

Morphological Changes In The Spleen During The Polypragmation Of 5 Different Types Of Anti-Inflammatory Medicines In Album Rats

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Abstract: The following morphological changes occurred in the spleen under the influence of 5 different types of anti-inflammatory drugs in 3-month-old white purebred rats: fullness in the red pulp vessels, especially in the venous vessels, edema in the vessel wall in the small arterial blood vessels of the spleen, uneven inner surface of the vessel. and small thromboses were detected, intravascular and intratissue hemosiderosis, interstitial edema, an increase in damaged and fragmented blood-shaped elements, especially at the expense of erythrocytes, an increase in the amount of macrophages and lymphocytes in the red pulp was observed.

Key words: spleen, polypharmacy, anti-inflammatory drugs, rats, white pulp.

Relevance of the study. For practical medicine, it is of great importance to study the changes in spleen lymphoid tissue under experimental conditions, to simulate the effect of various anti-inflammatory substances used in production. The most dynamic and labile immune system actively reacts to antigenic effects and the effects of anti-inflammatory drugs with structural and functional changes. The effect of anti-inflammatory drugs of various nature causes specific changes in the microstructure and microtopography of the organs of the immune system, depending on the type of active substance, its concentration and duration of exposure. It was found that various anti-inflammatory drugs can inhibit DNA synthesis in cells of lymphoid organs, as well as decrease the number of small lymphocytes, mitotically dividing cells, and macrophages in organ tissues. increase in destructive processes.

The spleen occupies a special place as an organ of the immune system and plays an important role in the formation of the body's protective reactions in response to the administration of anti-inflammatory drugs. It is in the spleen that antigens present in the blood "can activate properly identified lymphocytes to transform into immunocompetent cells" (Sapin M.R., Etingen L.E., 1996). To date, sufficient detailed information has been obtained on the macro and microscopic structure of lymphoid formations in the spleen of humans and some animals, age-related characteristics (Samoilov M.V., 1987; Ambartsumyan E.F., 2021; Sapin M.R. , Etingen JI . E. , 2016; Motalov V.G., 2004). Taking into account that the spleen plays an important role in maintaining the immune state in the body, studying the dynamics of lymphoid tissue development under the influence of high-concentration anti-inflammatory drugs is of great theoretical and practical importance.

Polypharmacy is known to cause drug interactions and contribute to the development of severe adverse drug reactions (ADRs). At the same time, in medical practice, –regardless of the

patient's characteristics, ADR can occur when one drug is unreasonably prescribed, and –drug interactions can occur when 2 or more drugs are prescribed at the same time . –Furthermore, polypharmacy and drug interactions may –be clinically beneficial in some clinical situations.

The morphological study of the structure of the spleen and the state of the whole organism under the influence of anti-inflammatory drugs is of particular interest, because these interactions, which reflect the state of the barrier protection function of the spleen, are sufficiently objective quantitative and qualitative. can be evaluated in terms of

The aim of the research is to determine the morphological changes in the spleen of white rats in polypharmacy of 5 different types of anti-inflammatory drugs.

Material and methods. White rats received 5 types of anti-inflammatory drugs: paracetamol 15 mg/kg, aspirin 5 mg/kg, ibuprofen 6 mg/kg, dexamethasone 0.1 mg/kg, hydroxychloroquine sulfate 6.5 mg/kg (n = 40). In order to study the effect of polypharmacy in experimental groups of animals, biopreparations of 150 white sterile male rats studied during the research period were stained by this method until the required test materials were formed.

Freshly prepared Harris and Karatzi hematoxylin (BioVitrum, Russia) was performed according to the protocol:

- Dewaxing in xylol, 3 x 5 minutes
- Washed in 95% ethanol 3 times for 5 minutes each
- Wash off quickly with bidistilled water
- Harris or Karatsi hematoxylin stain (5 or 10 minutes)
- Wash off quickly with bidistilled water
- Differentiation of 1% HCl in 70% ethanol (in Harris hematoxylin, 2 or 10 seconds)
- Washed in distilled water to remove excess eosin
- Staining with 1% hydroalcoholic eosin –(1 or 2 minutes)
- Rinse quickly with bidistilled water
- Dehydration in ethanol for 10 seconds (70%, 95%, 95%)
- Clarify in xylene, 3 minutes
- Placing in mounting medium (Vitrogel, BioVitrum) under cover.

