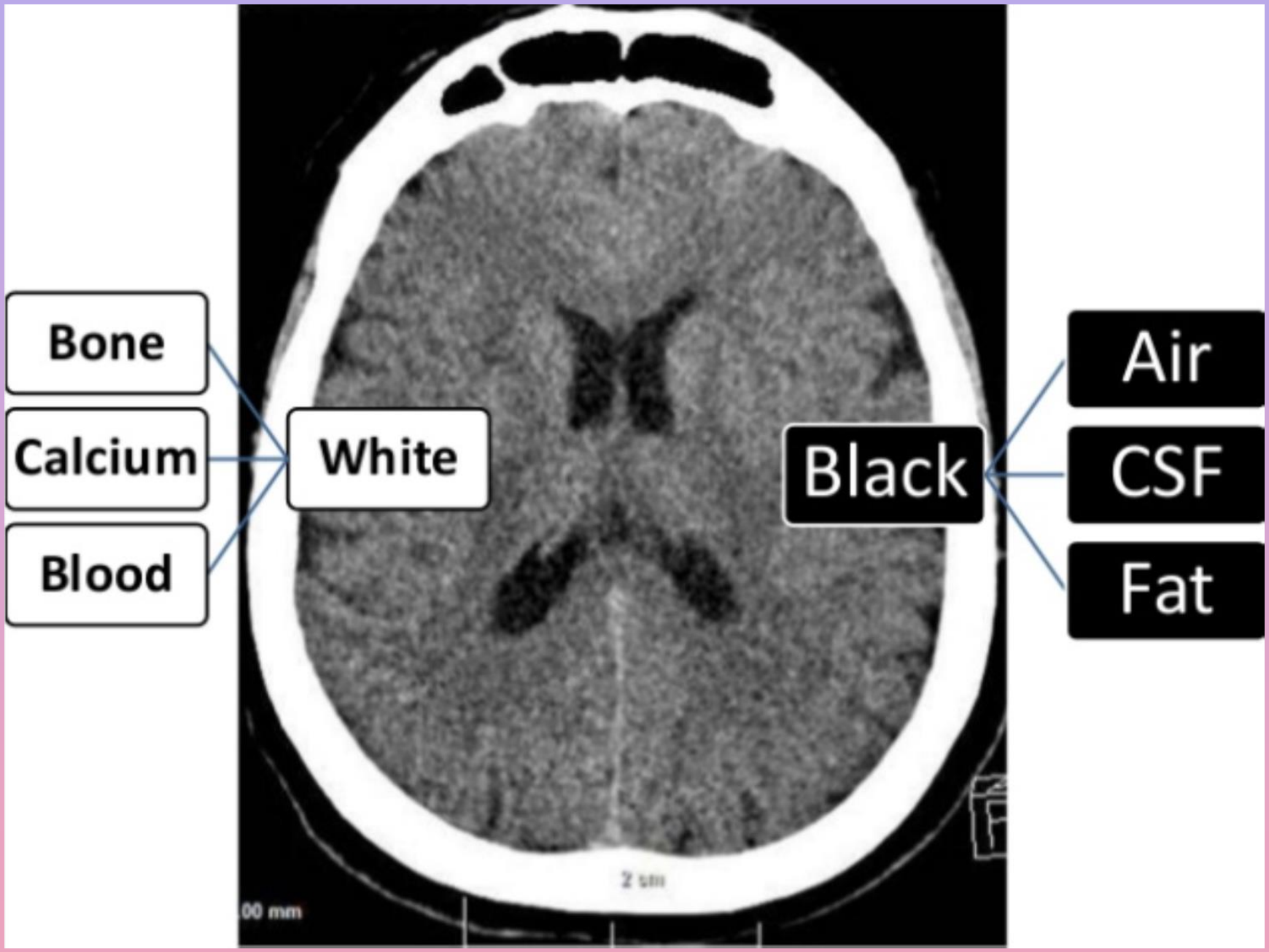
Radiographic features

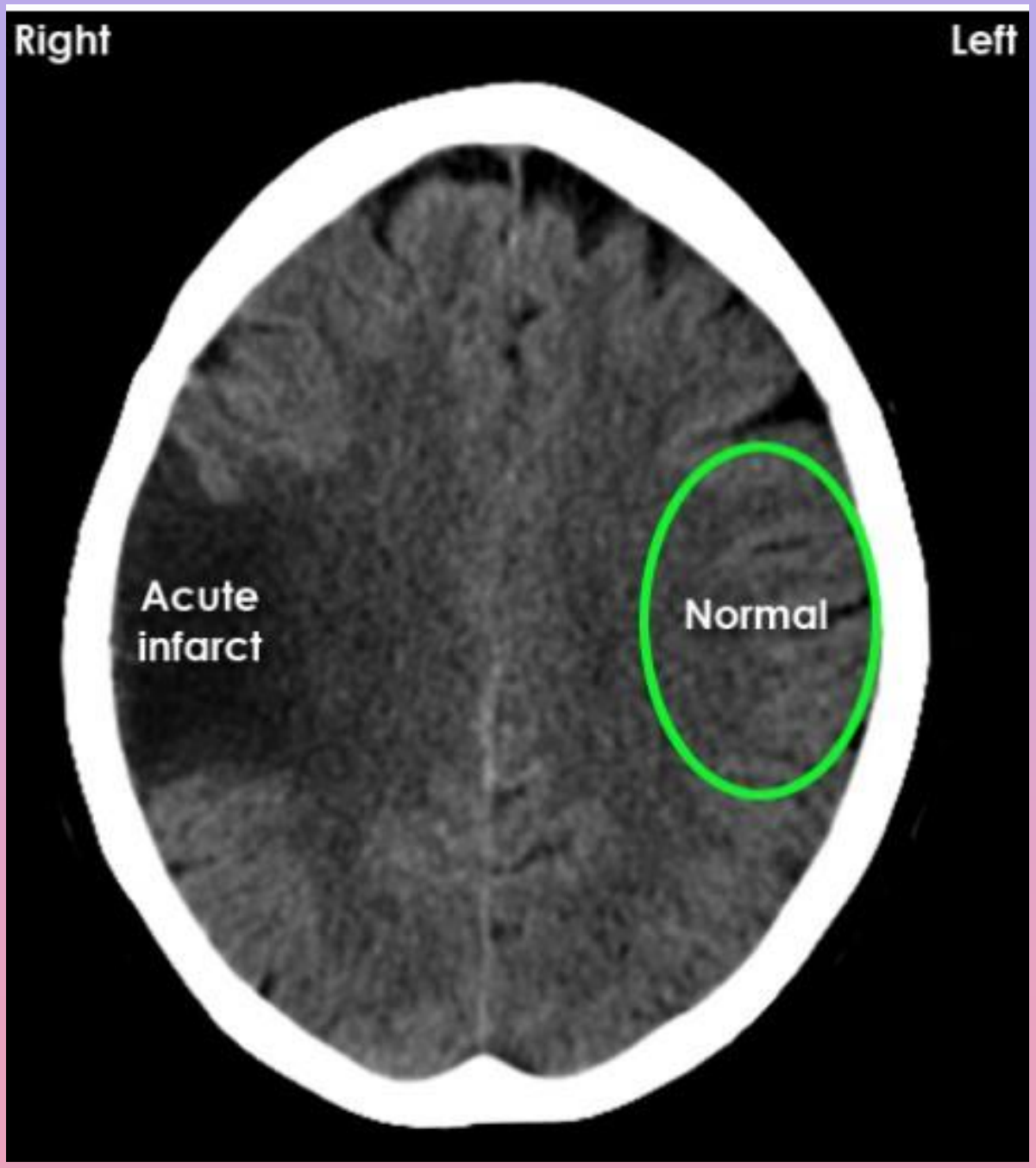
- Both CT and MRI can help in determining when a stroke occurred .
- **CT**
- Non-contrast CT of the brain remains the mainstay of imaging in the setting of an acute stroke.
