Al-Mustaqbal University

Pathophysiology 3rd stage

Lab - 1 -

Slide preparation & Liver disorders

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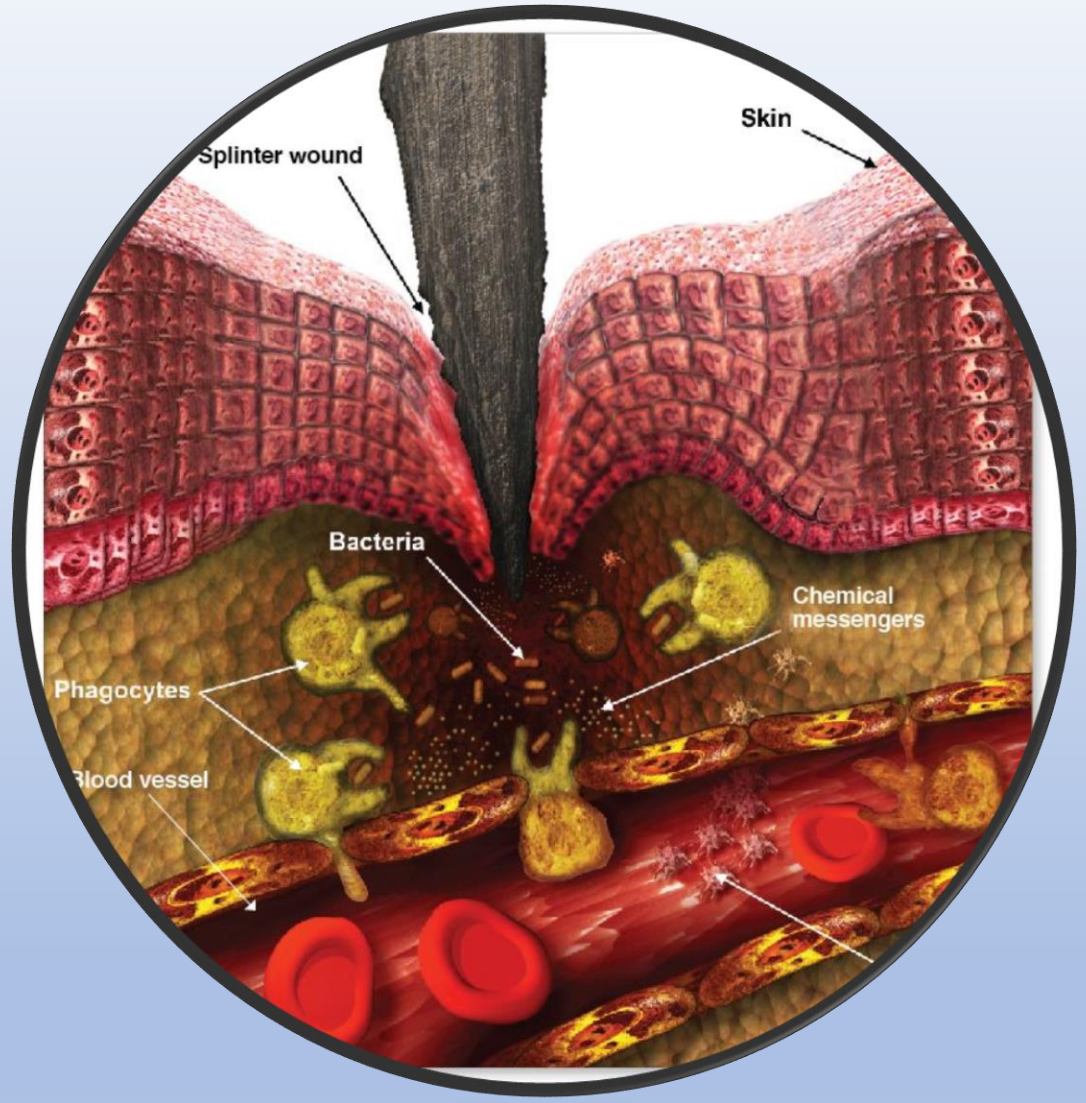
Pathophysiology is the study of how a condition (disease, injury) affects a patient, including both the physical and functional changes.