Prepared micropreparations were analyzed at x200 magnification using a light microscope (Axio Imager A1, Carl Zeiss, Germany) and an EC Plan-Neofluar 20x/0.50 M27 objective (Carl Zeiss, Germany). The results were evaluated by three histologists independently and at different times.

Research results. White rats received 5 types of anti-inflammatory drugs: paracetamol 15 mg/kg, aspirin 5 mg/kg, ibuprofen 6 mg/kg, dexamethasone 0.1 mg/kg, hydroxychloroquine sulfate 6.5 mg/kg experimentally for 10 days After the morphometric parameters, the average surface of the lymph node is 98867.60 μm^2 , the diameter of the lymph node is 403.29 \pm 20, the surface of the PALM area is 9089.50 \pm 1138 μm^2 , the menial area is 43152 \pm 9023 $\pm\mu\text{m}^2$, the marginal area is 51078 \pm 11787 μm^2 , etc. The surface area of the distribution area is 7023 \pm 1145 μm^2 and the diameter is 101.03 \pm 9.4 μm . When calculating the lymph node surfaces in percentages, it looks like this. PALM is 8.87%, mantle area is 41.45%, marginal area is 43.635% and reproductive area is 6.045%.

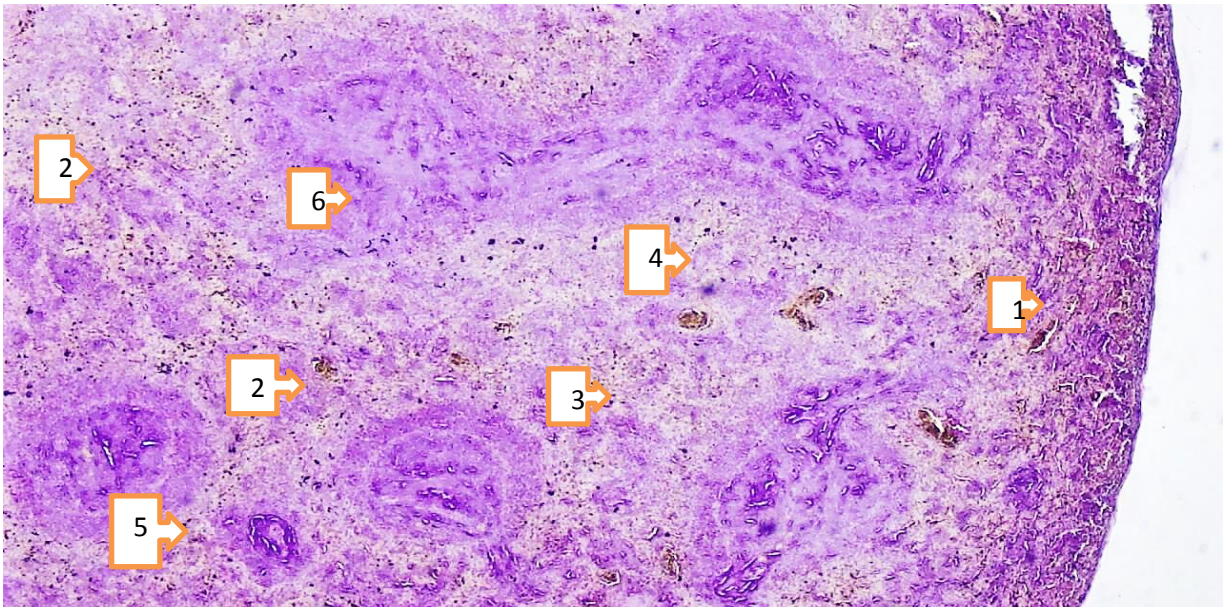