- It is fast, inexpensive and readily available. Its main limitation, however, is the limited sensitivity in the acute setting. The earliest CT sign visible is a hyperdense segment of a vessel, representing direct visualization of the intravascular thrombus/embolus .
- Dense artery sign.



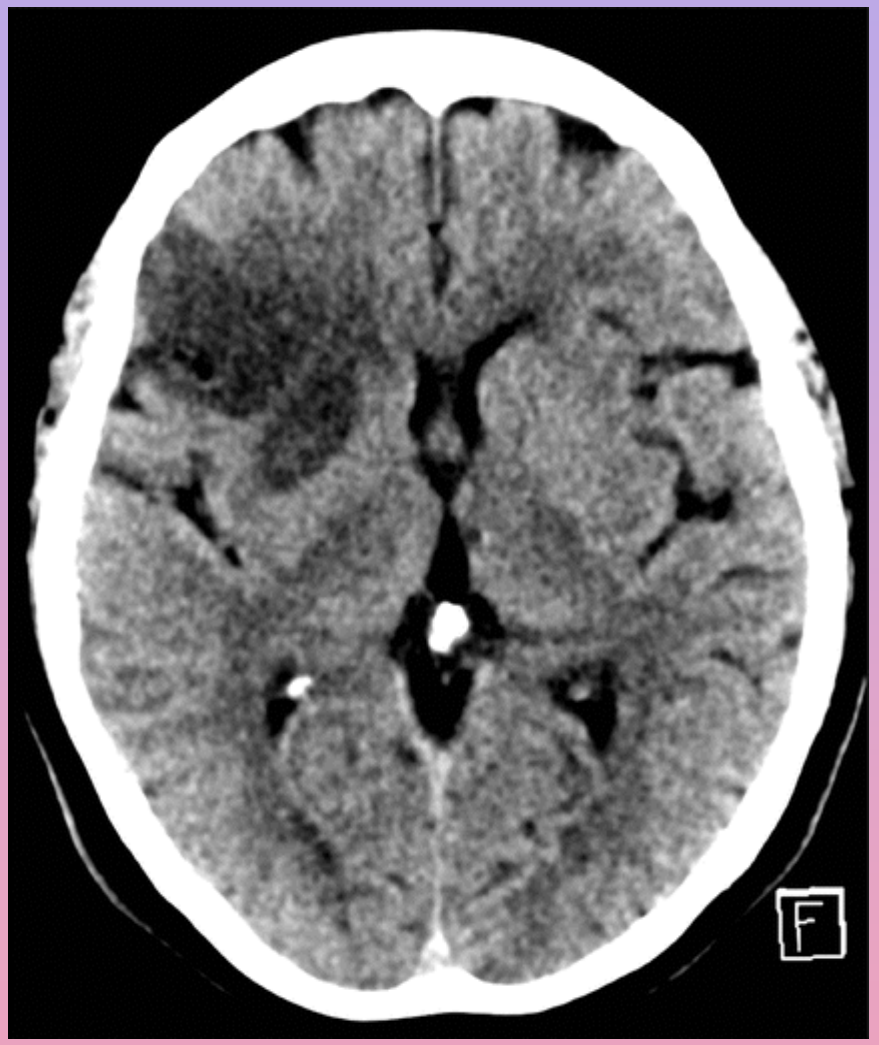
- loss of grey-white matter differentiation.
- cortical hypodensity with associated parenchymal swelling with resultant gyral effacement.
- The hypoattenuation and swelling become more marked with time, resulting in a significant mass effect. This is a major cause of secondary damage in large infarcts

- **CT angiography**
- may identify thrombus within an intracranial vessel, and may guide intra-arterial thrombolysis or clot retrieval
- **MRI**
- MRI is more time consuming and less available than CT but has significantly higher sensitivity and specificity in the diagnosis of acute ischemic infarction in the first few hours after onset.
- **Diffusion-weighted imaging (DWI)** is a commonly performed MRI sequence for the evaluation of **acute ischemic stroke** and is very sensitive in the detection of small and early infarcts.