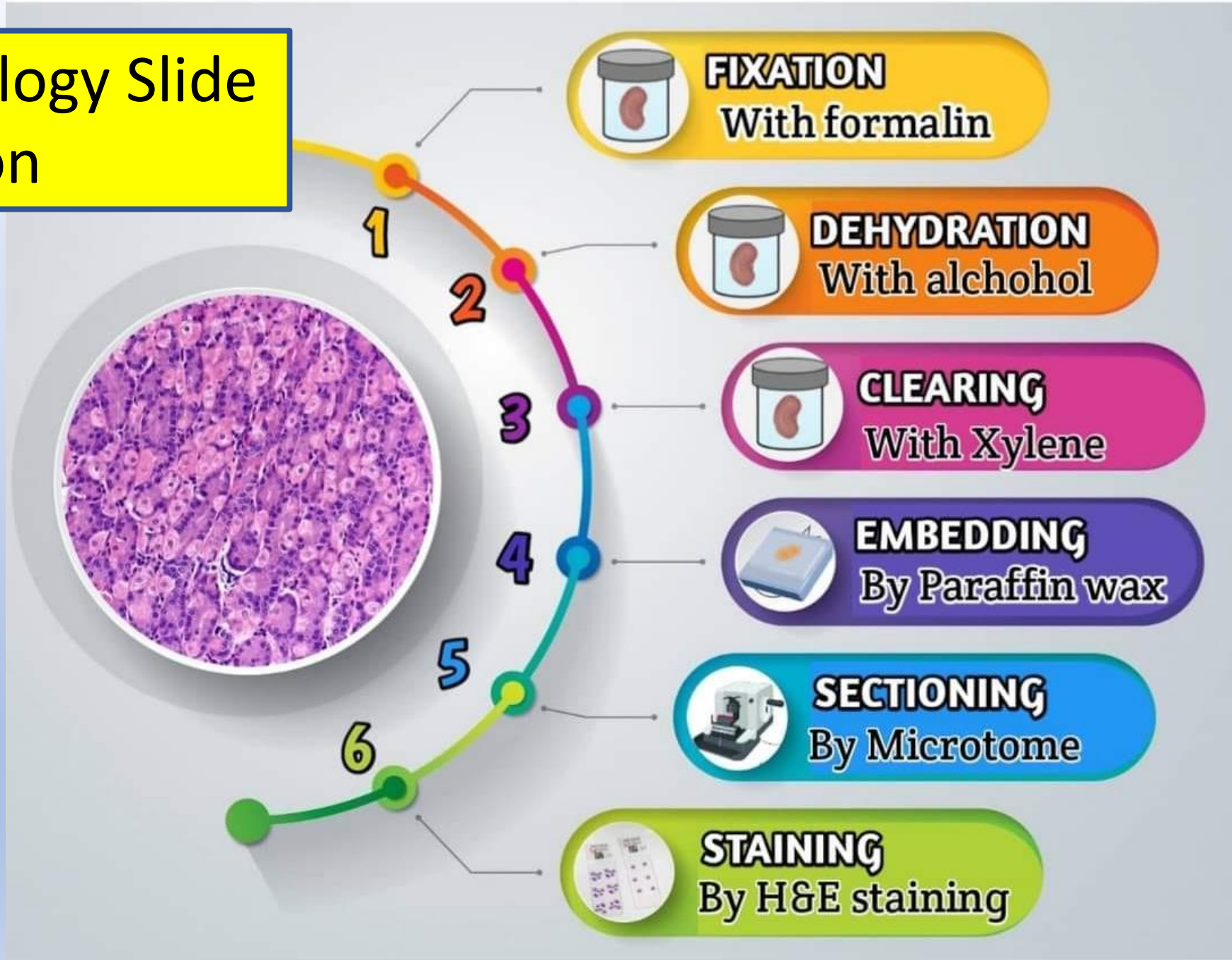
Tissue Specimens

Biopsy: piece of tissue or organ taken from living human being.

Gross: colour, size, surface, texture, consistency.

Microscopical examination: examine under microscope.

The Steps of Histology Slide Preparation



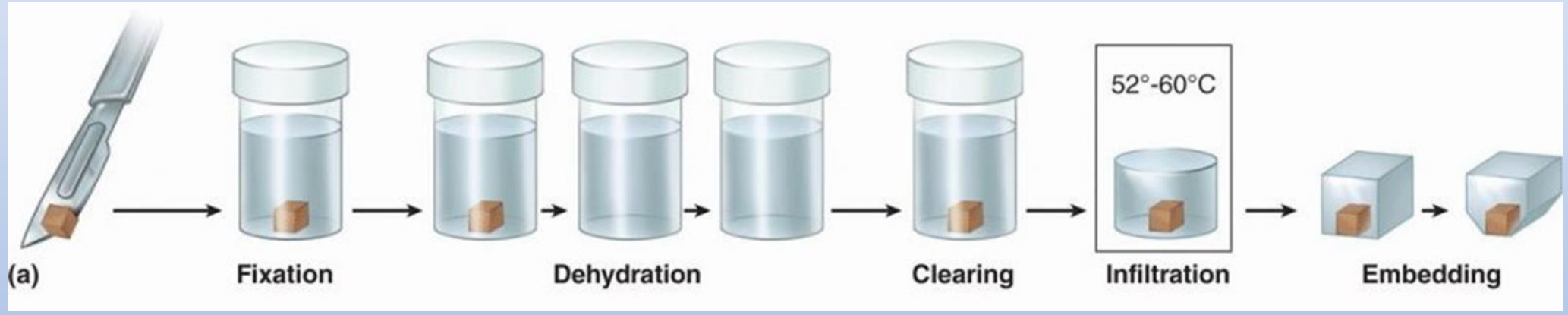
1. Tissue fixation:

- to prevent tissue autolysis and damage, and
- to prevent growth of bacteria,
- Most specimens are fixed in 10% formalin.