Figure 1. Morphological structure of the spleen. Dye Hem-eosin. ob 10x20 ok. 1. The surface of the spleen capsule is uneven and slightly flattened. Fullness of sinusoids under the capsule and swelling in the stroma. 2. Red pulp area: the spleen is enlarged in Chordae lienalis, B-lymphocytes, plasma cells and macrophages are increased. Splenic sinusoids (sinus lienalis) are hemosiderins of various sizes in which erythrocytes are swollen, fragmented, foci and scattered. 3. White pulp area: the periarterial area has a relatively reduced amount of lymphocytes. 4. the surface is slightly smaller in the marginal area and the density of lymphocytes and macrophages is relatively reduced. 5. the appearance of lymphocytes in the marginal area.

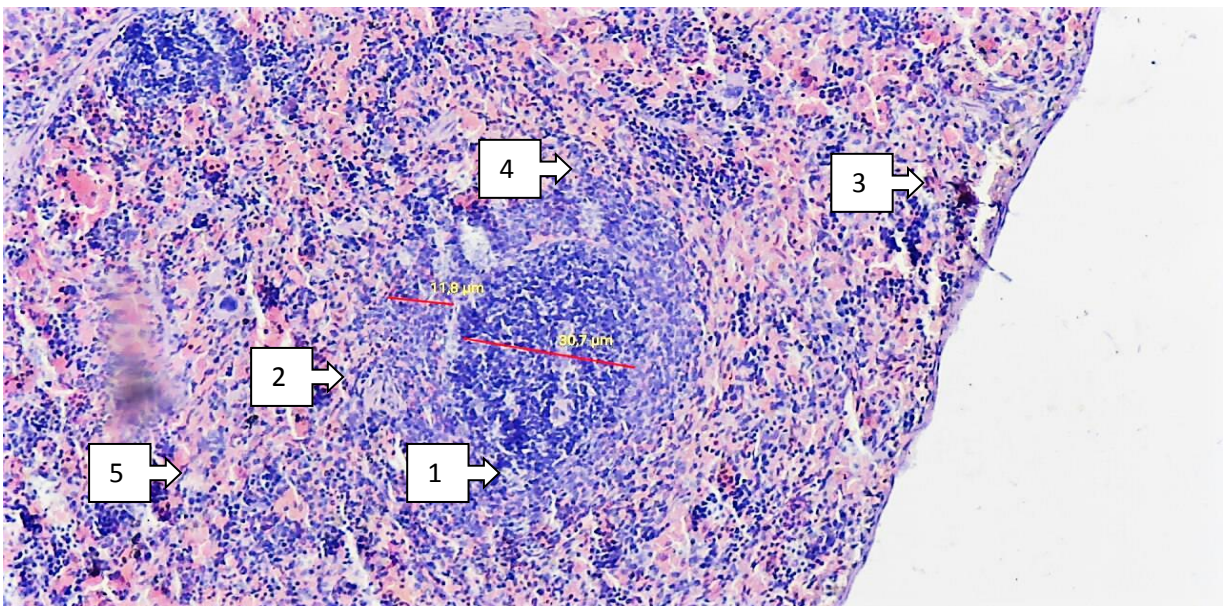


Figure 2. Morphometric structure of the spleen. Dye Hem-eosin. ob 10x20 ok. 1. White pulp area: the center of the lymphoid follicle "Reactive center - reproduction center" is enlarged, lymphocytes hyperplasia. 2. Mantle and marginal areas are expanded and thickened. 3. Splenic capsule (by size) - elastic-connective tissue is abnormally thinned. 4. Red pulp area: the spleen is enlarged in Chordae lienalis, B-lymphocyte hyperplasia, plasma cells and macrophages are increased. 5. Sinusoidal wall and reticular fibers surrounding it are swollen, swollen and have a hyaline appearance. Hyalinosis of the spleen.

