

# Al-Mustaqbal University

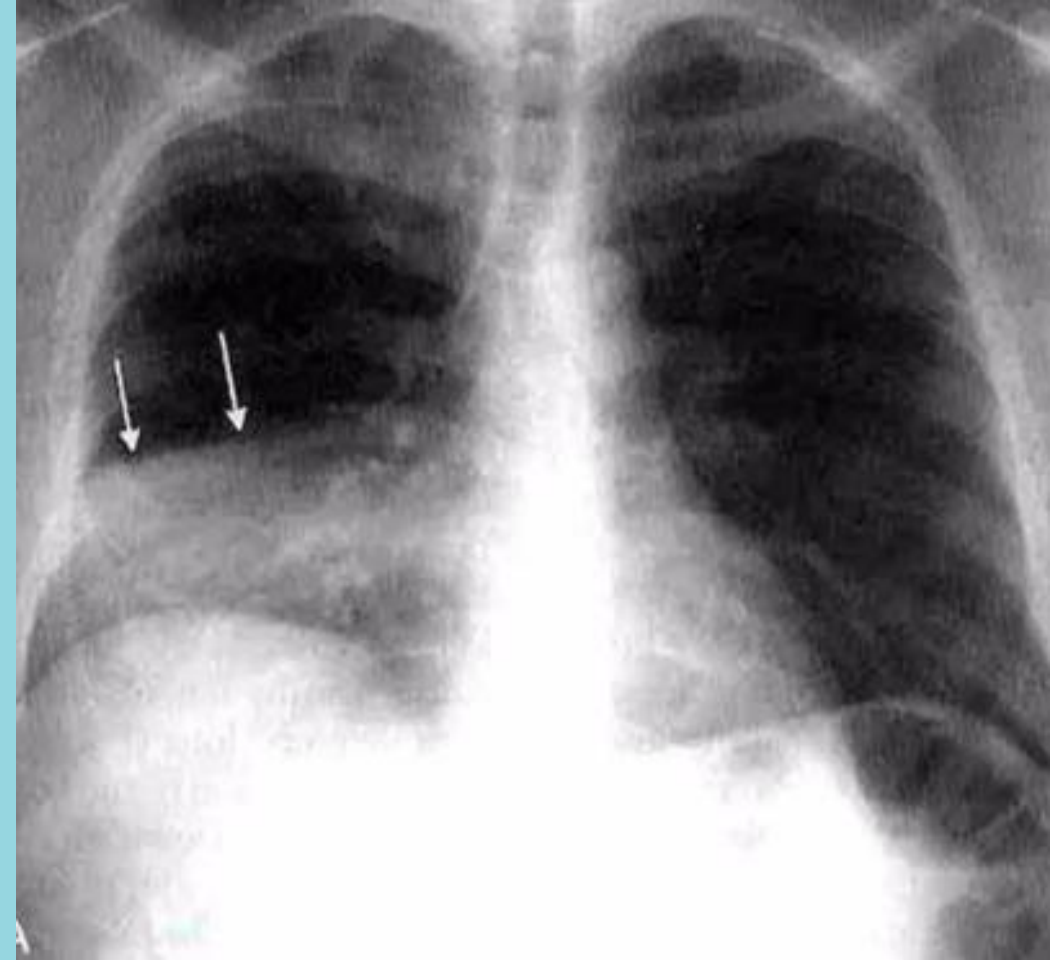


**Pathophysiology 3<sup>rd</sup> stage**

**Lab (Lobar Pneumonia Stages)**

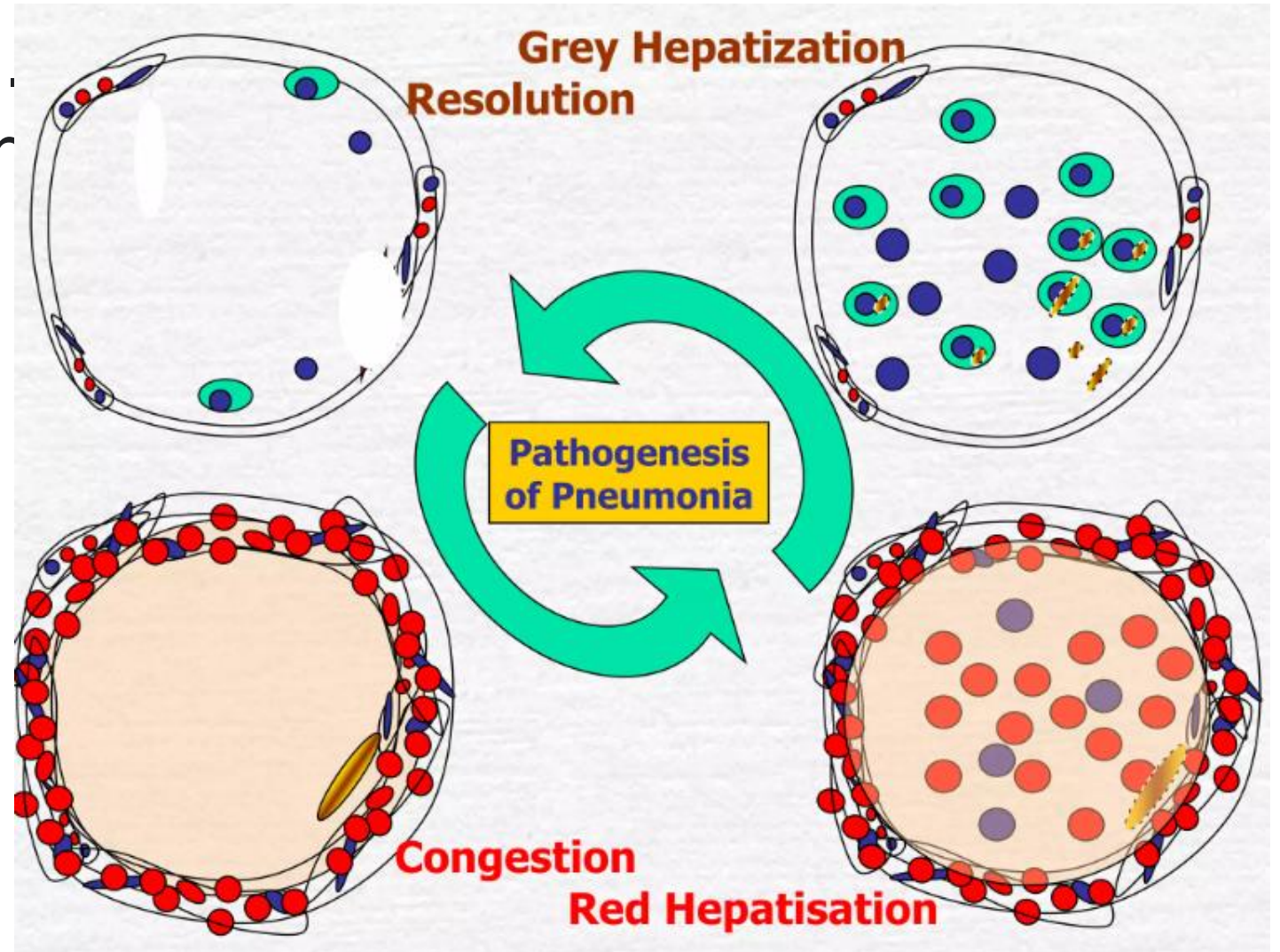
**Dr. Widad Abd AL-Jabbar & Dr. Hasanain Owadh**

