

Circulatory Disorders

- **Edema**
- **Hyperemia & congestion**
- **Thrombosis**
- **Embolism**
- **Infarction**
- **Shock**

EDEMA

- \uparrow hydrostatic pressure (*Heart failure*)
- \downarrow plasma osmotic pressure (*hypoproteinemia* due to \downarrow intake, \downarrow absorption, \uparrow loss)
- Lymphatic obstruction (*tumor, fibrosis etc*)
- Sodium and water retention (*renal failure*)



Pitting Edema



Lymphedema

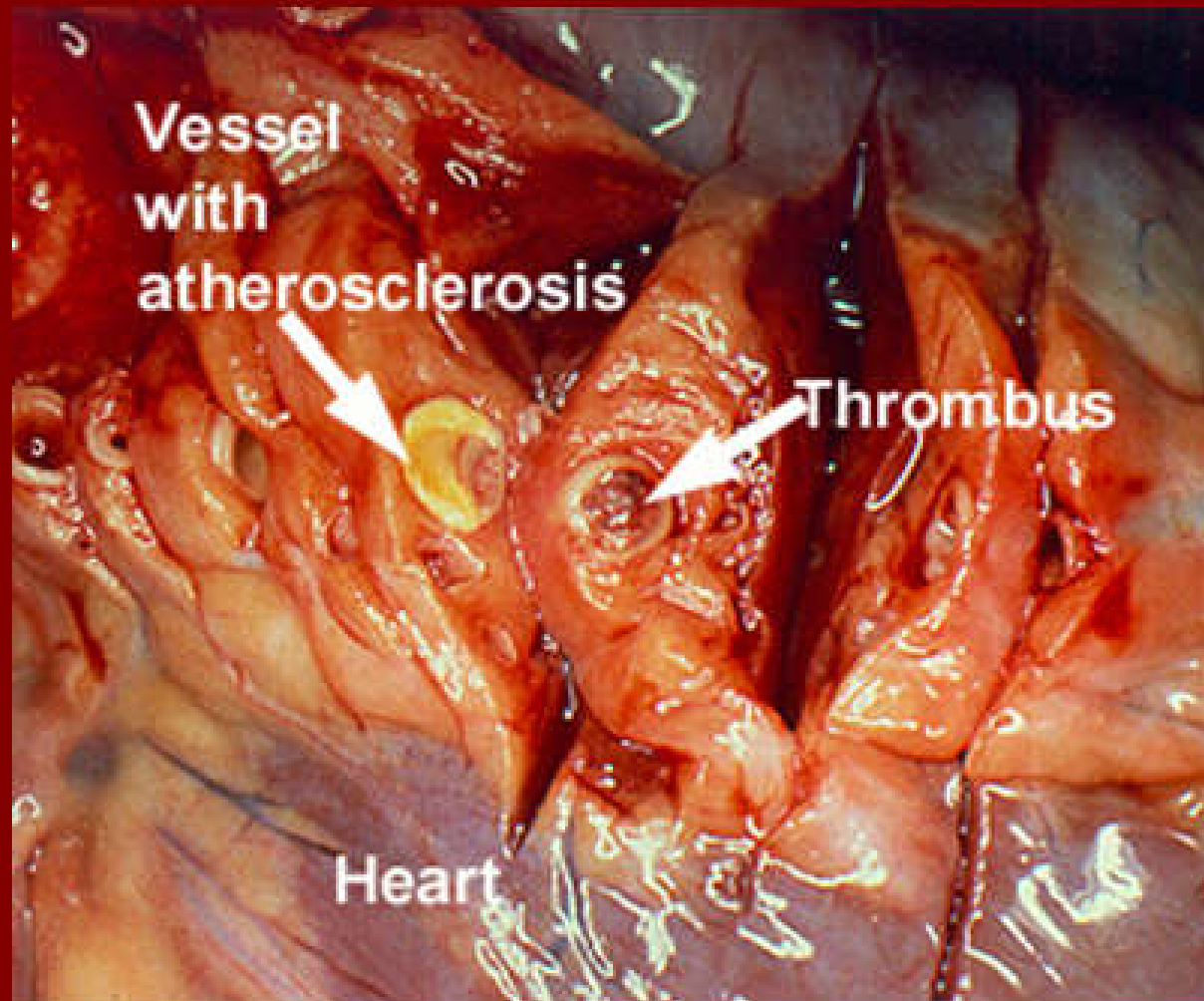


Pulmonary Edema

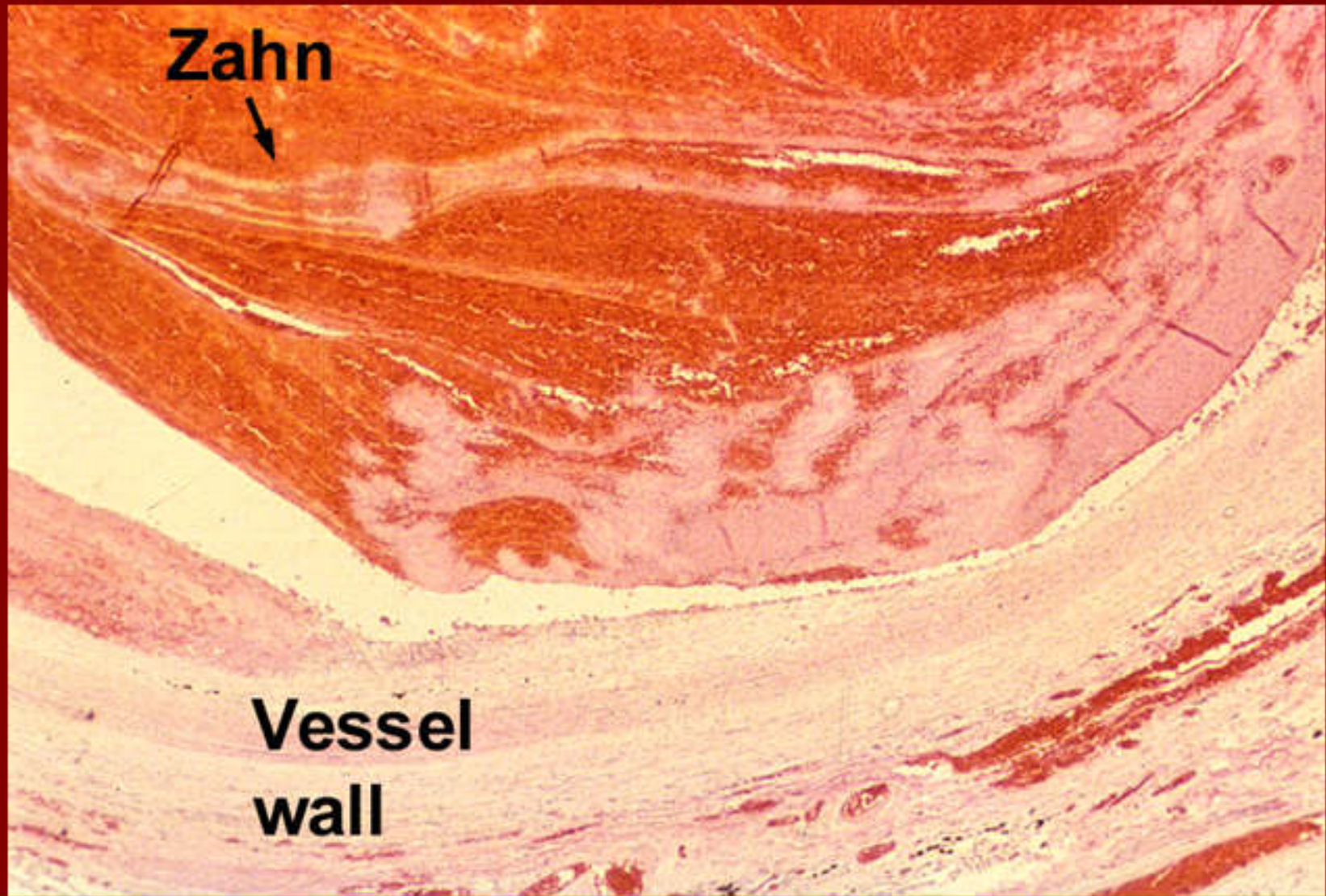


Thrombosis

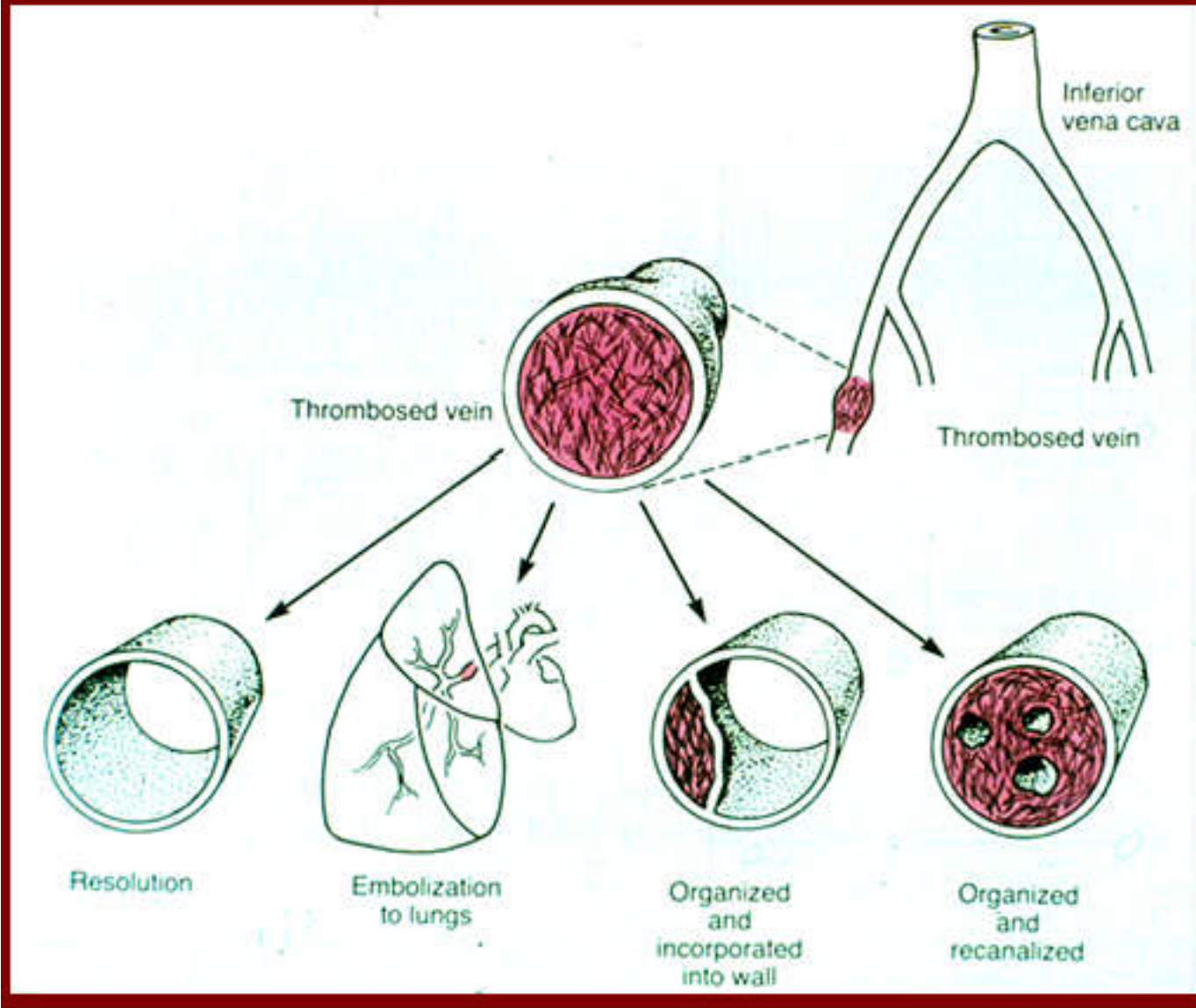
