

## LESSON № 3

### Topic: INFLAMMATION. ALTERATION and EXUDATION

**Aim of the lesson:** to study causes and mechanisms of main inflammation signs development.

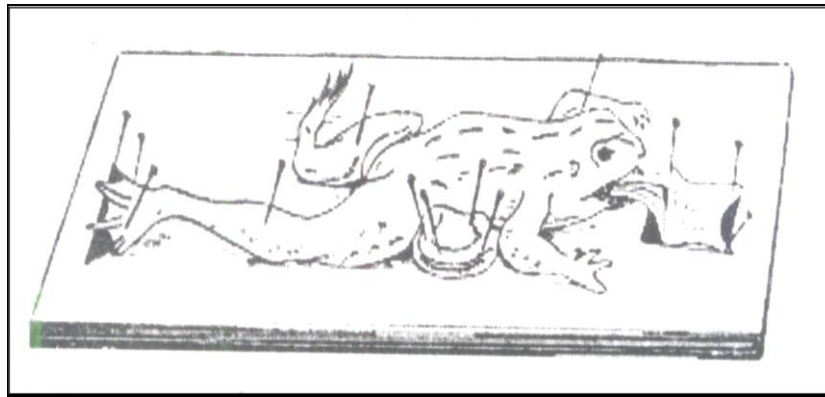
#### QUESTIONS:

1. Inflammation. Causes of inflammation. Exogenous and endogenous causes.
2. Inflammation stages (alteration, exudation and emigration, proliferation).
3. Alteration. Primary and secondary alteration.
4. Inflammation mediators. Role of mediators.
5. Particularities of metabolism at alteration.
6. Physico-chemical changes at alteration.
7. Description of microcirculation disorders in the area of inflammation, sequence and mechanisms of their development.
8. Exudation. Its biological value. Mechanisms of vascular leakage. Difference between exudates and transudates.
9. Leukocyte recruitment. Stages of extravasation: margination, rolling, firm adhesion to vascular wall, transmigration through vascular wall.
10. Chemotaxis. Definition, mechanisms of chemotaxis, exogenous and endogenous chemoattractants.
11. Inflammatory mediators and their classification.

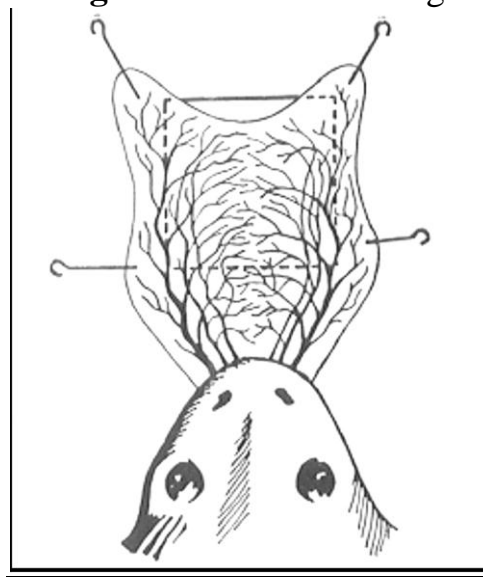
## LABORATORY WORKS

### **Laboratory work 1. *Alteration and vasculature reactions on frog tongue during inflammation***

**Description of the work:** The frog is fixated on the laboratory table. The frog's tongue should be isolated. The students analyze the normal microcirculation in the organ under microscope. Then salt ( $\text{AgNO}_3$ ) should be put on the center of the tongue and students fix the changes, draw inflammatory zones and make conclusions.



