

CEREBRAL INFARCTION

Definition: Liquefactive necrosis of brain caused by cerebral arterial occlusion by a thrombus or an embolus.

Sites: Any site of brain, but more extensive in Basal ganglia and thalamus (no collaterals)

Causes/Types

Embolic infarction:

-More common

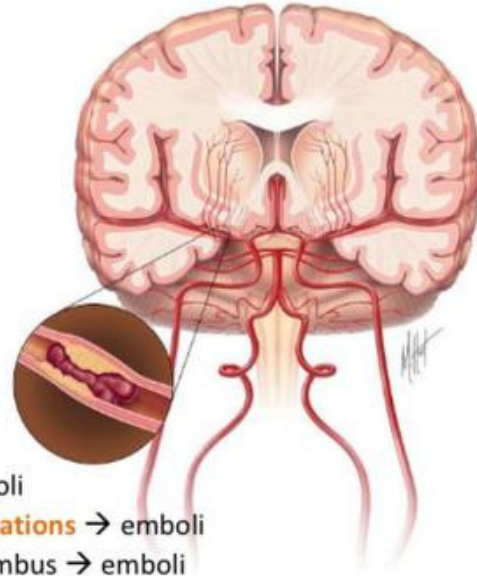
-Source of emboli:

- **Cardiac**
 - **MI** → mural thrombi → emboli
 - Valve diseases (SBE) → **vegetations** → emboli
 - **Atrial** fibrillation → Ball thrombus → emboli
- **Thromboemboli** from arteries, most often from atheromatous plaques of **internal carotid** or arch of **aorta**.
- **Paradoxical embolism** from **DVT** which bypass lung by ASD or VSD.

-Site of impaction **middle cerebral artery** at bifurcation of vessels.

Thrombotic infarction:

- Thrombosis on top of **atherosclerosis** at the origin of the **middle cerebral** artery, and **basilar** artery.