Coronary Artery Thrombosis



Pulmonary Embolus

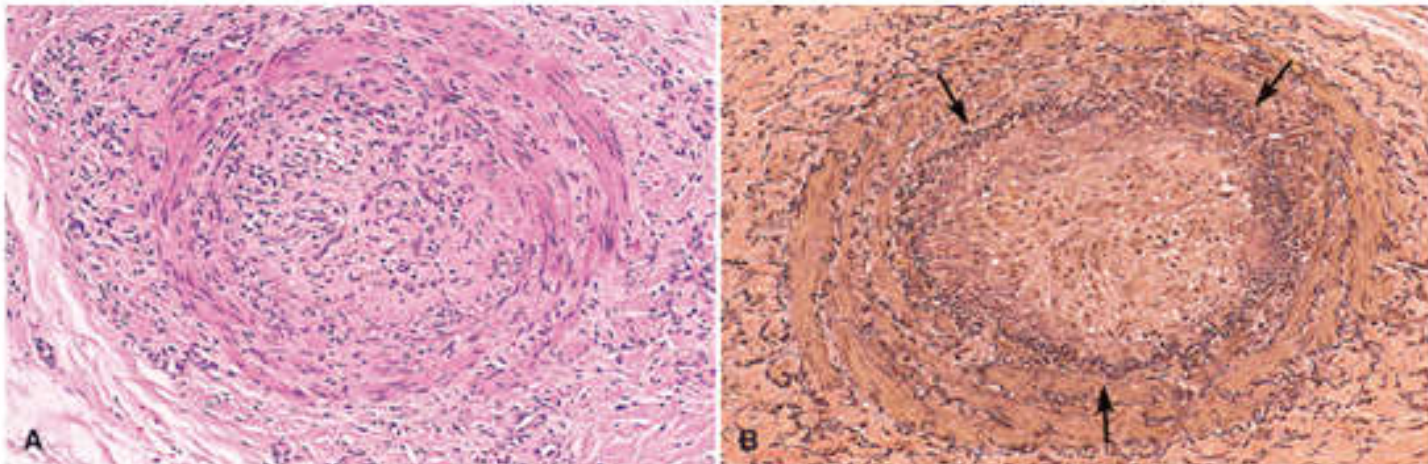


Outcomes of thrombus



Fate of a thrombus

- **Dissolution:** fibrinolytic activity completely clears thrombus
- **Organization and recanalization or incorporation:** thrombi in vessels induce inflammation and fibrosis (organization); these can **recanalize** (shown below) or they can become **incorporated** into the vessel wall
- **Propagation:** thrombus stimulates further platelet aggregation and growth that may eventually occlude vessel lumen
- **Embolization:** thrombi may break off and plug a distant site