**Lobar pneumonia:**  
is a form of  
pneumonia characterized by  
inflammatory exudate within  
the intra-alveolar space  
resulting in consolidation that  
affects a large and continuous  
area of the lobe of a lung.



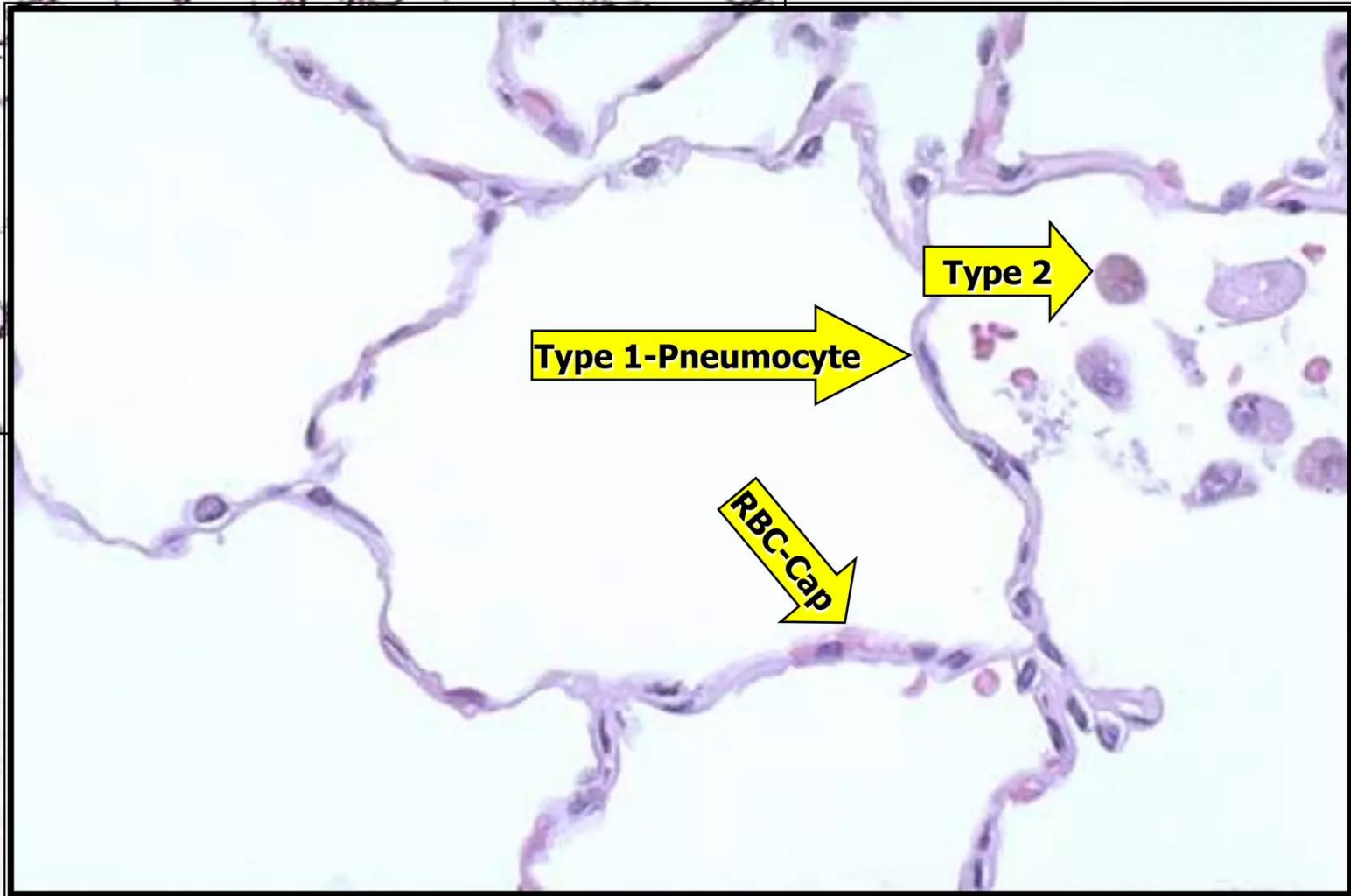
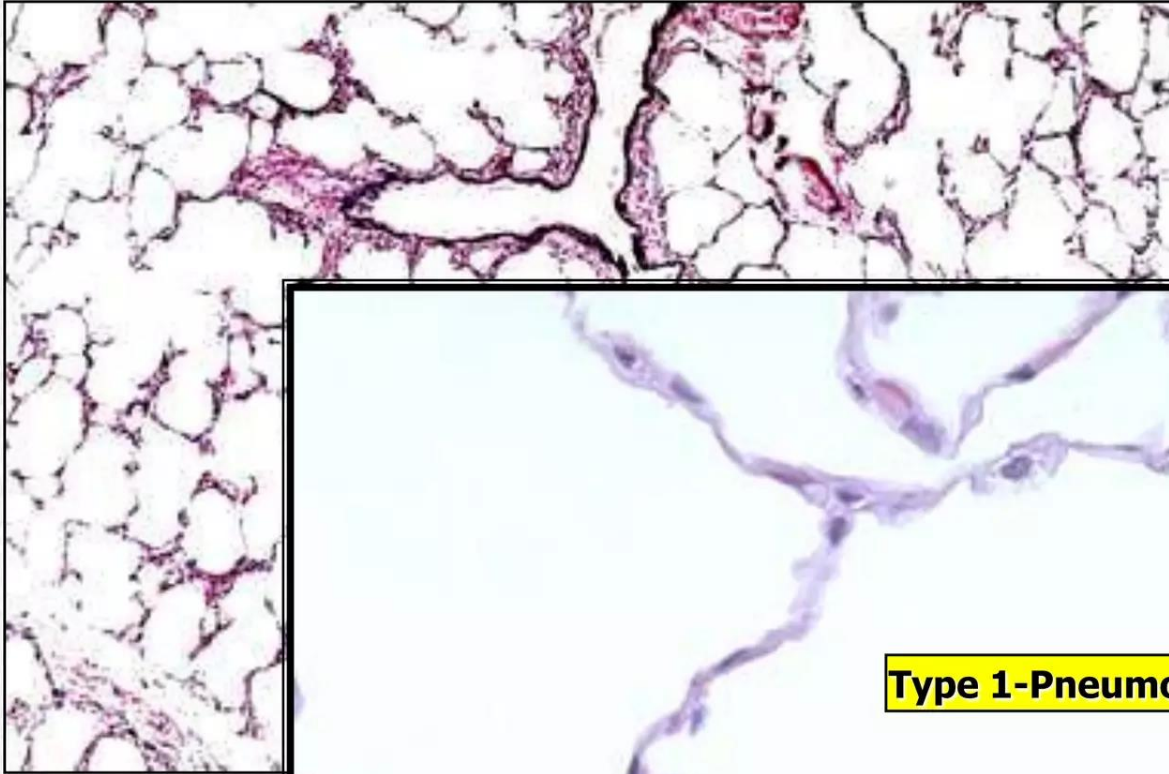
# The four stages of lobar pneumonia include