This will allow most tissues to become adequately fixed within 24-48 hours.

- 2. Grossing and labelling
- Grossing involves a careful examination and description of the specimen that will include:
- describing the appearance,
- the number of pieces,
- dimensions and
- measurements.
- all specimens are properly labeled

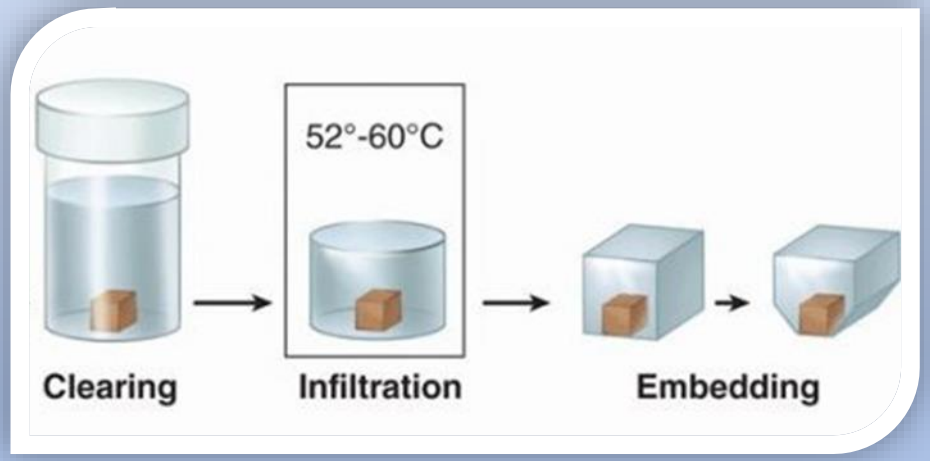
3- Dehydration, which involves immersing a specimen in alcohol to remove the water and formalin from the tissue.



4- Clearing, in which an organic solvent such as xylene is used to remove the alcohol and allow infiltration with paraffin wax.

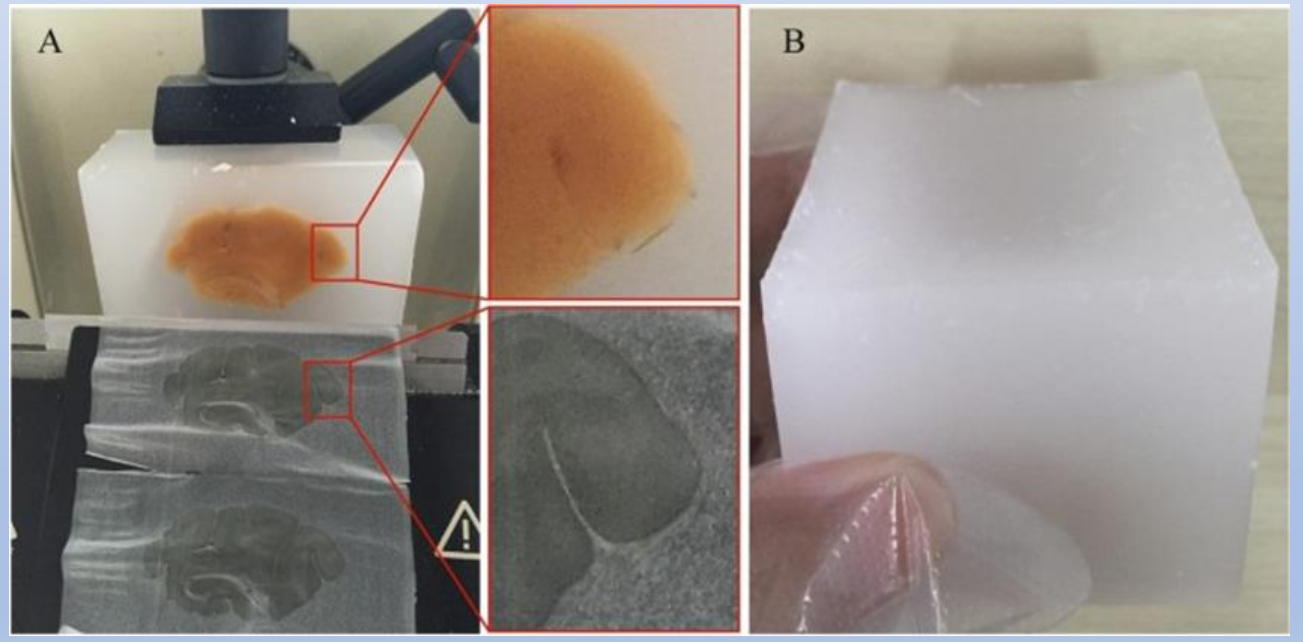
5- Embedding, where specimens are infiltrated with the paraffin wax.