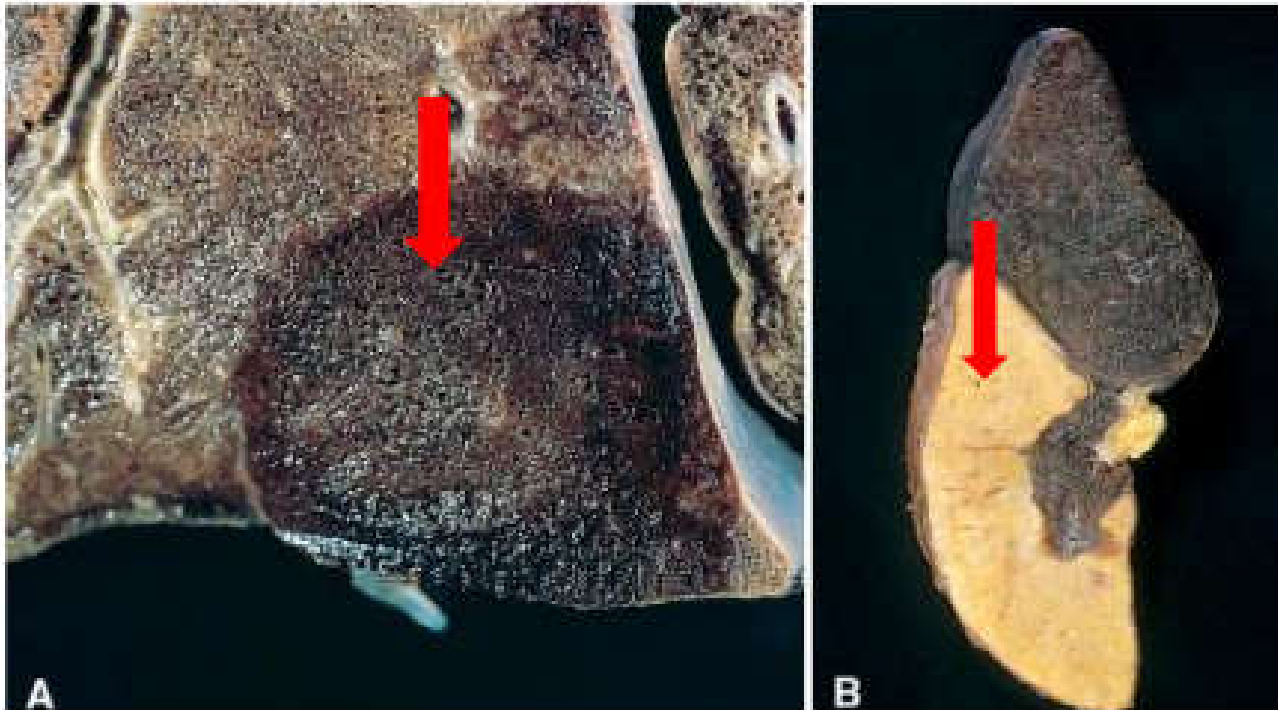
Embolism

- **An embolus is a detached intravascular solid, liquid, or gaseous mass that is carried by the blood to a site distant from its point of origin.**
- **Emboli lodge in vessels too small to permit further passage, resulting in partial or complete vascular occlusion**

- Large embolus derived from a lower extremity deep venous thrombosis and now impacted in a pulmonary artery branch.



infarction



Examples of infarcts. (A) Hemorrhagic, roughly wedge-shaped pulmonary infarct. (B) Sharply demarcated white infarct in the spleen.

INFARCTION

White infarction

- Arterial occlusion
- Solid, compact organs
- Few collateral circulation
- (spleen, kidney, heart, brain, etc.)



Morphology

Gross: Pale yellowish white,
wedge-shaped necrotic lesion

INFARCTION



Hemorrhagic infarction of the intestine

Cerebral Infarction



Other circulatory disorders

HYPEREMIA & CONGESTION

A local increased volume of blood in a particular tissue

Hyperemia: An augmented blood flow inducing arteriolar and capillary dilation

Congestion: Accumulation of Blood in Small Veins & capillaries result from drainage difficulty of veins