Bone
Calcium
Blood
White
Black
Air
CSF
Fat


Right
Left
Acute infarct
Normal


A
R
L
P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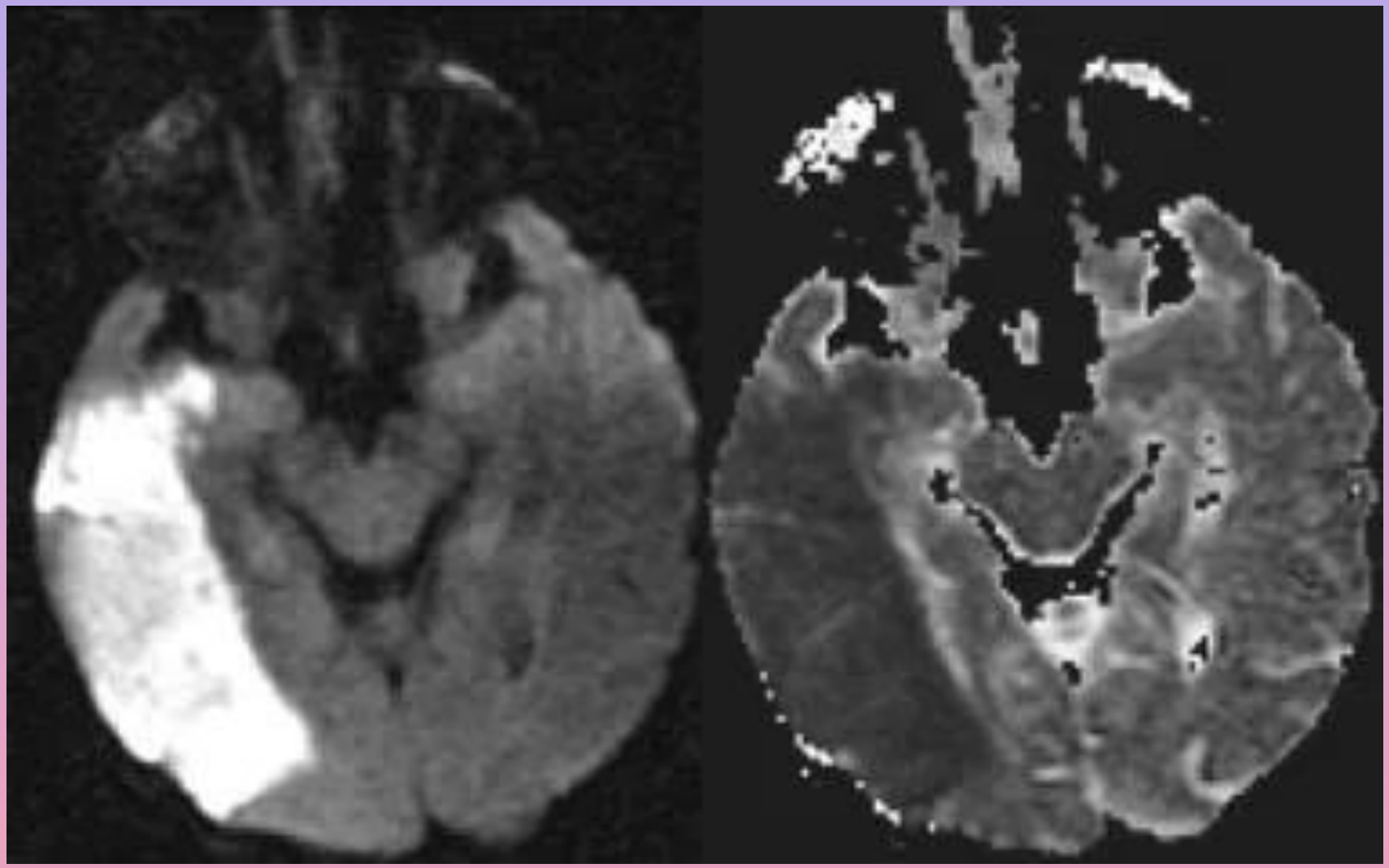

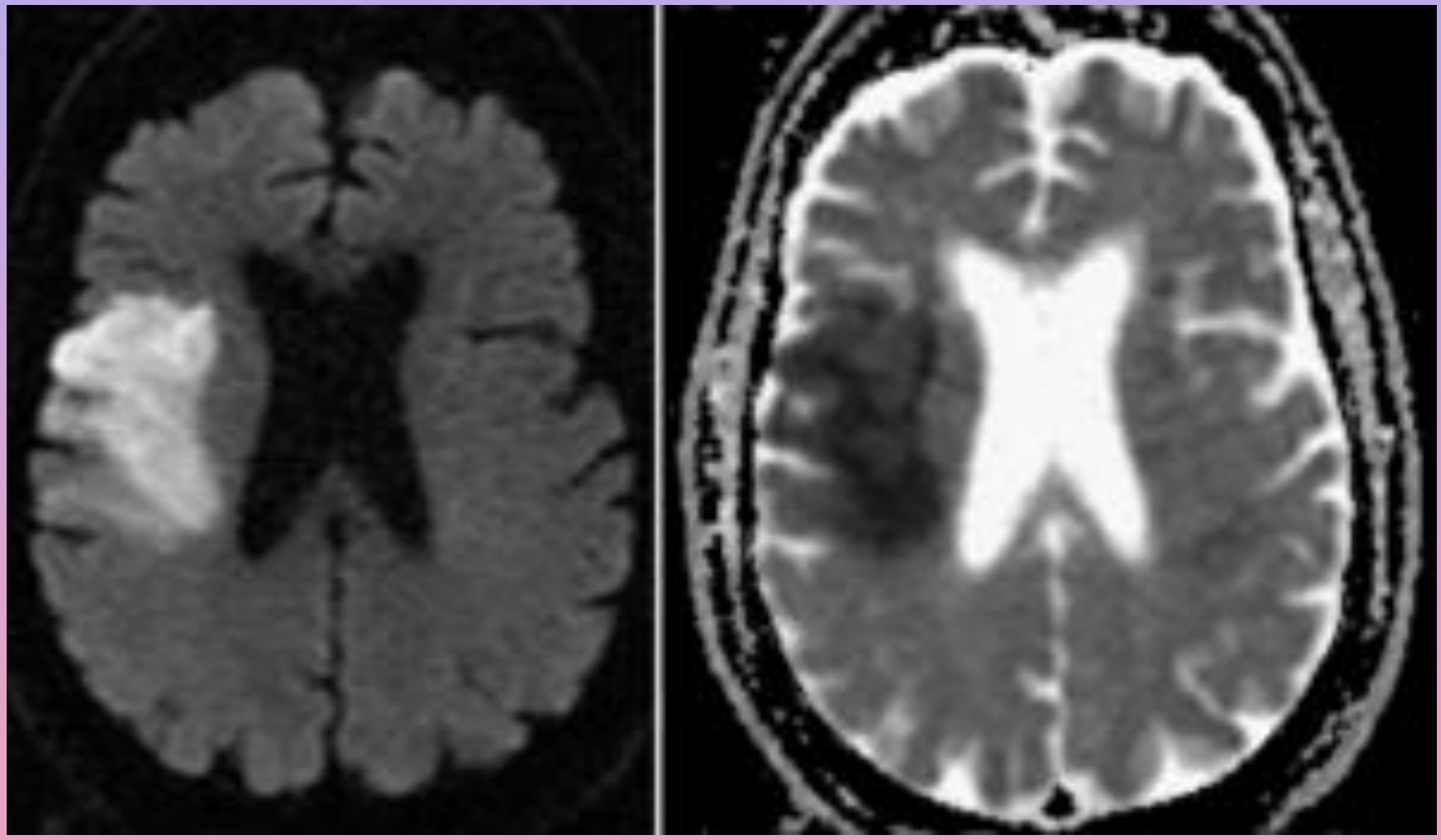


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