The tissue becomes surrounded by a large block of molten paraffin wax, creating what is now referred to as the “block”.



6- Sectioning:

Once the block solidifies, it provides a support matrix that allows very thin sectioning.



7. Staining

Histochemical stains (typically hematoxylin and eosin) are used to making tissue structures more visible and easier to evaluate.

Following staining, a coverslip is mounted over the tissue specimen on the slide, using optical grade glue, to help protect the specimen.

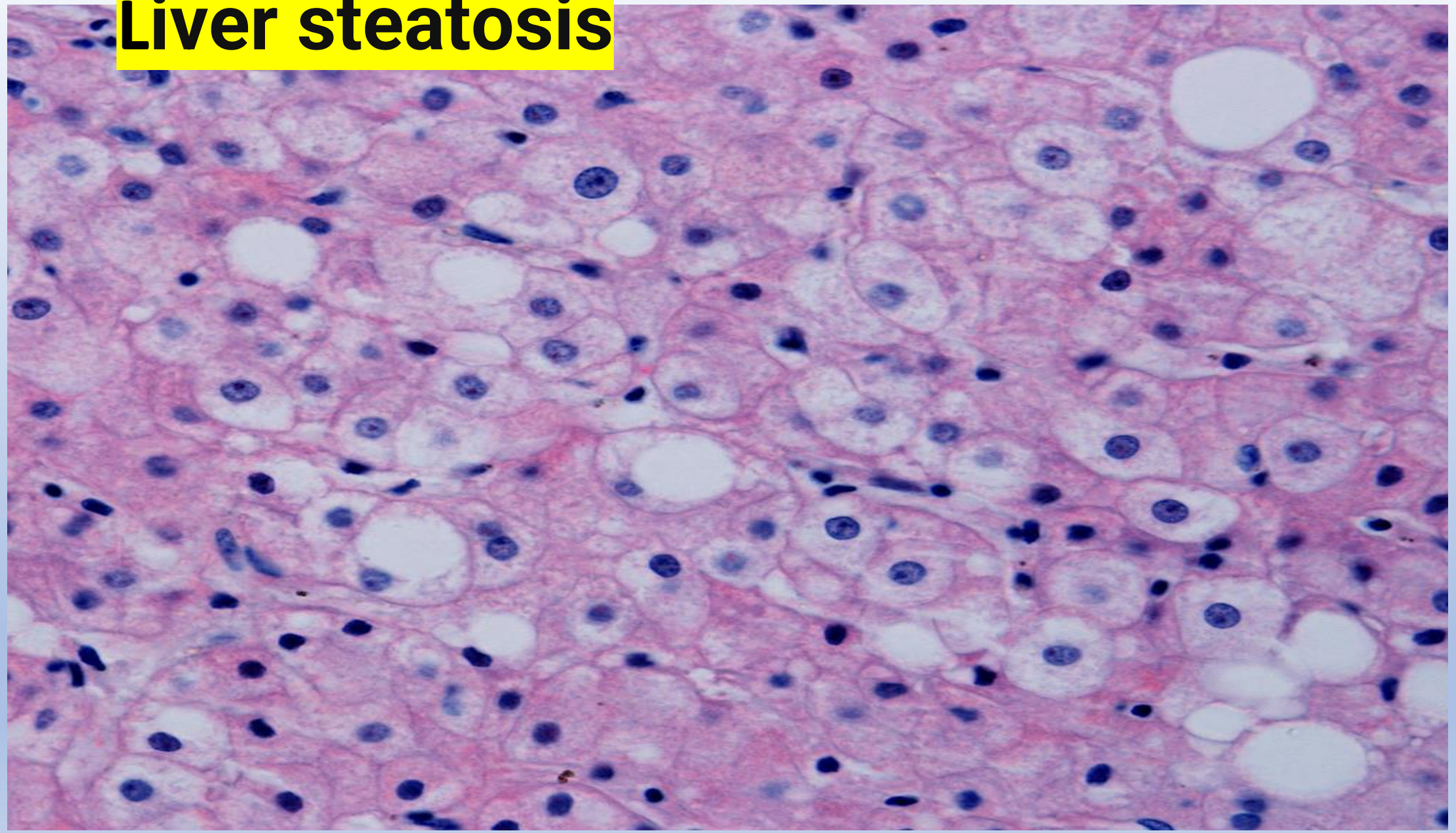
Liver degeneration

Liver degeneration refers to changes in liver cells (hepatocytes) due to various forms of injury, such as toxins, infections, or metabolic disturbances. Microscopically, common features of liver degeneration include:

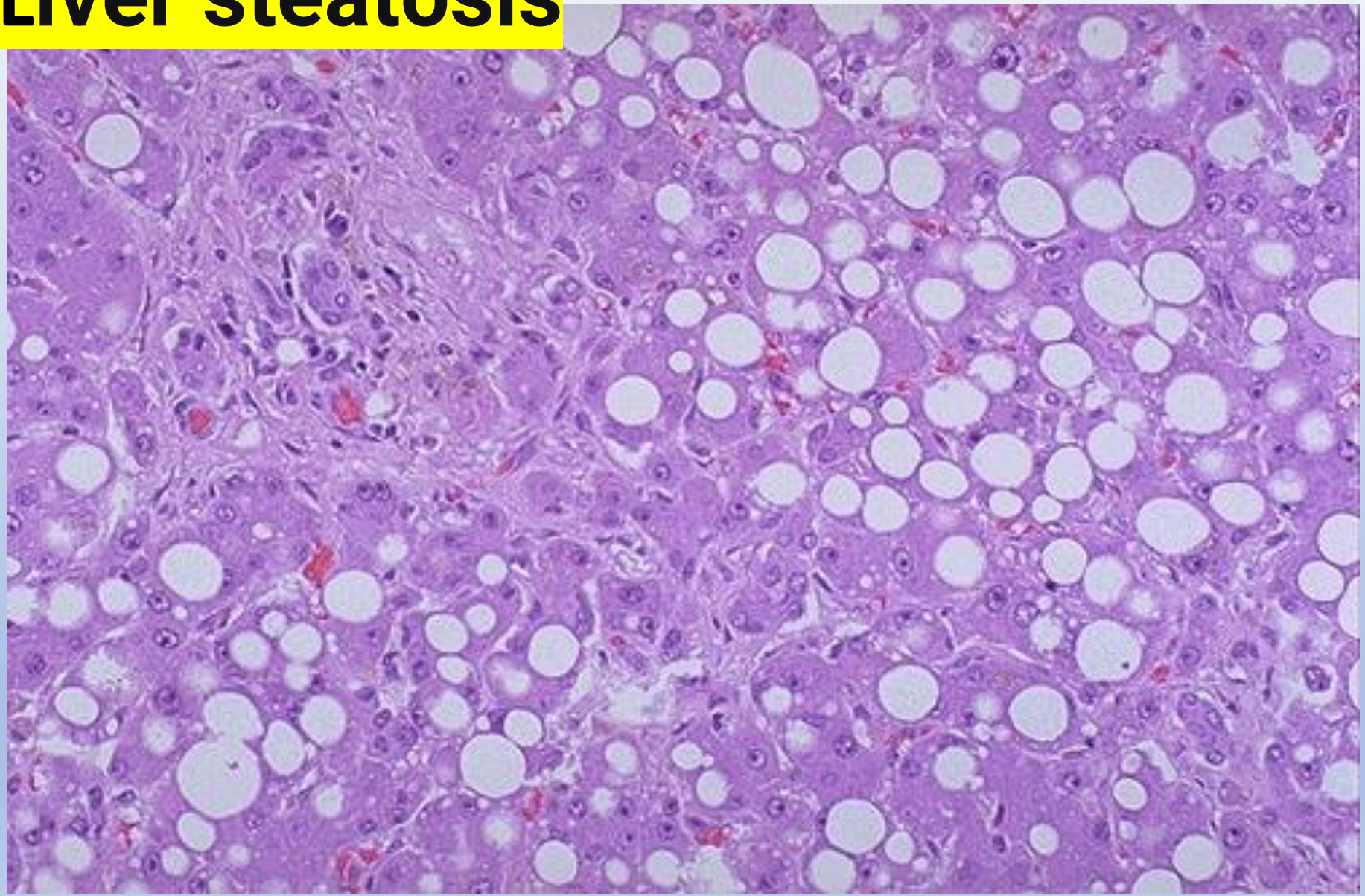
1.Cellular Swelling (Hydropic Change): Hepatocytes appear swollen due to accumulation of water inside the cells. This results in a pale and vacuolated cytoplasm (osteoporotic appearance).

2.Macrovesicular Steatosis: This occurs when a single large fat droplet occupies the majority of the cell, pushing the nucleus to the cell's edge. It is common in conditions like obesity, diabetes, and alcohol-related liver disease..

