

# Al-Mustaqbal University



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

### **Lab (Disorders of the central nervous system)**

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# **Brain liquefaction necrosis**

Liquefactive necrosis: is a type of necrosis which results in a transformation of the tissue into a liquid viscous mass.

In liquefactive necrosis, the affected cell is completely digested by hydrolytic enzymes, resulting in a soft, circumscribed lesion consisting of pus and the fluid remains of necrotic tissue.

Loss of tissue architecture means that the tissue can be liquefied. This process is not associated with bacterial action or infection. Ultimately, in a living patient most necrotic cells and their contents disappear.

# Cerebral infarct

## Gross Description

There is small cystic degeneration in the region.

No haemorrhage or purulent material is seen.



Neurons do not regenerate. So, some brain tissue is lost forever.

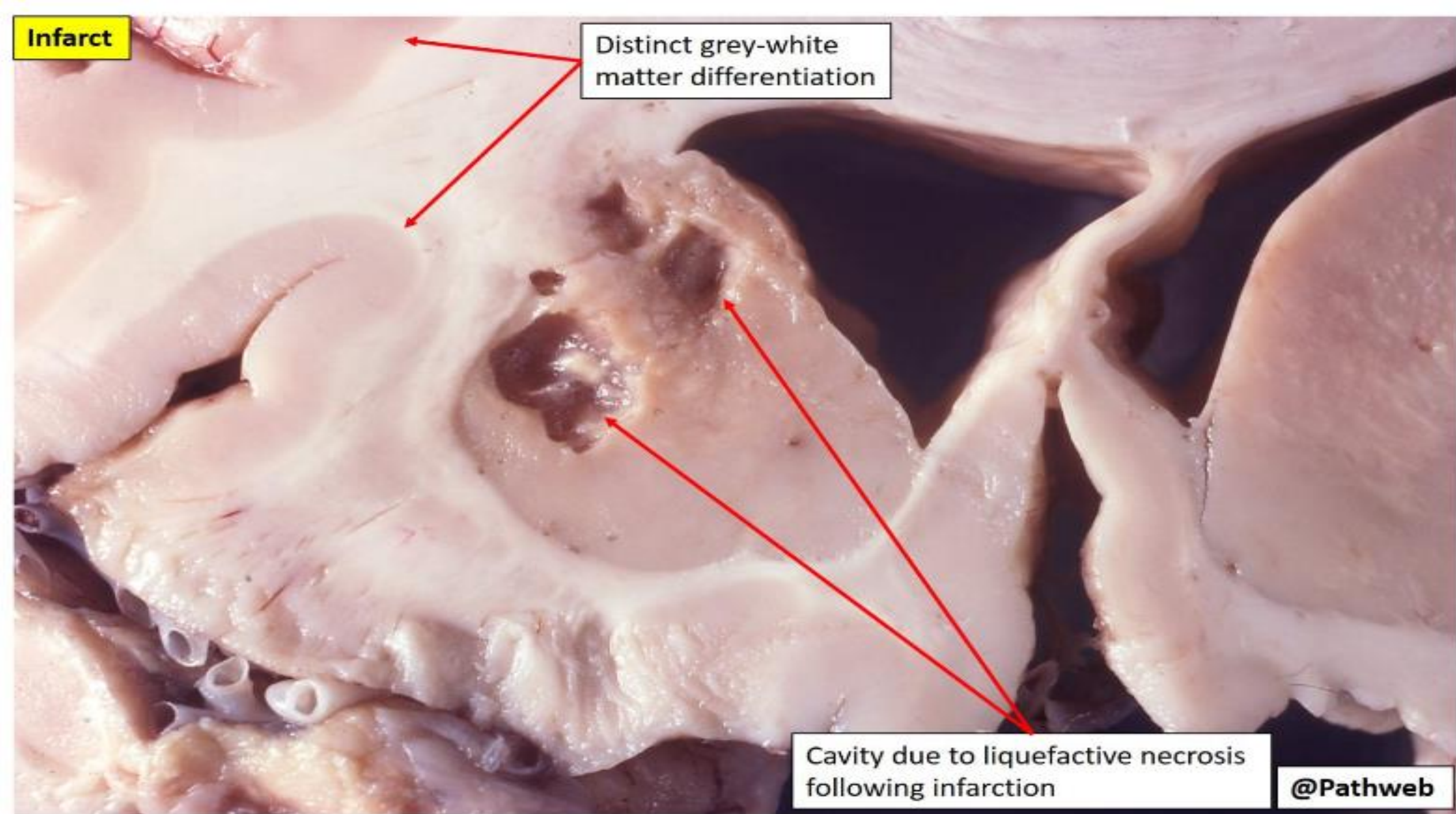


**Infarct**

Distinct grey-white  
matter differentiation

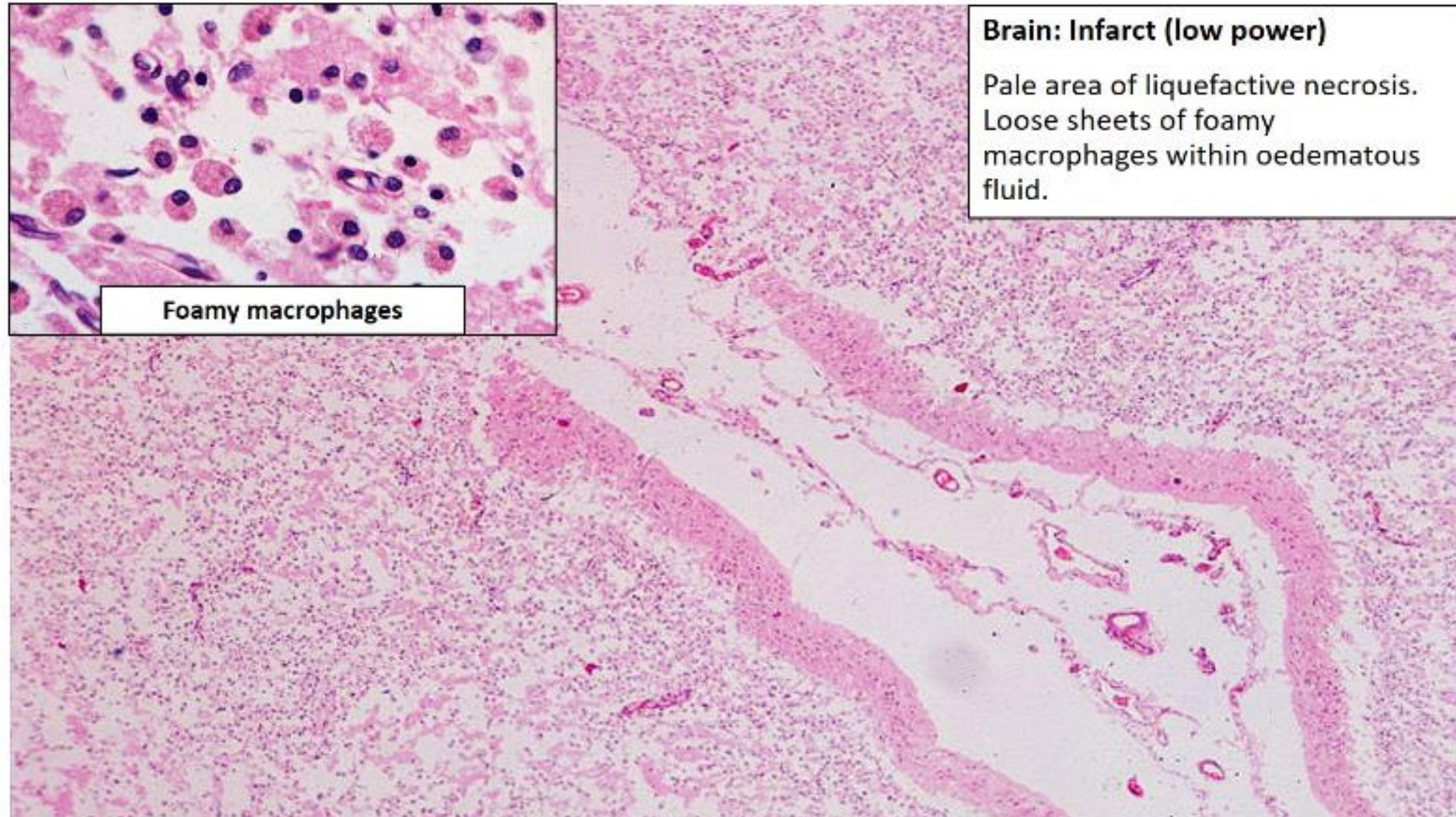
Cavity due to liquefactive necrosis  
following infarction