Hyperemia

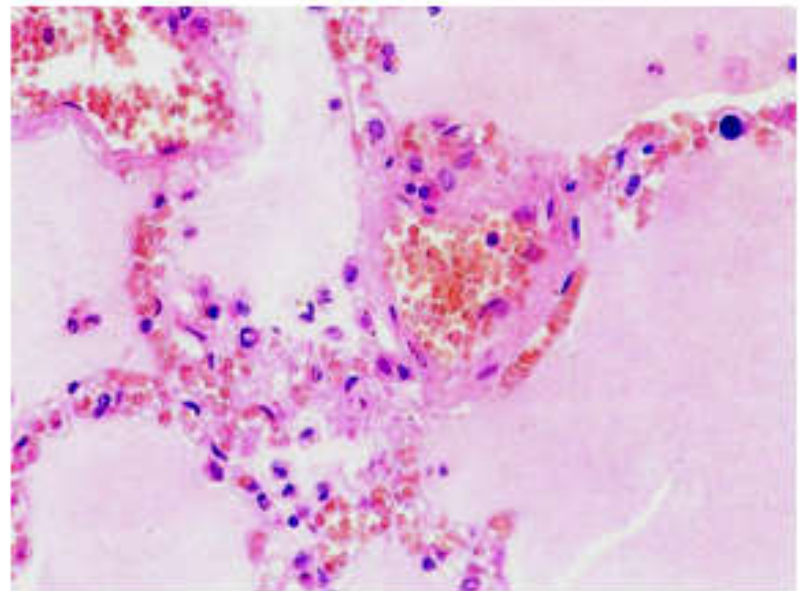
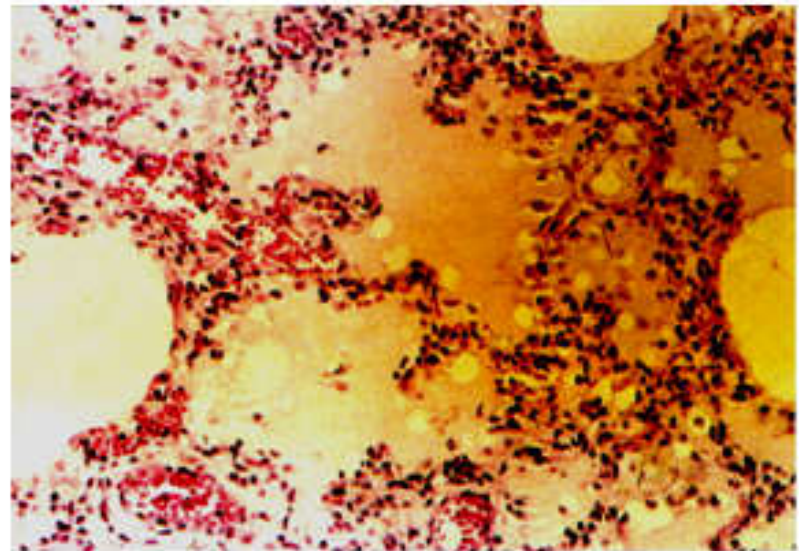


LUNG CONGESTION

Gross: heavy wet
enlarged lung oozing
edematous fluid

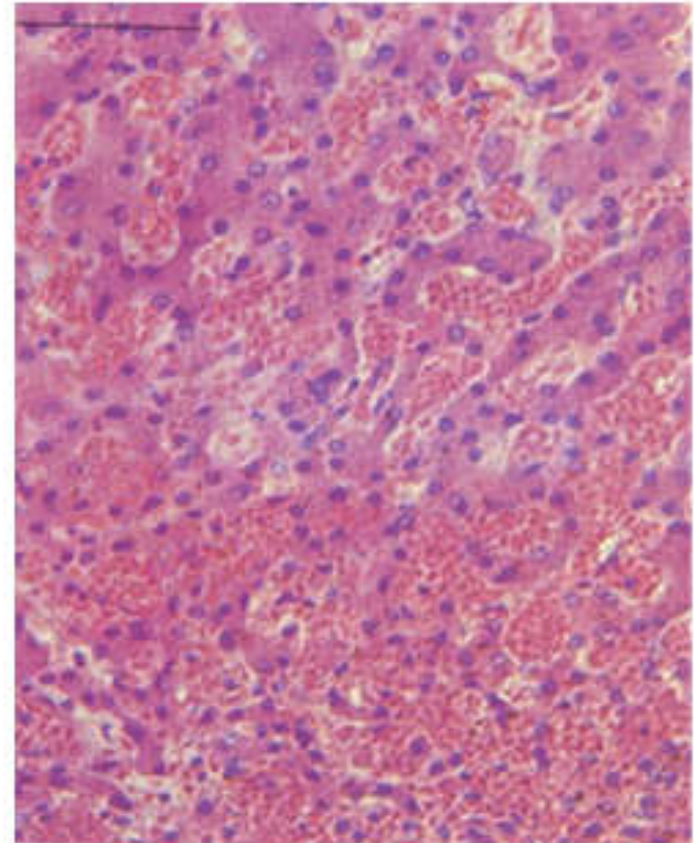
Microscopic: Alveolar
capillaries highly dilated
& engorged with blood
Alveolar cavity filled
with eosinophilic
edema fluid