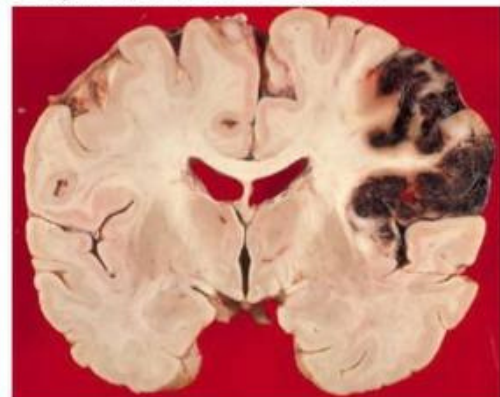
Gross

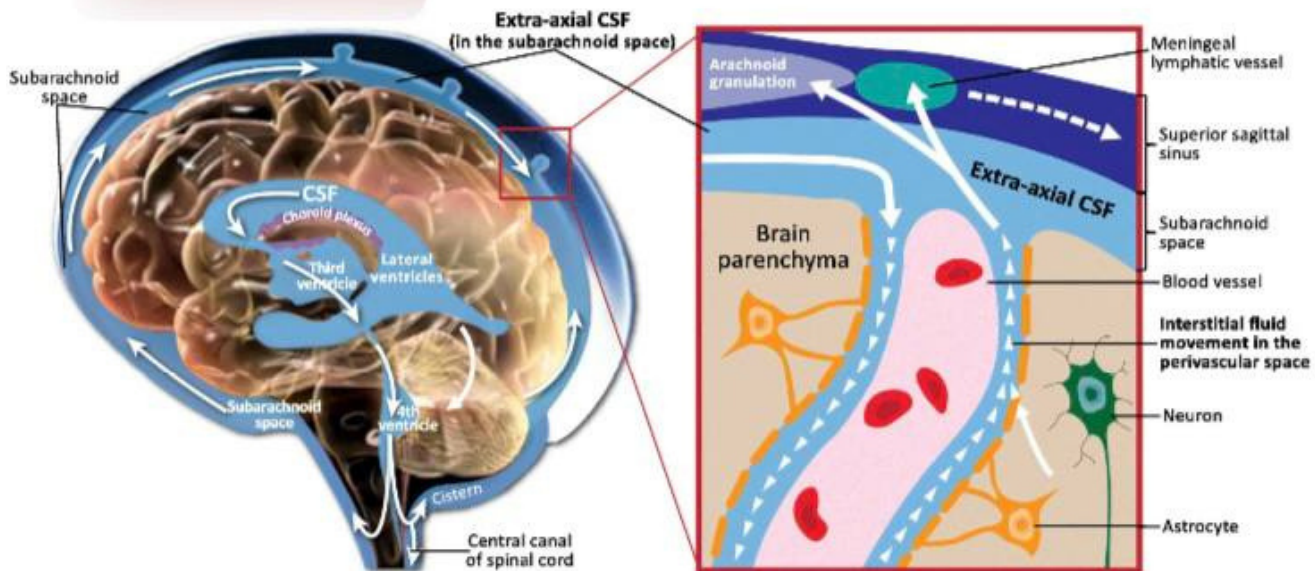
Size: swollen

Consistency: Soft

C/S : Loss of definition between grey and white matter.

Color: Yellow or hemorrhagic





INCREASED INTRACRANIAL TENSION.

Causes:

- Excess CSF.
- Cerebral edema.
- **Space occupying lesions:**
 - Tumors
 - Trauma → Hemorrhage/Hematoma
 - Infarction (with Hemorrhage & edema)
 - Infections (abscess, TB, Amoebic).

Effects: Compression → brain displacement or herniation.

CEREBROVASCULAR DISEASE

STROKE

Sudden disturbance of **CNS function** due to **focal cerebral ischemia**.

Risk factors :

- **Atherosclerosis** → thrombosis → **infarction** (the most common cause)
- **Hypertension** → Micro-aneurysms → **Hemorrhage** (intracerebral or subarachnoid)

Microscopic:

- **Liquefactive** Necrotic tissue
- infiltrated by **macrophages** containing lipids from myelin breakdown
- surrounded by reactive **glial cells** (astrocytes) and proliferating **capillaries**.
- After 3 weeks → **Cyst**, lined by gliosis

INTRACEREBRAL HEMORRHAGE

Incidence: more common > 60 y

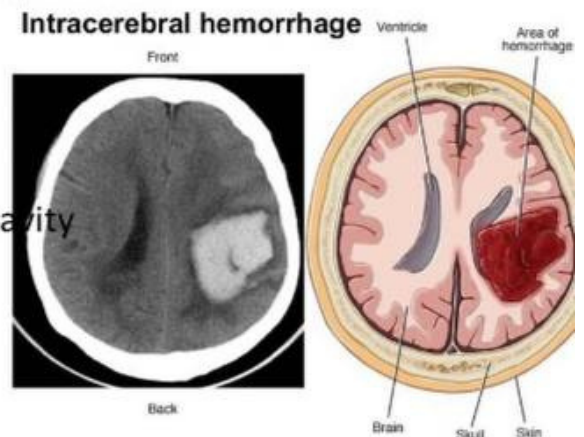
Causes: **Hypertension** is the leading cause.

Sites: more common in the **basal ganglia (80%)**, **thalamus**, then pons and cerebellum and cerebral cortex.

Morphology: Extravasated blood (**hematoma**) → compress brain

Fate:

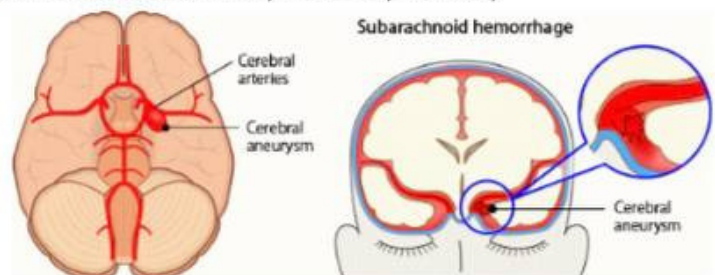
- Resolution → Absorption → cystic cavity
- Brain herniation