- Stage 1: Congestion.
- Stage 2: Red hepatization.
- Stage 3: Gray hepatization.
- Stage 4: Resolution.

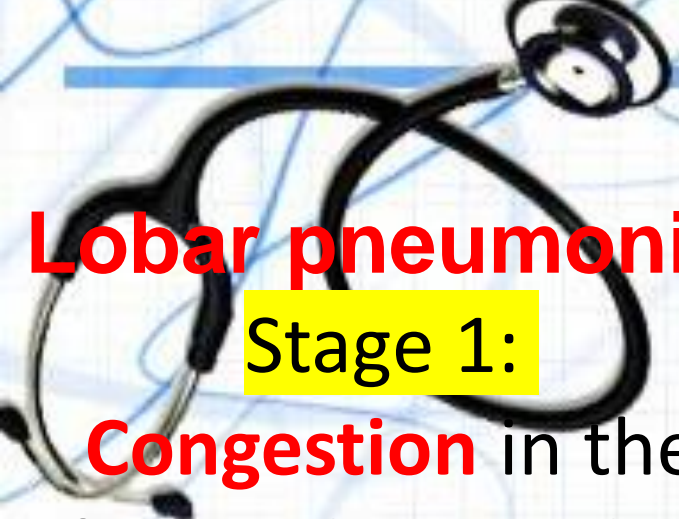




## Normal Lung





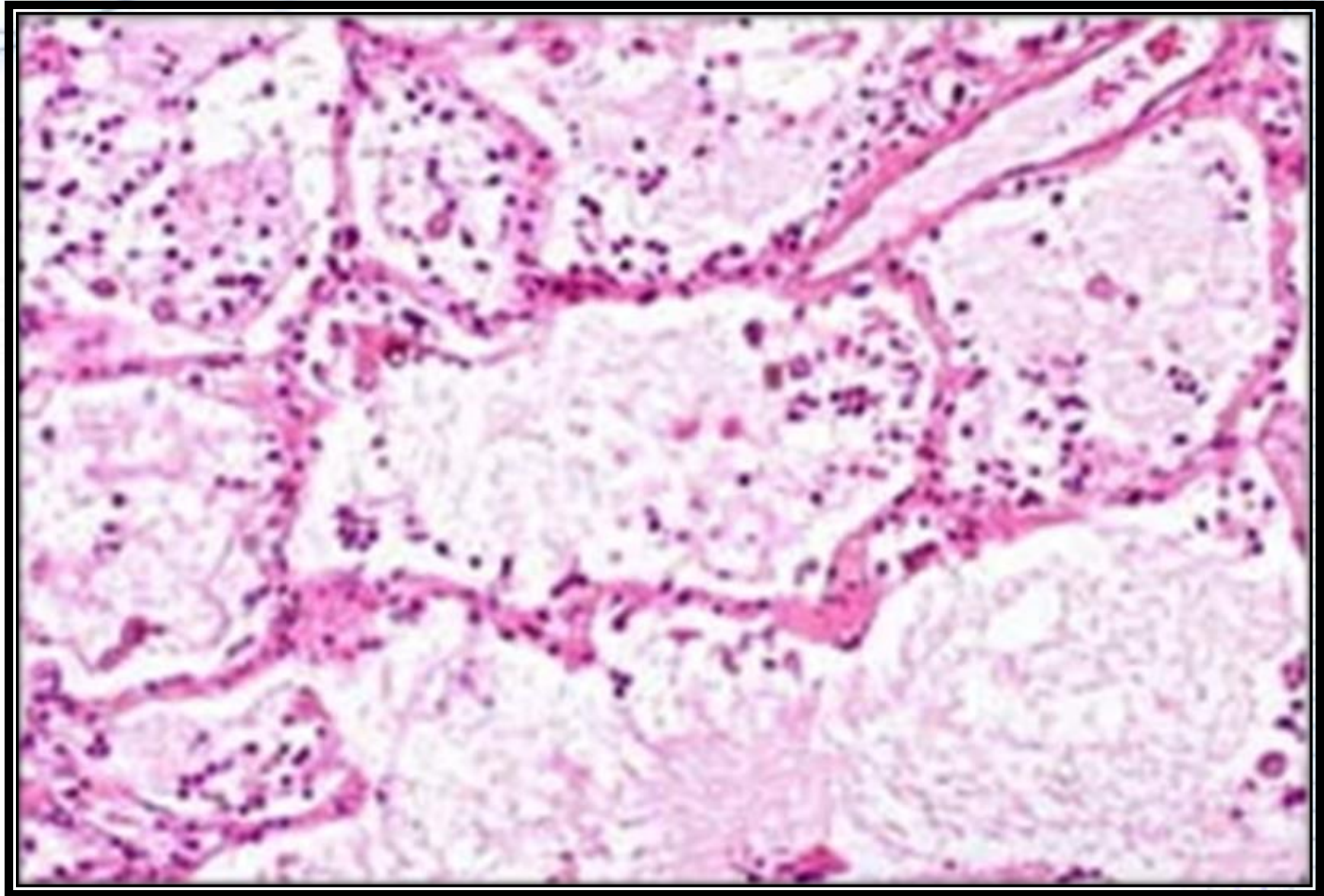


# Lobar pneumonia

## Stage 1:

**Congestion** in the first 24 hours: This stage is characterized histologically by

- 1- intra-alveolar exudate,
