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DYNAMICS OF STRUCTURAL TRANSFORMATION OF LYMPH NODES IN RATS AFTER A SINGLE EXPOSURE TO IONIZING PHOTON RADIATION

The study was performed as a part of the research work "Morphogenesis of the mammalian immune system after parenteral xenogenic cerebrospinal fluid administration under the effects of adverse environmental factors" (state registration number 010112U003085, cypher 06/12).

ABSTRACT. Background. One of the problems of modern morphology is the investigation of the impact of extreme environmental factors, such as ionizing radiation on the body. However, literature data are often controversial, due to the lack of unity in the methodological assessment of the effects of ionizing radiation, as well as usage of different types of radiation doses and experimental facilities. **Objective.** The purpose of this research was a comparative investigation of the dynamics of structural transformations of mesenteric lymph nodes after a single total photon-ionizing radiation. **Methods.** Experiment was conducted on 30 male Wistar rats. Rats were exposed to a single ionizing photon irradiation at a dose of 4.5 Gy. Intact animals served as a control. Experimental animals were euthanized by decapitation under ether anesthesia on the 3rd, 7th, 14th and 30th day after irradiation (6 rats in each experimental period). After decapitation mesenteric lymph nodes were isolated to the subsequent histological study using standard hematoxylin and eosin staining procedure. **Results.** Typical histological changes in the mesenteric lymph nodes included decrease of the cortex area and the number of primary and secondary lymphoid nodules, reduced density of the cell population in all structural and functional areas of the organ, expansion of sinus spaces and prominent reaction of the microvasculature. **Conclusion.** Histological study revealed the evidence of significant changes in both stromal vascular and parenchymal components of investigated organs. Changes were divided into phases, acquiring the greatest severity on the 3rd-7th day, with subsequent attenuation on the 14th day and almost complete recovery on the 30th day after irradiation, indicating the reversibility of detected changes.

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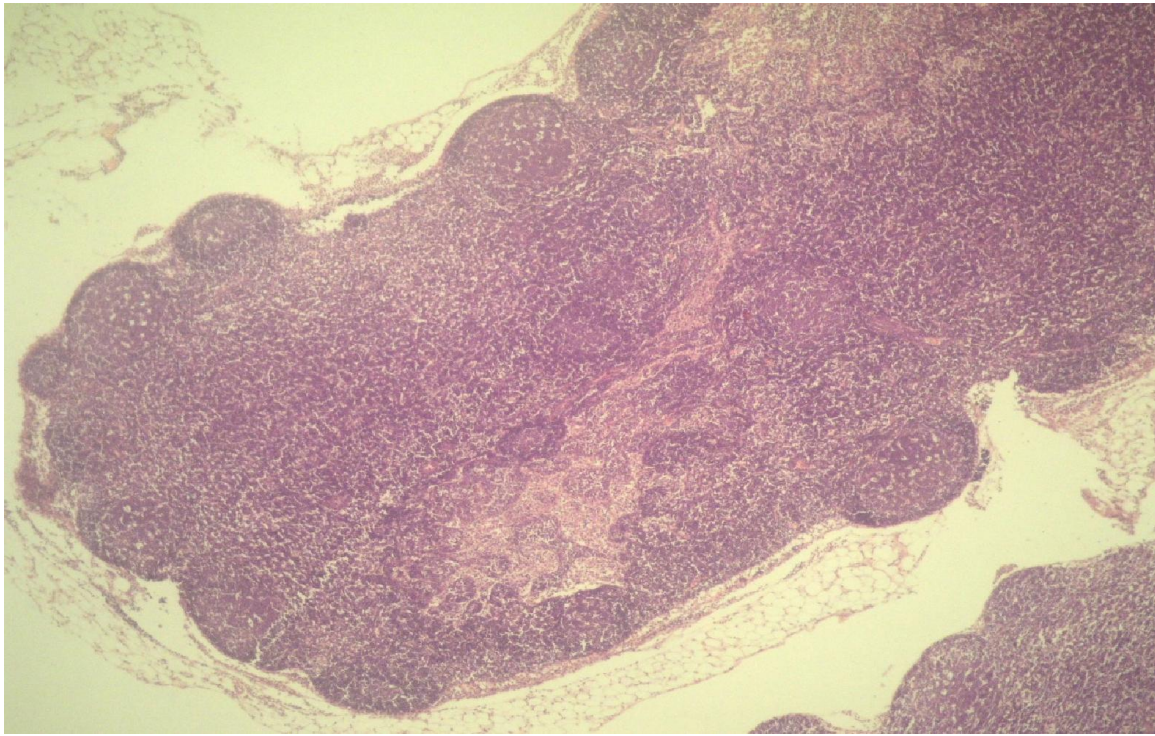


Fig. 1. Lymph node capsule, cortex, lymphoid follicles. Intact rat. Hematoxylin&Eosin staining. $\times 40$.