@Pathweb



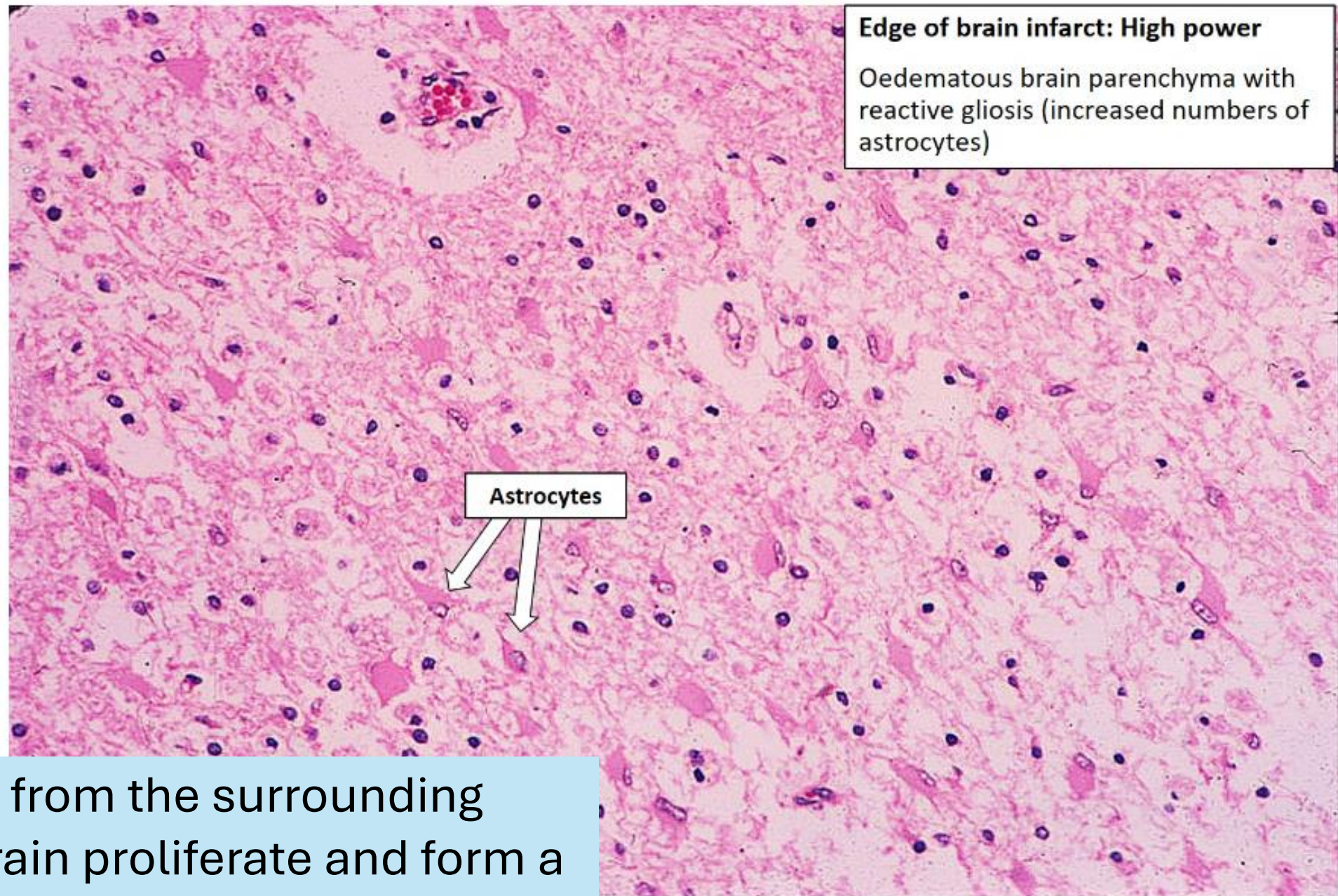


## Macrophage reaction appears early and peaks at 3-4 weeks



Liquefactive necrosis of the human brain, light photomicrograph showing loss of cell outlines, accumulation of cellular debris, macrophage infiltration.