**SUBARACHNOID HEMORRHAGE**

Incidence: Less than 50 y

Causes: rupture of a **berry aneurysm** on the circle of Willis, Trauma, Tumor, vascular malformations

Clinical: Sudden severe headache

**Fate:**

- Ischemia and **infarction** (due to reflex spasm after rupture)
- **Fibrosis** of arachnoid → **Hydrocephalus**

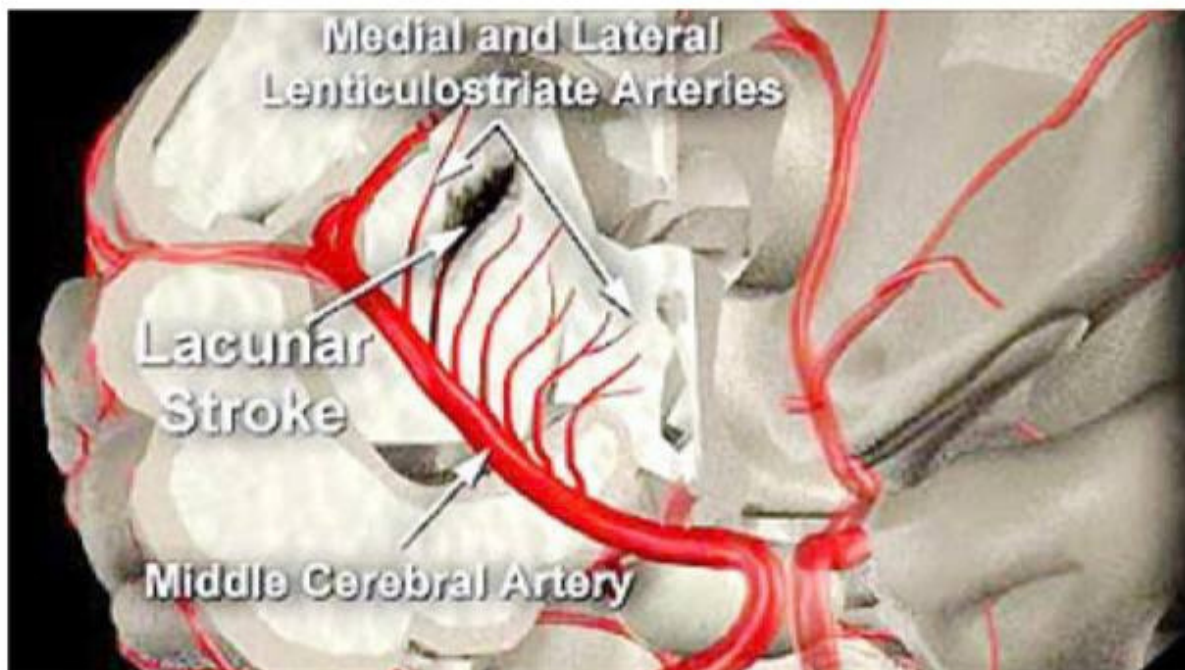
OTHER VASCULAR DISEASES

Hypertensive cerebrovascular disease:

a) **Intracerebral hemorrhage:** Acute massive hemorrhage & stroke. due to ruptured **arteriosclerotic vessels** or **microaneurysms**.

b)

b) **Lacunar infarcts:** Small, **cavitary** infarcts of the deep grey matter in the basal ganglia and thalamus due to **occlusion of single penetrating branch** of a large cerebral artery



c) **Hypertensive encephalopathy:**

-It is a syndrome characterized by **headache, confusion, vomiting, convulsions** up to **coma**.

-It is associated with sudden sustained rise in diastolic blood pressure greater than **130** mm HG.

-**Post mortem** : cerebral edema; fibrinoid necrosis of arterioles .