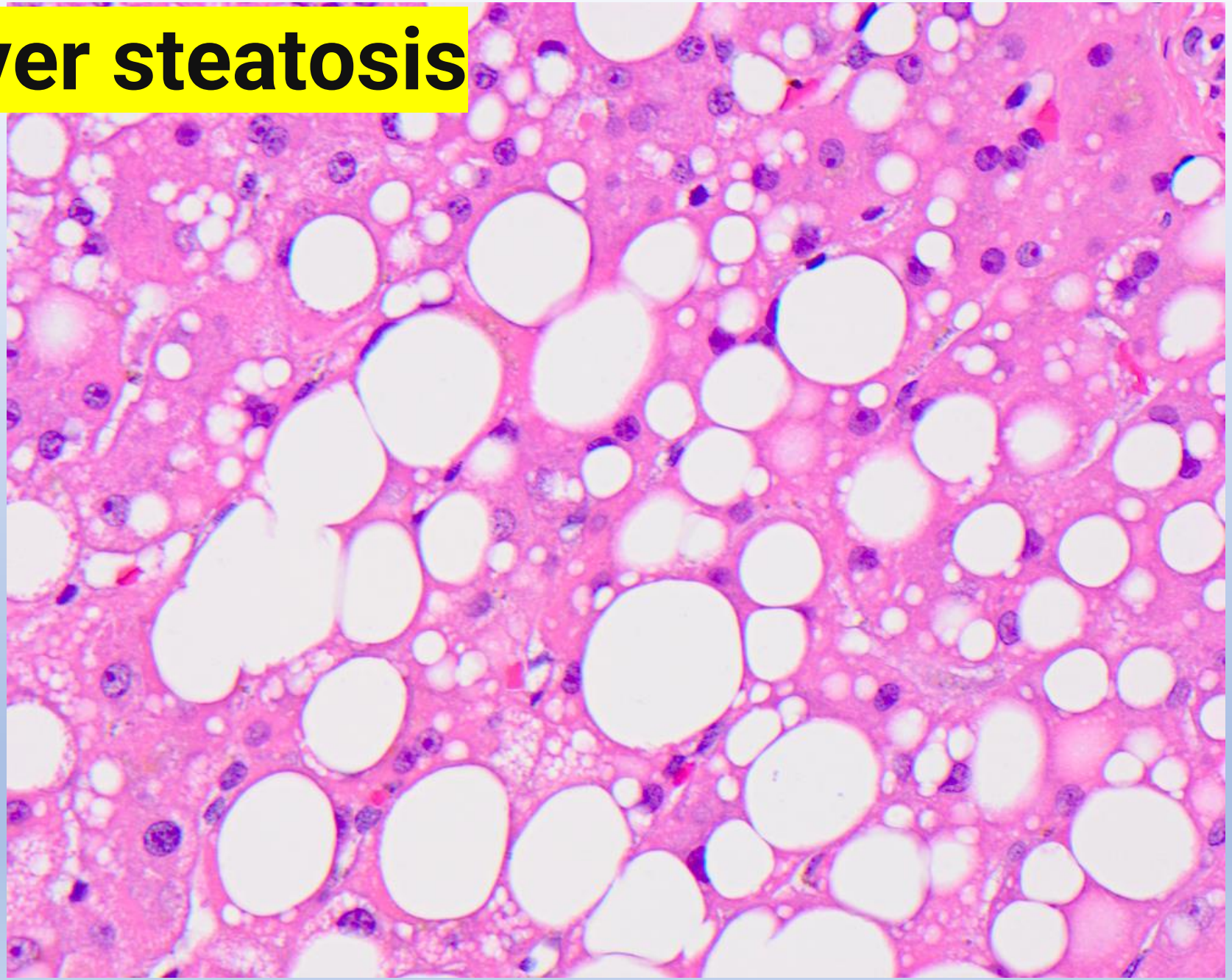
Liver steatosis



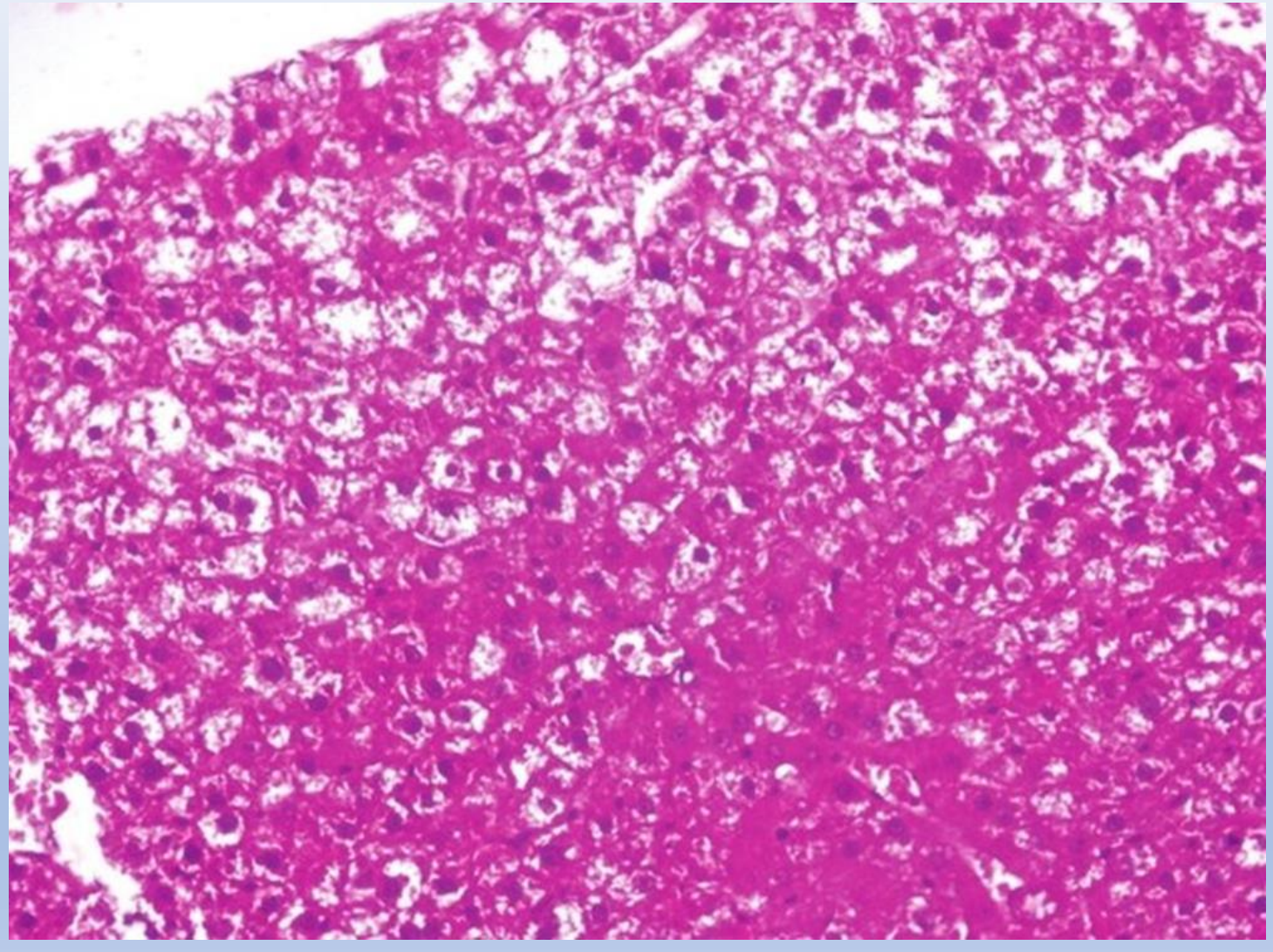