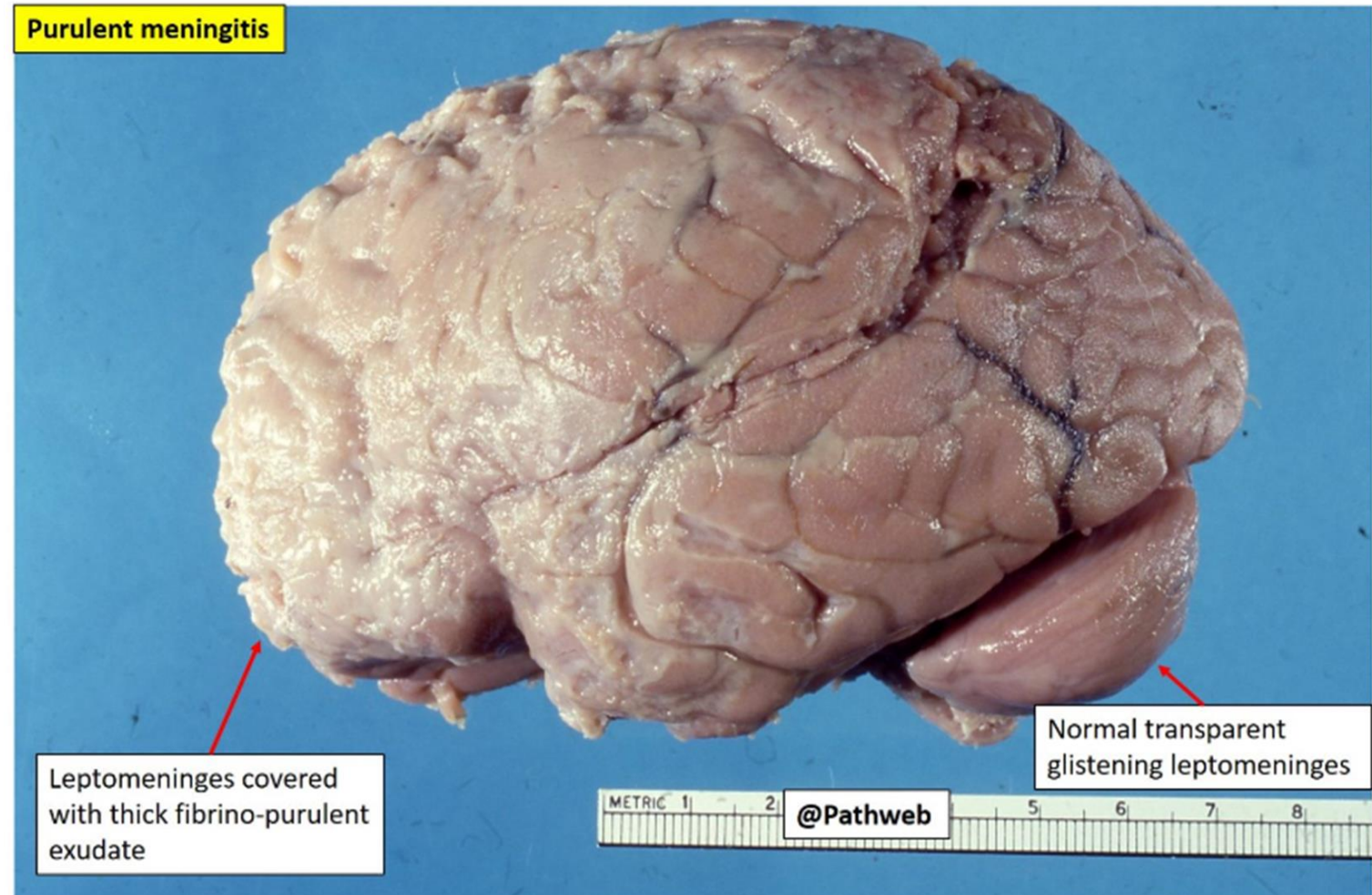


Astrocytes from the surrounding undamaged brain proliferate and form a glial scar around the infarct.



## II- Brain Purulent Meningitis

Purulent meningitis refers to inflammation