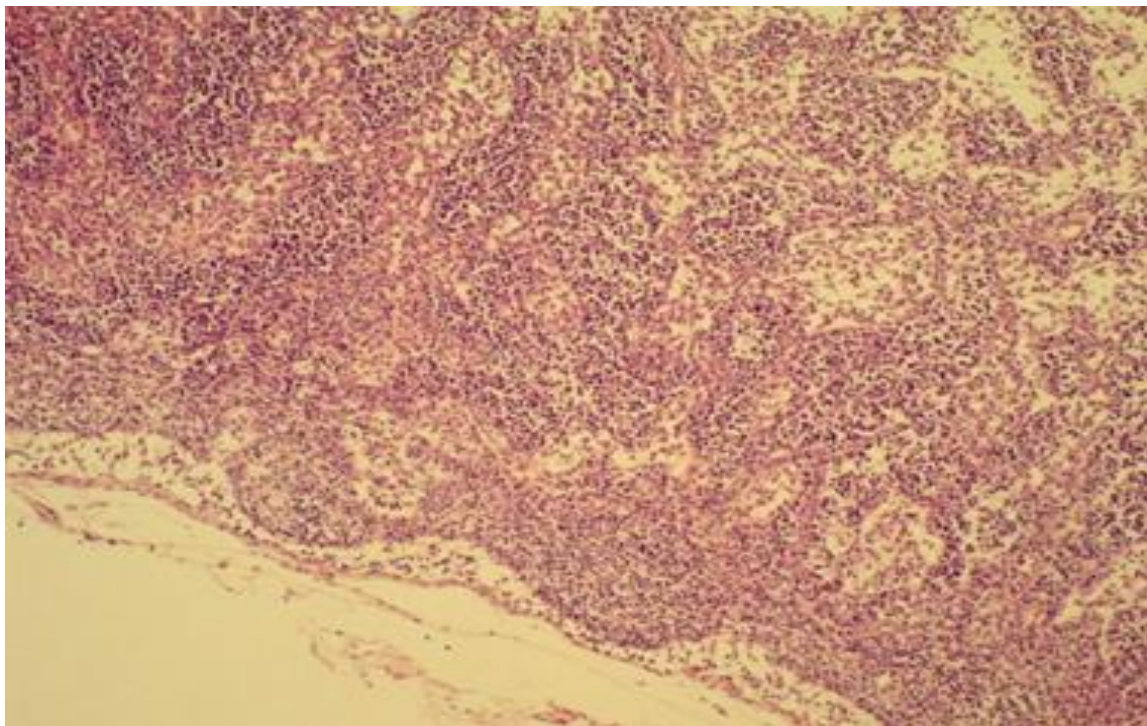


Fig. 2. Dilated sinuses. Radiation, 3rd day. Hematoxylin&Eosin staining. $\times 100$.

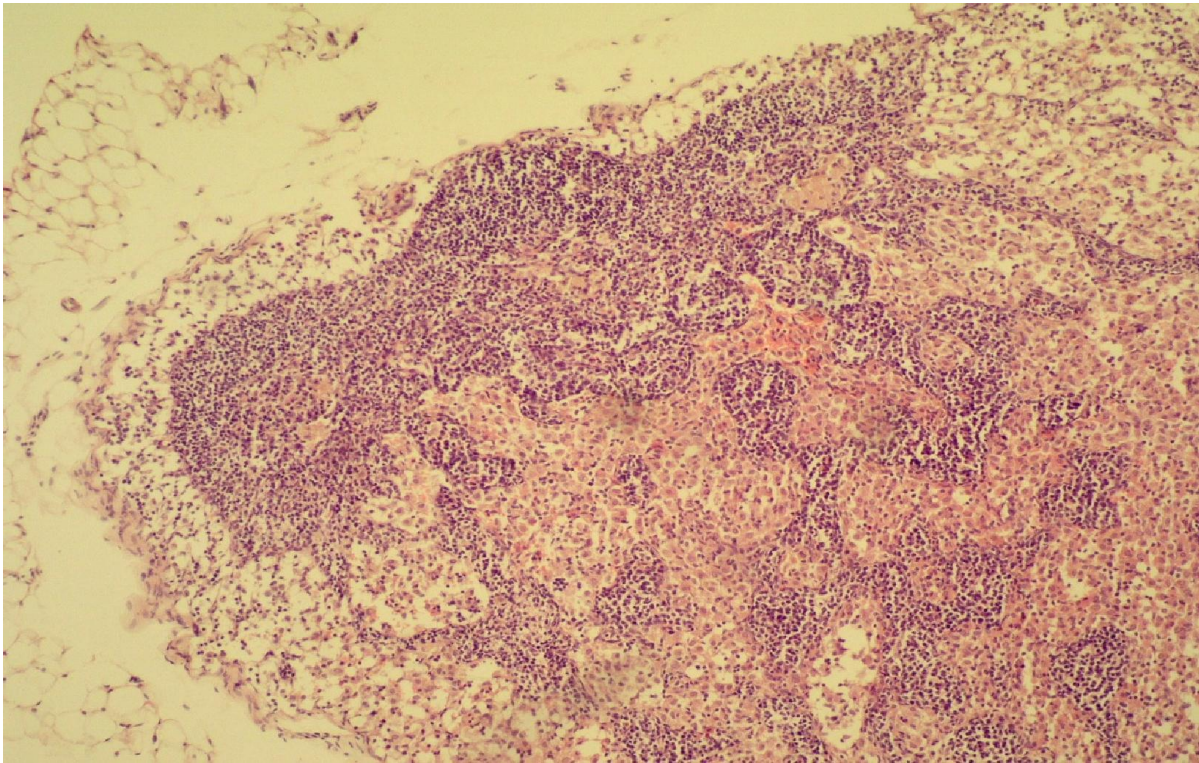


Fig. 3. Mesenteric lymph node. Radiation, 14th day. Hematoxylin&Eosin staining. ×100.

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