clinical: *Pink colored
foamy sputum*

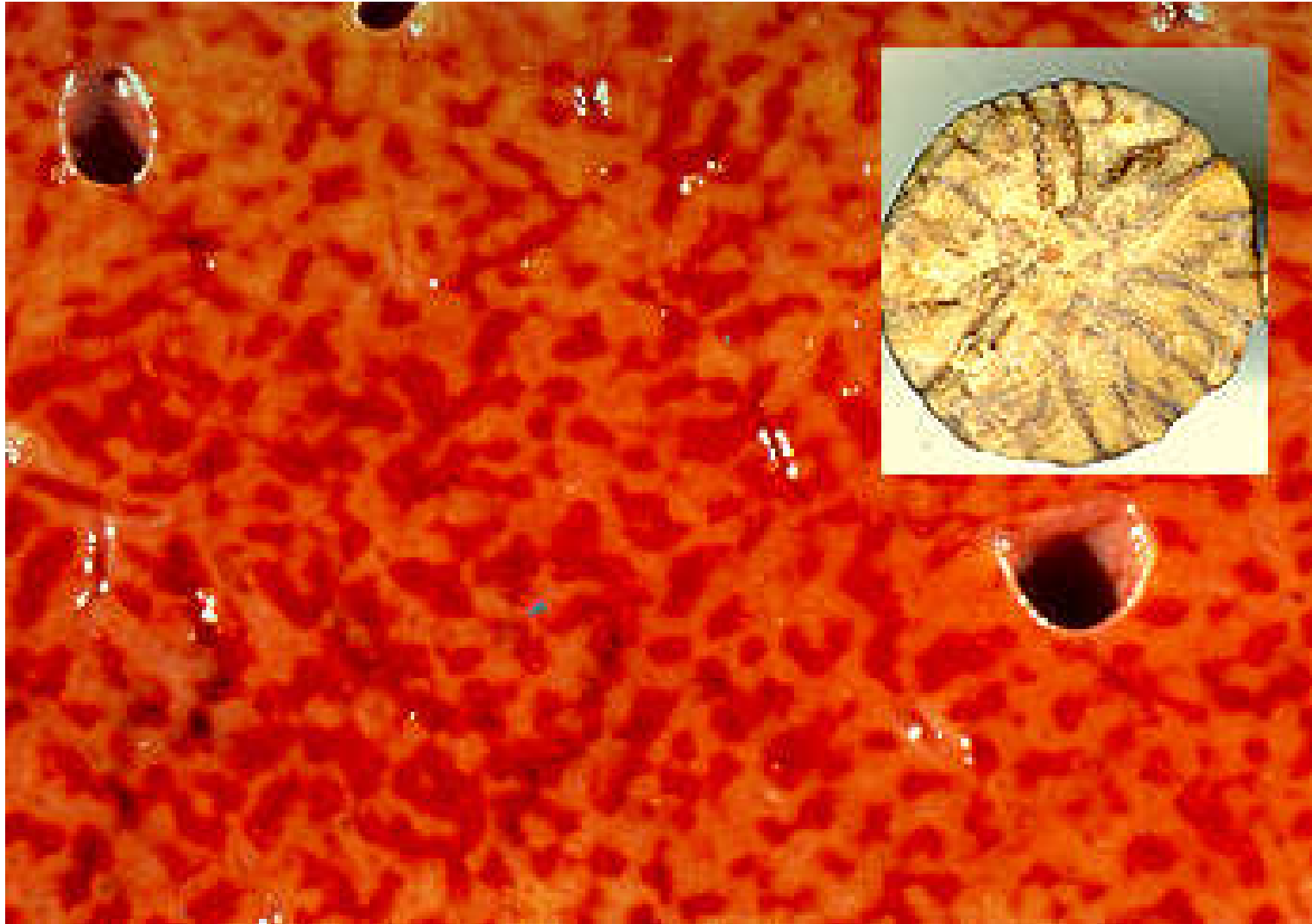


LIVER_CONGESTION

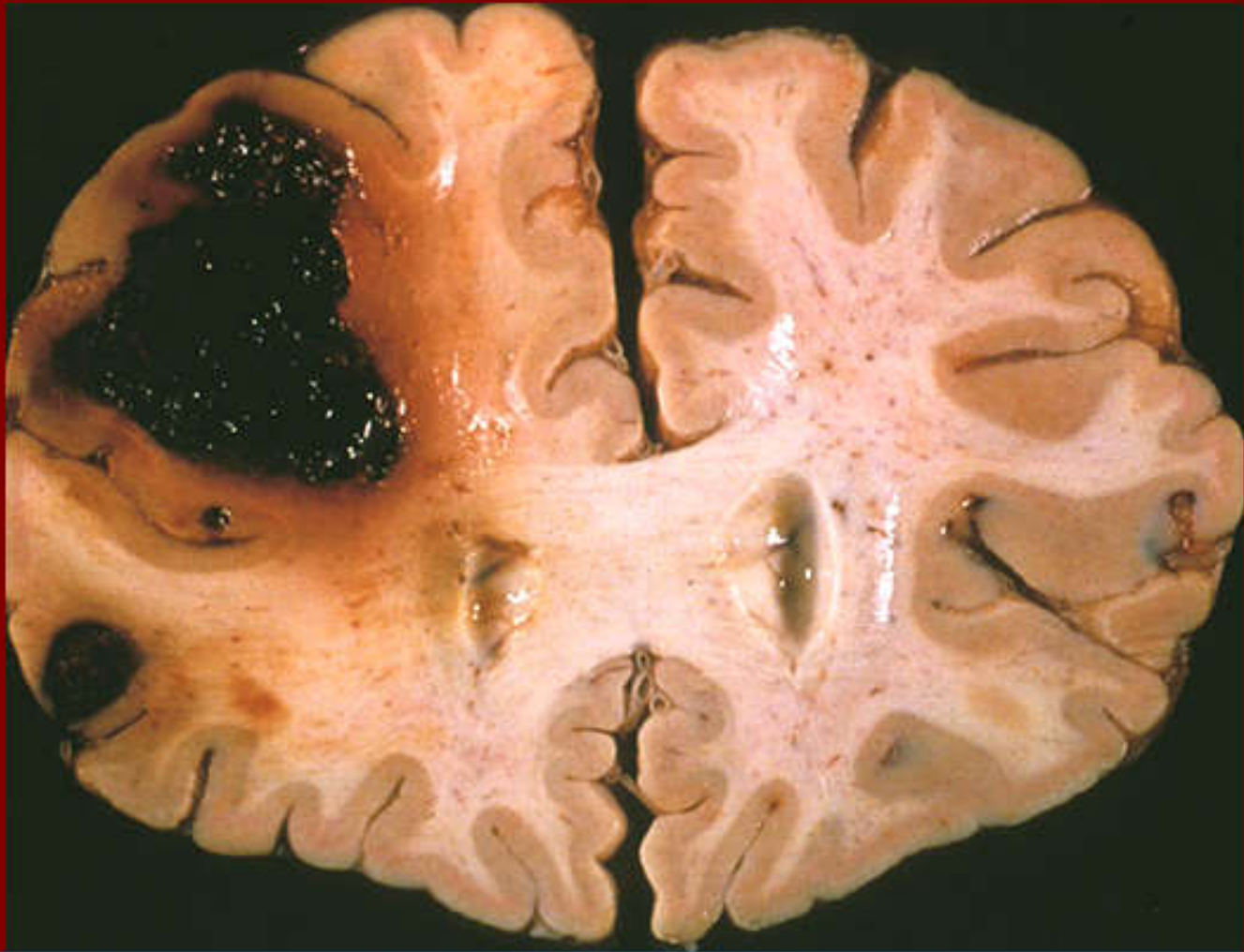
- * Dilation of central vein & sinusoids with blood
- * Atrophy, degeneration & necrosis of central hepatocytes



Chronic Passive Congestion, Nutmeg Liver



Hematoma



Petechiae