of leptomeninges occurring along with infection of the subarachnoid space by various purulent bacteria.



## Gross Description:

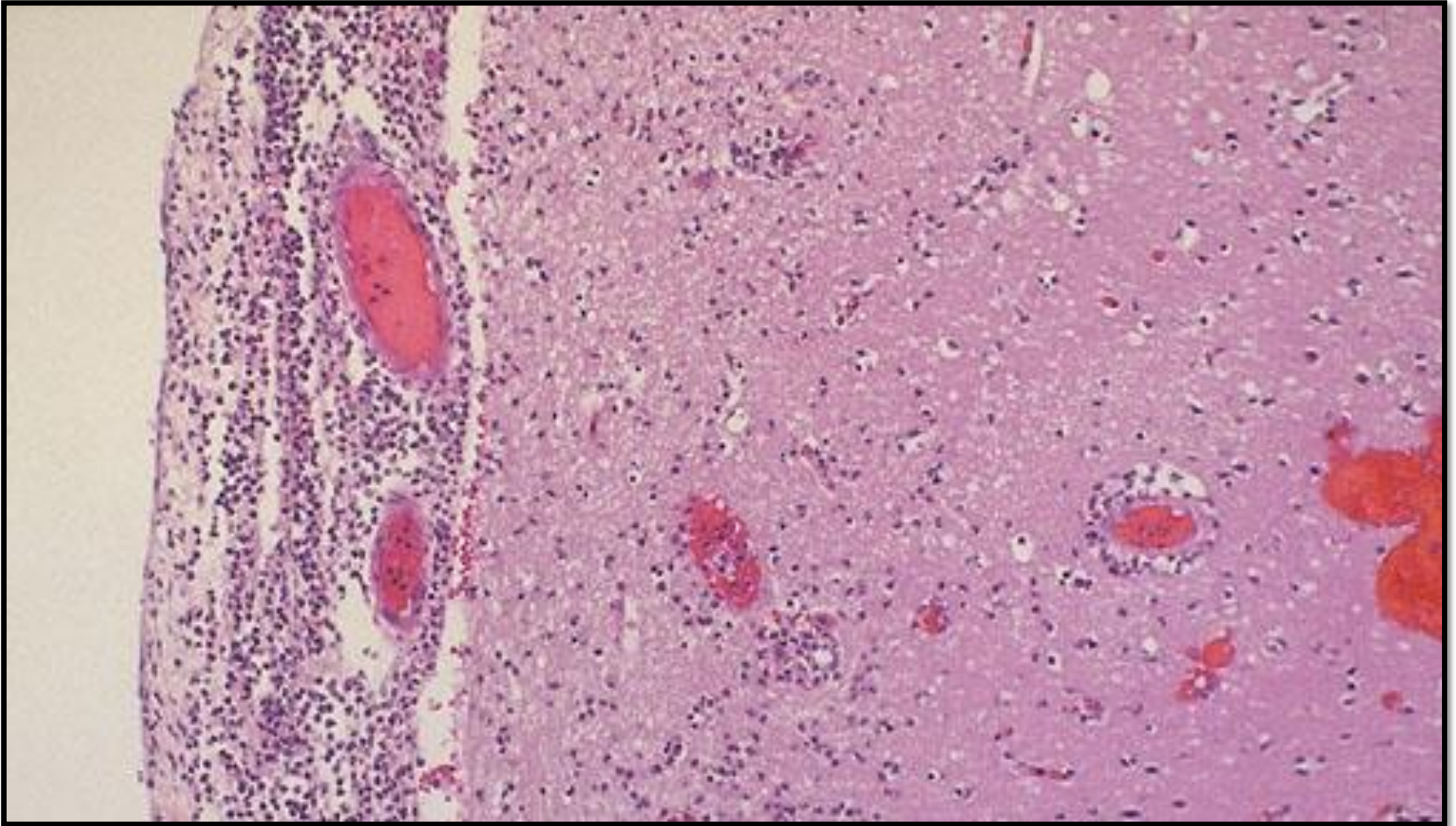
The brain is swollen due to oedema and congestion.