- 2- small numbers of neutrophils, often numerous bacteria.



## **Lobar pneumonia** Stage 2: **Red hepatization or consolidation**

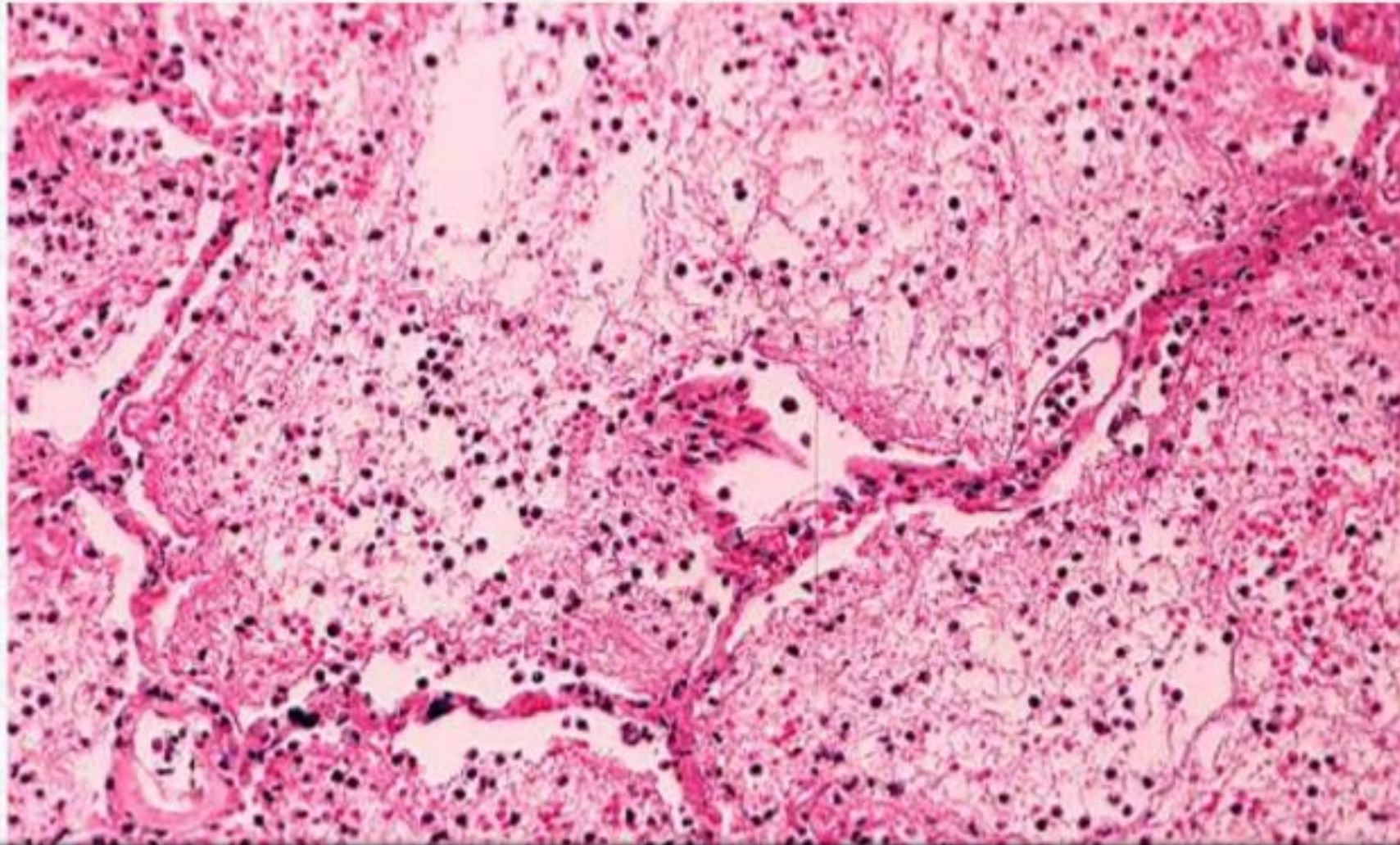
The gross appearance has been likened to that of the liver, hence the term "hepatization".