**Fig. 4** – Fixation of a frog

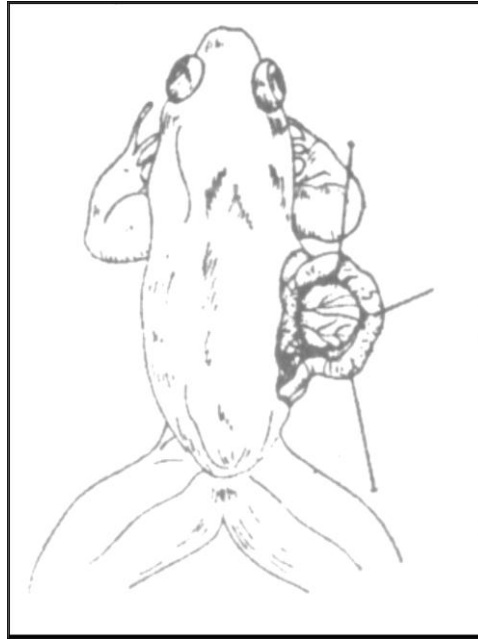


**Fig. 5** – Frog's tongue preparation

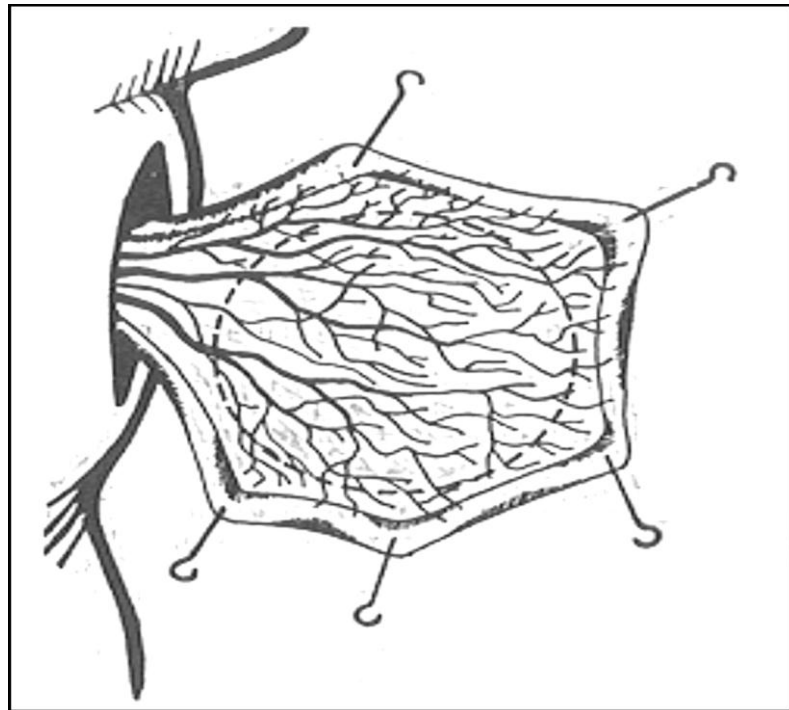
## **Laboratory work 2. *The vasculature reactions on frog mesentery during inflammation (Kogeim experiment)***

**Description of the work:** The frog is fixated on the laboratory table.

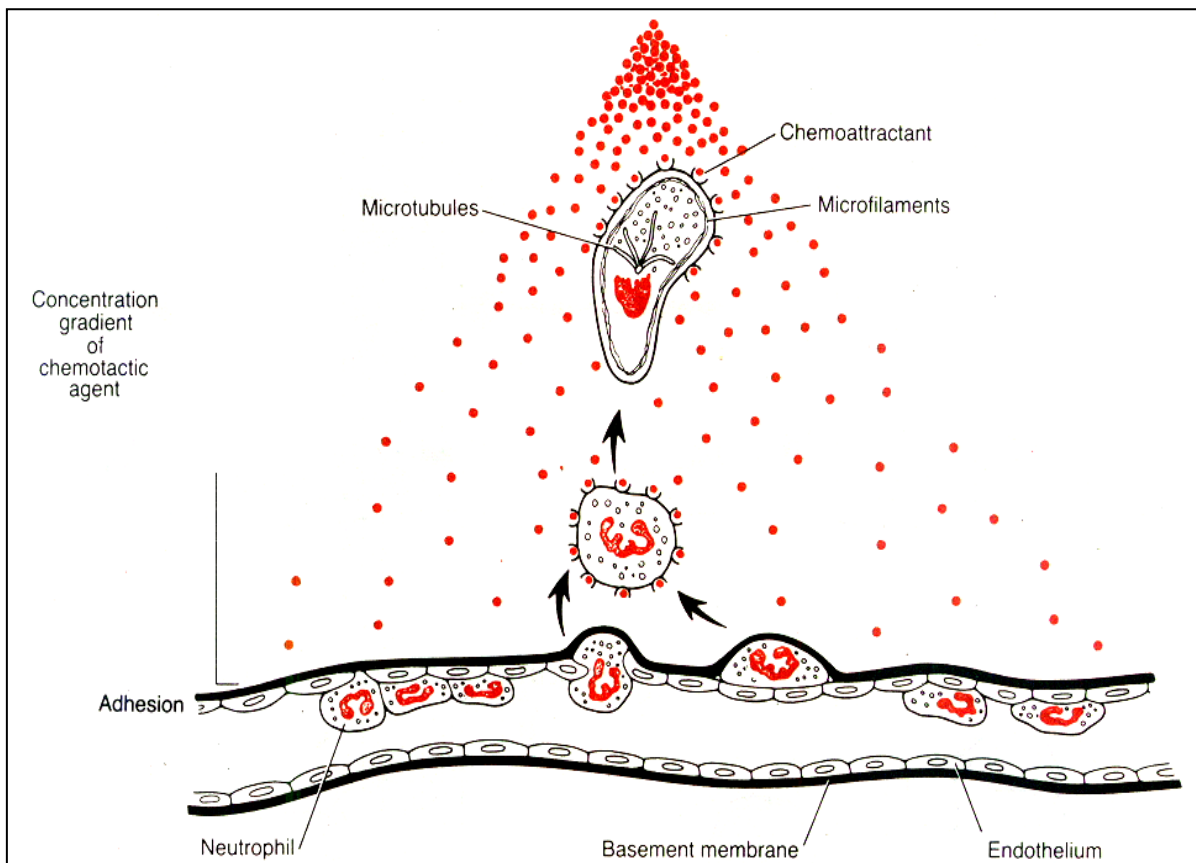
The mesentery should be isolated and during 60 min students watch the microcirculative disturbances and leukocytes recruitment during inflammation. The students pay attention to white blood cells marginating and passing through the vascular wall, draw emigrated leukocytes and make conclusions.