Liver steatosis

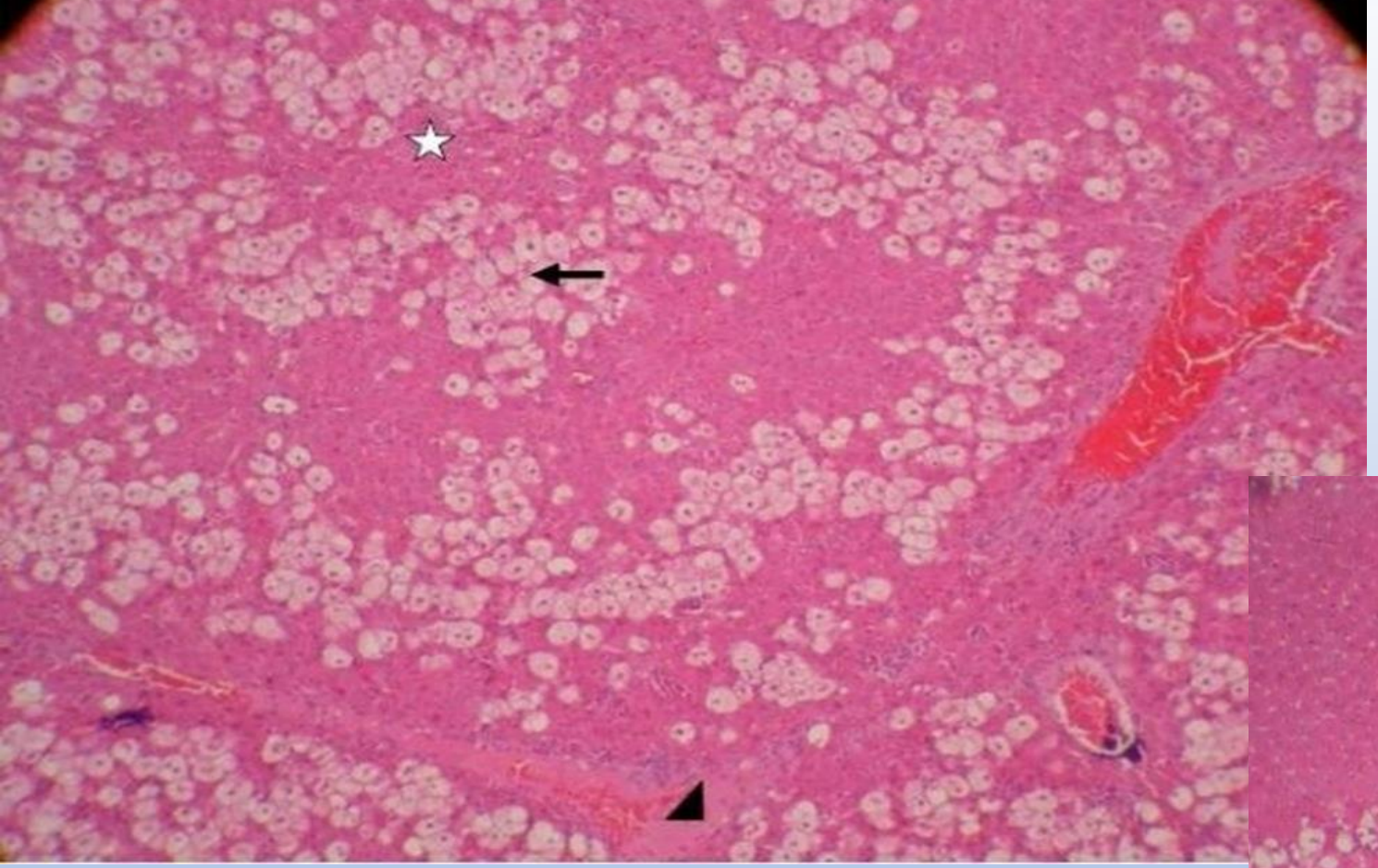


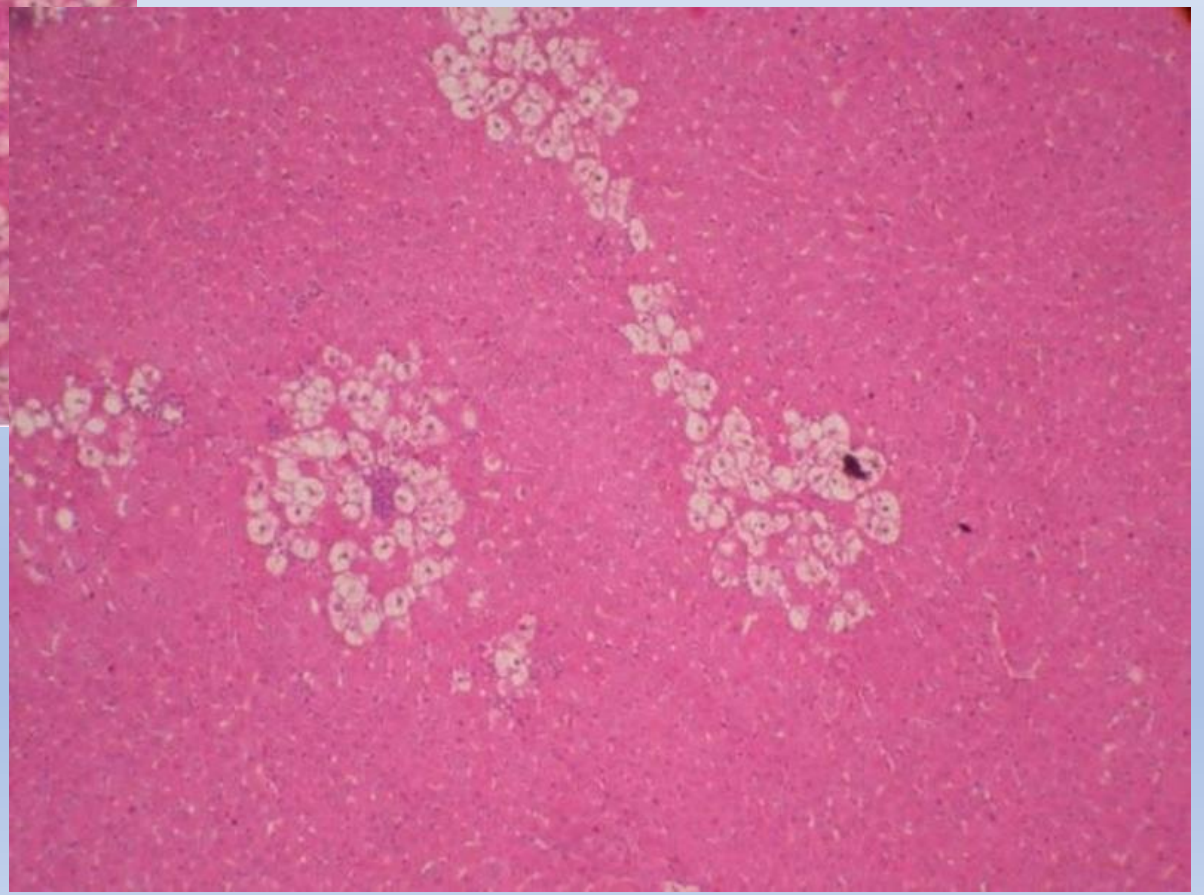
Liver steatosis



Hydropic degeneration of liver or liver degeneration







THANK YOU