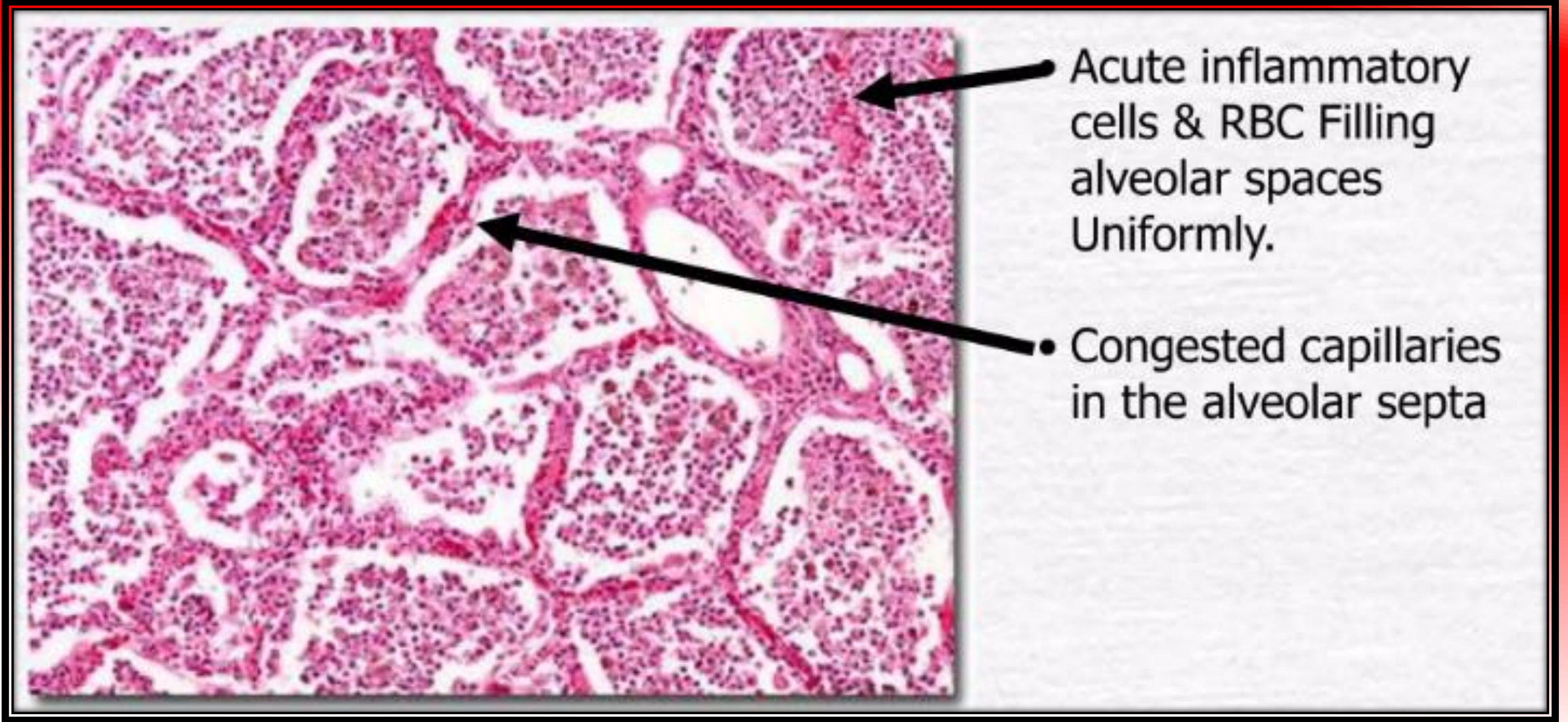


## Lobar Pneumonia: Microscopy:

Congestion → red hepatization



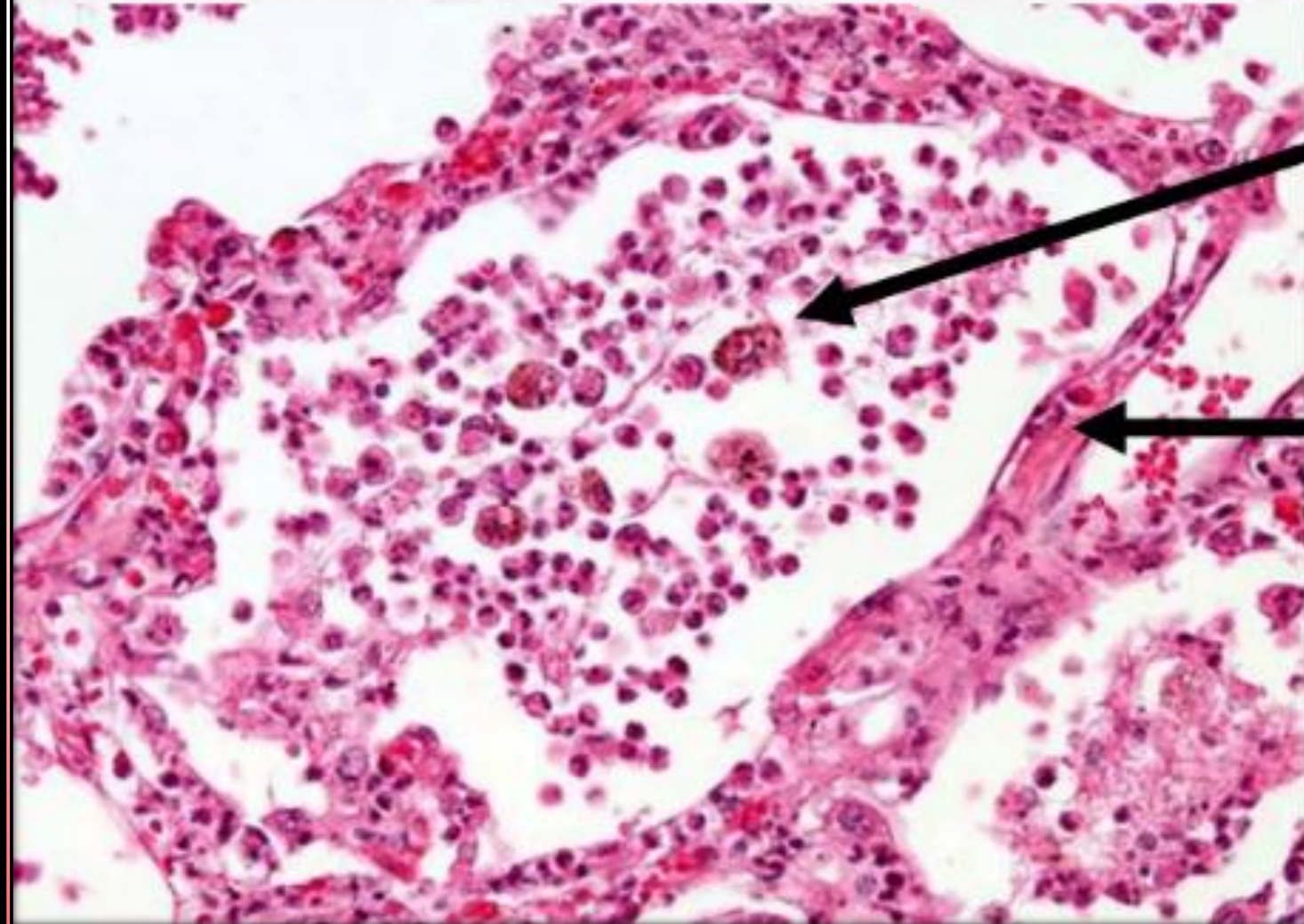




**Red hepatization or consolidation:** Vascular congestion persists, with extravasation of red blood cells into alveolar spaces, along with increased numbers of neutrophils and fibrin.