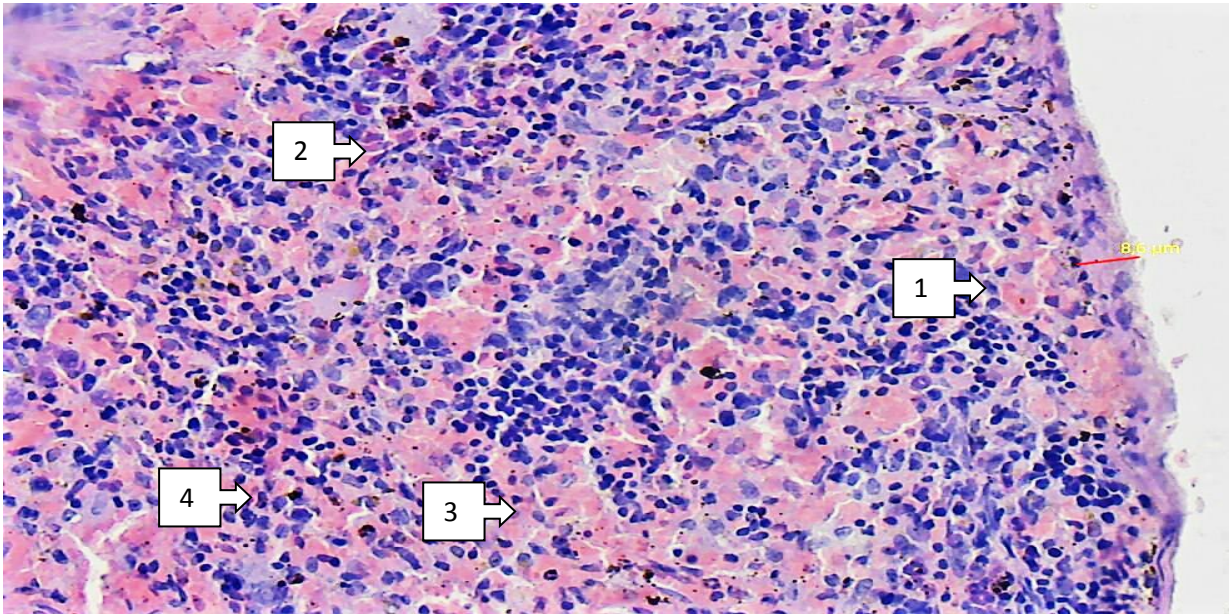


Figure 3. Morphological structure of the spleen. Dye Hem-eosin. ob 10x20 ok. 1. Splenic capsule (by size) - elastic-connective tissue is abnormally thinned. 2. Splenic sinusoids (sinus lienalis) erythrocytes are swollen, fragmented, focal and scattered, hemosiderins of various sizes are reduced. 3. Sinusoidal wall and reticular fibers surrounding it are swollen, swollen and have a hyaline appearance. Hyalinosis of the spleen has begun. 4. Red pulp area: the spleen is enlarged in Chordae lienalis, B-lymphocyte hyperplasia, plasma cells and macrophages are increased.

Summary. In 3-month-old white rats, under the influence of 5 different types of anti-inflammatory drugs, the following morphological changes occurred in the spleen: fullness in the red pulp vessels, especially in the venous vessels, swelling in the vessel wall in the small arterial blood vessels of the spleen, uneven inner vessel surface and small thromboses were detected, intravascular and intratissue hemosiderosis, interstitial swelling, an increase in damaged and fragmented blood-shaped elements, especially at the expense of erythrocytes, an increase in the amount of macrophages and lymphocytes in the red pulp was observed. When looking at the morphometric changes, it was found that the periarterial lymphatic coupling and the marginal area in the white pulp increased in terms of surface and diameter, and then decreased again, and the ratio of parenchyma stroma increased due to stroma. In polypharmacy, as the number of drugs and the duration of administration increased, it was found that the growth and development of the lymphatic parts of the white pulp of the spleen were relatively slowed down.

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