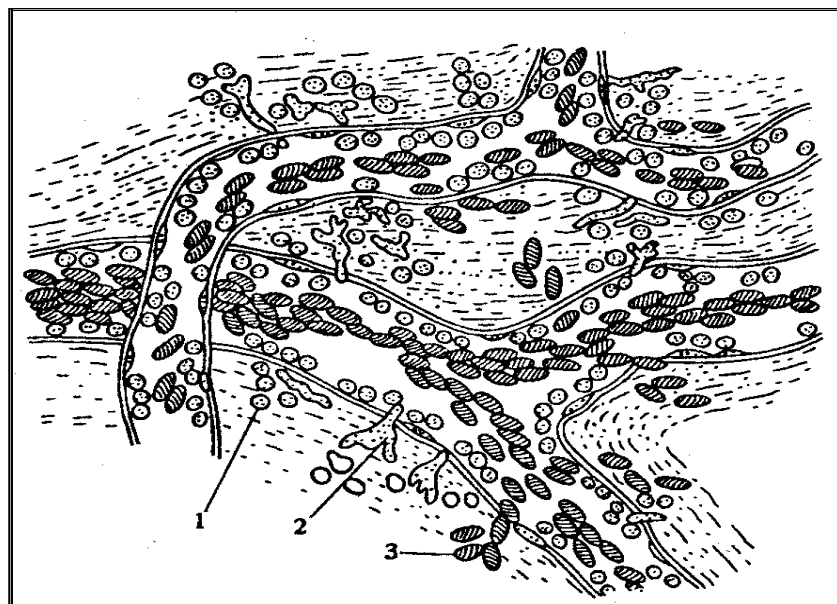
**Fig. 6** – Fixation of frog's mesentery



**Fig. 7** – Frog's mesentery



**Fig. 8** – Adhesion and emigration of neutrophils in response to chemotactic agents



**Fig. 9** – Leukocyte recruitment from the vessels  
 1 – leukocytes margination, rolling, firm adhesion to vascular wall;  
 2 – transition of leukocytes through the vascular wall; 3 – erythrocytes

## LITERATURE:

1. Lecture material.
2. General and clinical pathophysiology / ed. by A.V. Kubyshkin. – Vinnytsa: Nova Knyha Publishers. – 2011. – P. 184-201.
3. Litvitsky P.F., Pirozhkov S.V., Tezиков E.B. Pathophysiology: Concise Lectures, test, clinic-pathophysiological situations and clinic-laboratory problems. Students manual / Moscow «Geotar-Media». – 2012. – P. 33-36.
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6. Pathology / ed. by E. Rubin and J.L. Farber. 2<sup>nd</sup> ed. – 1994. – P. 33-55.