# Lobar Pneumonia: Red hepatization.



Acute inflammatory cells. Filling alveolar spaces Uniformly.

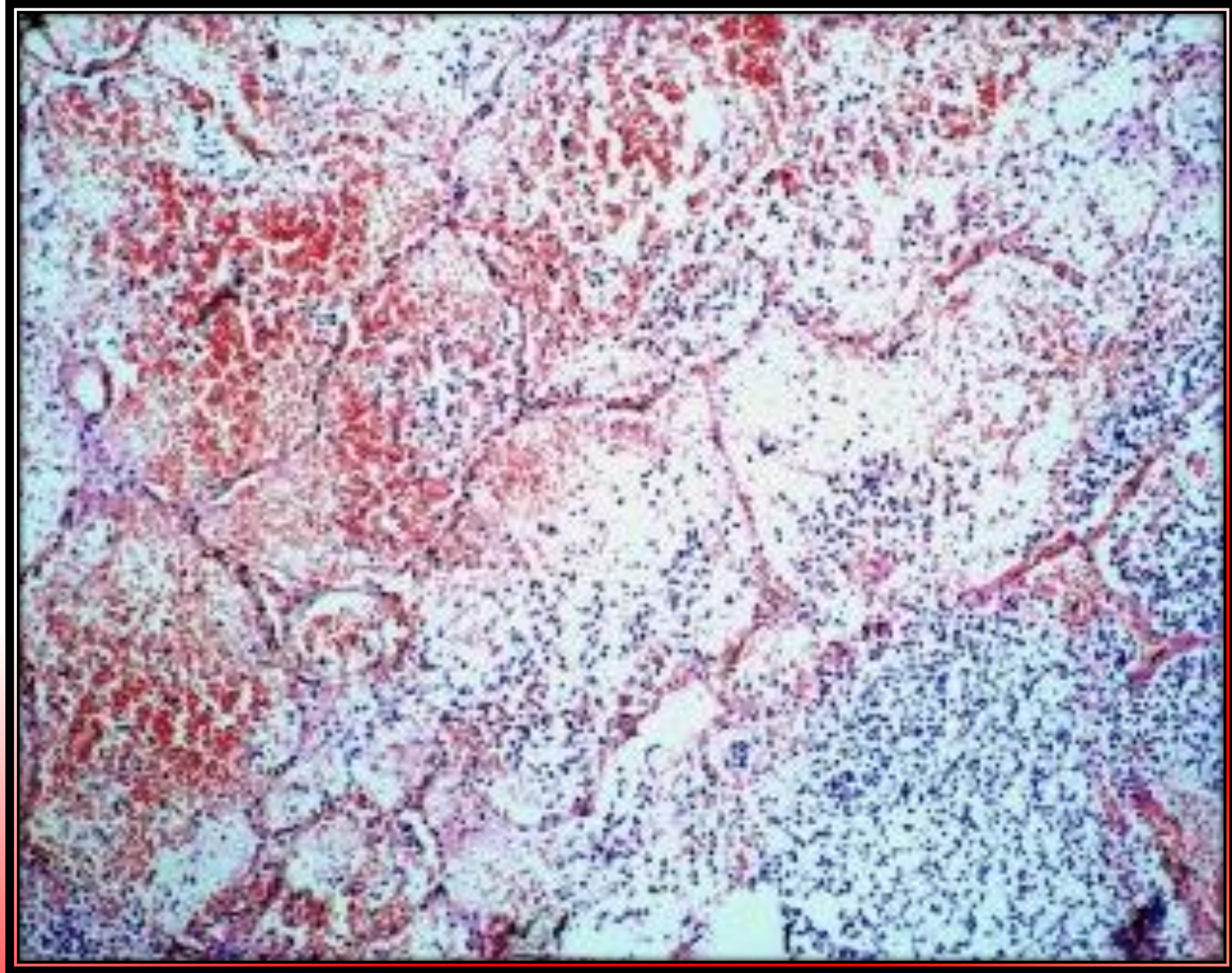
Congested capillaries in the alveolar septa



“Red hepatization”

Blood vessel congestion.

In the lumen of alveoli  
1-erythrocytes,  
2-fibrin,  
3-several neutrophils.