The leptomeninges show prominent engorged blood vessels covered by thick fibrinopurulent exudate





Microscopically, a **neutrophilic exudate** is seen involving the meninges at the left, with prominent dilated vessels.

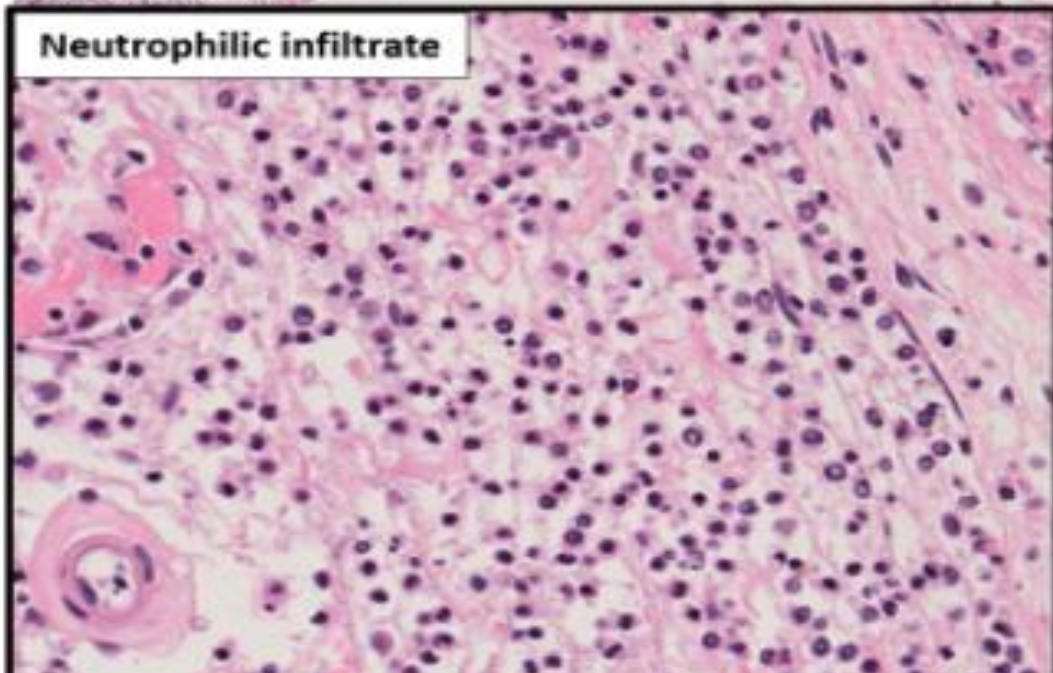




**Brain: Purulent meningitis  
(medium power)**

Leptomeninges infiltrated by  
neutrophils

**Neutrophilic infiltrate**







THANK YOU