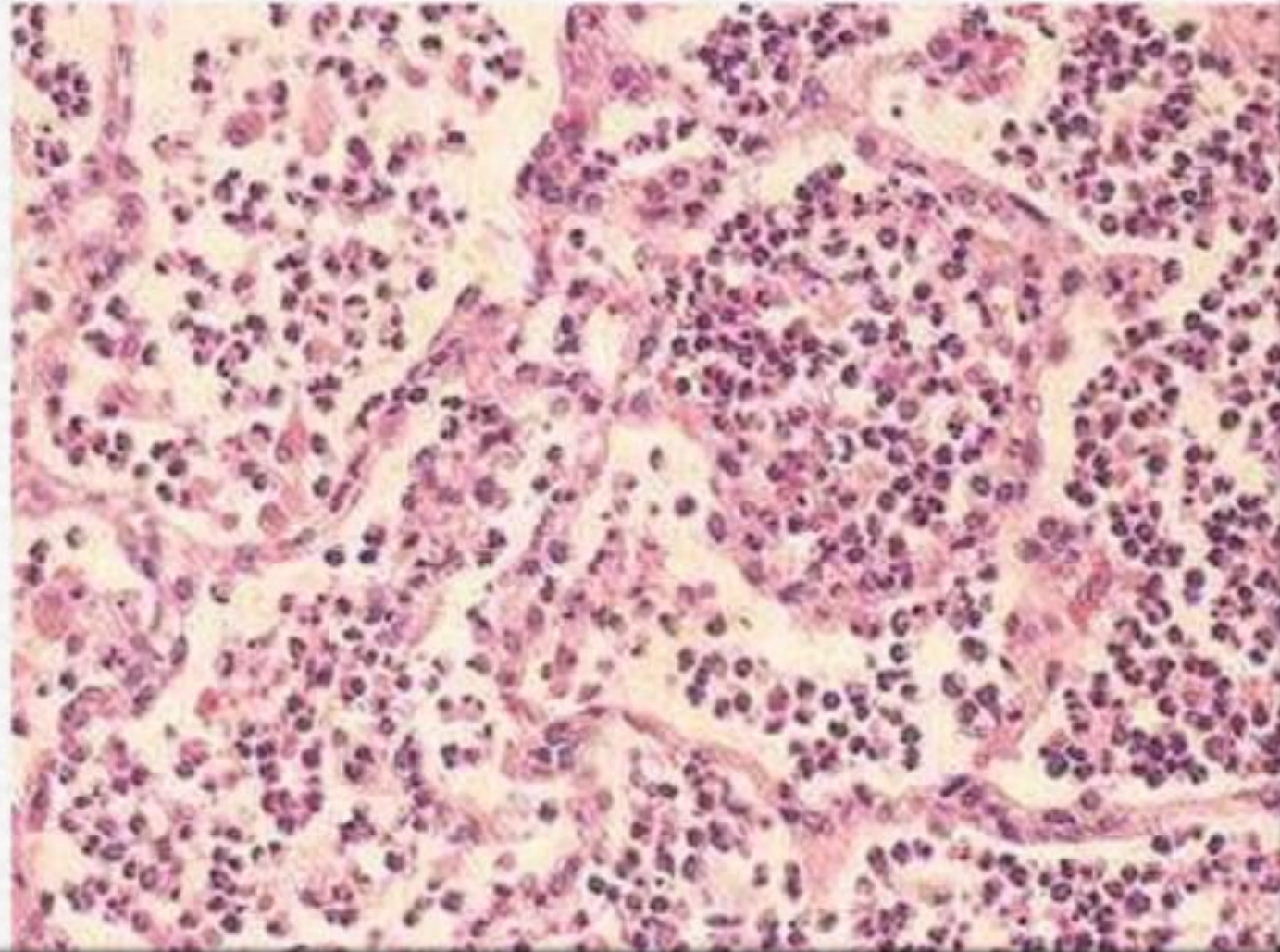


- **Grey hepatization:**  
grossly the color is paler  
and the cut surface is  
drier. This is when death  
typically occurs in  
severe cases.





Lobar Pneumonia: Red → Grey  
hepatization.

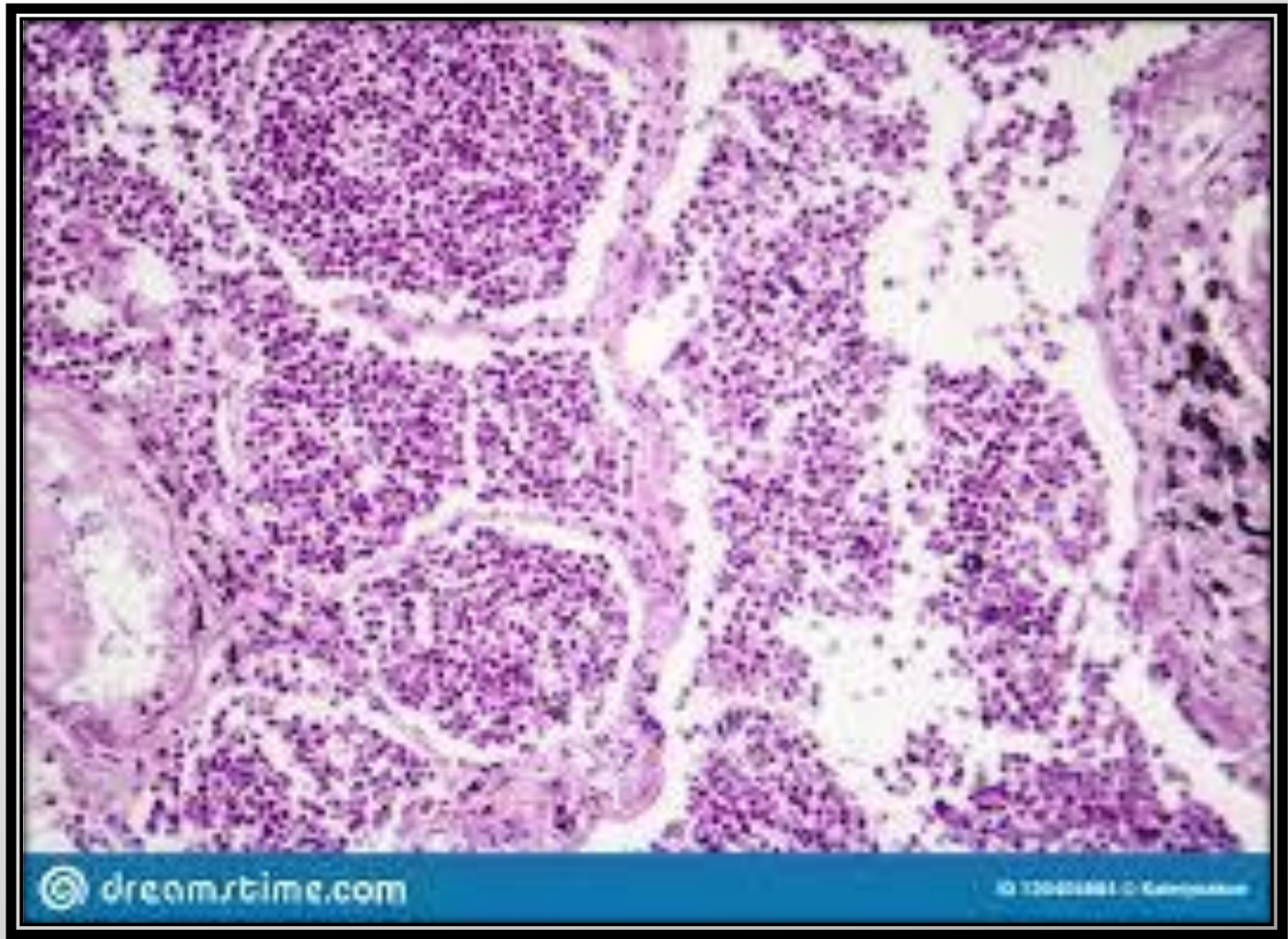




# Lobar pneumonia

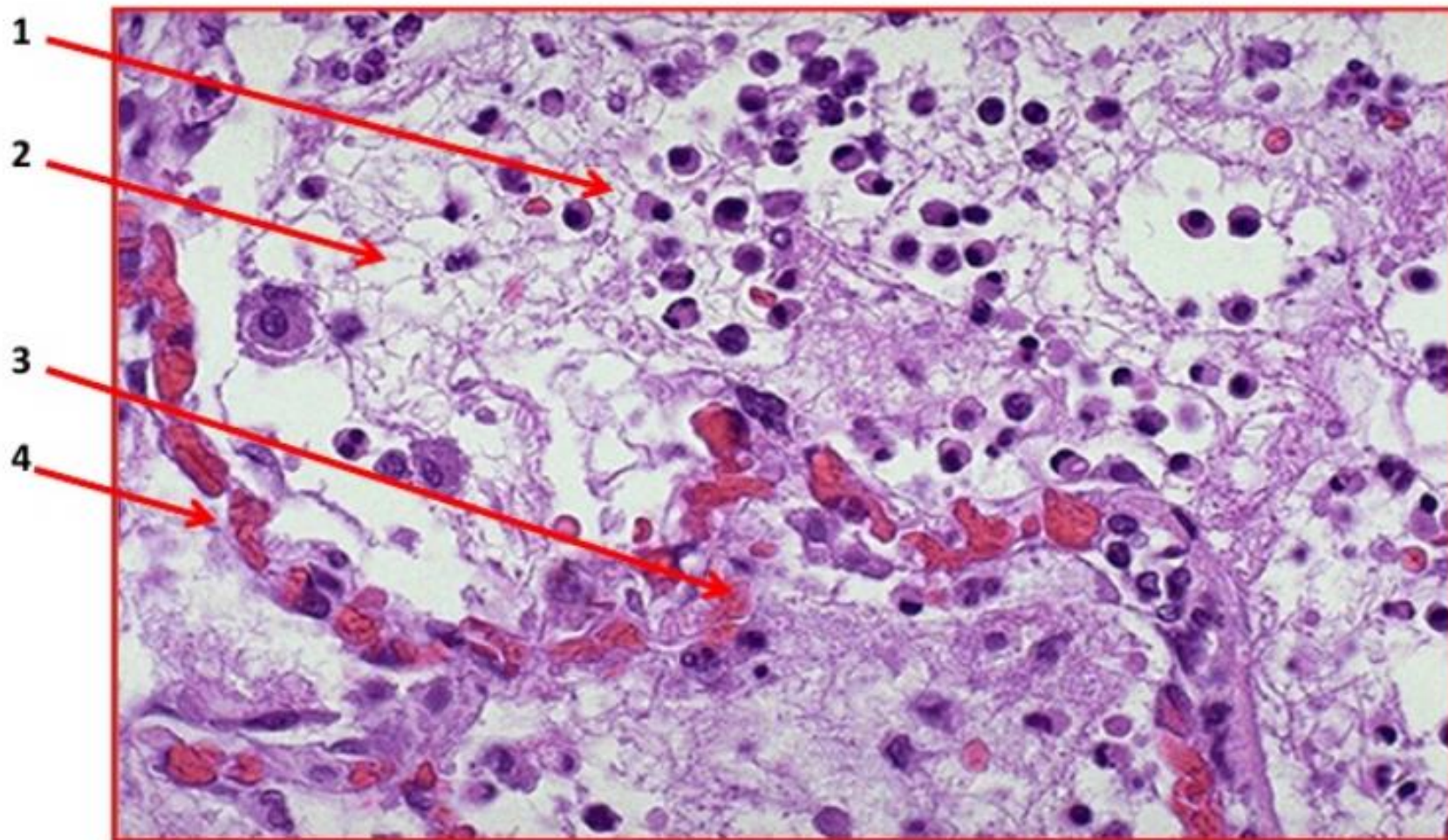
Stage 3: Lobar (gray hepatic phase) Gray hepatization

- **Grey hepatization:**
- Red blood cells disintegrate, with persistence of the neutrophils and fibrin.





# Lobar Pneumonia, Grey Hepatization



- 1) Inflammatory cells
- 2) Clumps of fibrin and edema
- 3) Fragmented RBCs
- 4) Congested alveolar capillaries



## Stage 4: **Resolution**

Fluids and breakdown products from cell destruction are reabsorbed.

Macrophages (large white blood cells) are present and help to clear (neutrophils) and left over debris.

