**SPECIES CHARACTERISTICS OF MORPHOLOGY OF THE HUMAN SPLEEN AND THE RAT SPLEEN**

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**Abstract** This article is devoted to definition and terminology of separate structural components of the human spleen and the rat spleen, also species characteristics of morphology of the white and red pulp of the human spleen and the rat spleen are shown here too.

**Keywords** Spleen, marginal sinus, marginal zone, ellipsoids.

The material for the rat spleen morphology study was excised from spleens of 6 mature healthy decapitated rats undergone quarantine inspection.

The material for the human spleen morphology study was excised after autopsy from spleens of 6 humans dying from injuries incompatible with life.

The paraffin sections were stained with hematoxylin-and-eosin and with azur-II-and-eosin.

**Results**

The human spleen differs from the rat spleen mainly by absence of periarteriolar lymphoid sheath and marginal sinus around arterioles. The pulp arteries are not surrounded by collagen fibers but have lymphoid tissue which is getting thin as divided into arterioles and capillary. Due to absence of the marginal sinus in the human spleen which in animals is a borderline between mantle and marginal zones, it is difficult to differentiate the mantle zone of the lymphoid node which in our opinion, is more appropriate when describing the normal and pathological spleen morphology. Whilst, widely used in literature terms “the inner marginal zone” and “the outer marginal”, referring to the perifolicular zone bring discord into definition of the normal structure of the spleen parenchyma.

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**Material and Methods**

At present significant progress in human immune organs study is achieved, in the human spleen in particular (1,2,3,4). In the 1970s Neiwenhuis P., Keuning F. (5) performed experimental studies on rat spleen immunological function and Veerman (6) published a detailed description of the white pulp of the rat spleen.

Nevertheless, there is still some confusion surrounding the morphology and function of the human spleen. This confusion is explained by several reasons. This organ is extremely vulnerable to autolysis, which makes findings in postmortem specimens difficult to interpret. A big problem lies in interpretation and definition of the normal spleen due to the fact that diseases affecting the function of immunogenesis in humans throughout life are not always known, also are unknown what anti-virus vaccines were received in childhood. The next problem is that in humans the spleen shrinks rapidly after death due to a sudden drop of pressure in the splenic vein and around all portal system, and as a result the morphological description of such a spleen sections does not correspond to the spleen structure in vivo. That is why the best way to preserve the spleen native structure and have appropriate sections of the spleen is fixation perfusion of the shrunk spleen vein under great pressure till normal sizes of the spleen are restored (7).

Another source of misunderstanding about the structure of the human spleen is the terminology and definitions used. Usually, these terms and definitions originate from studies on animal spleens, however the human spleen does not have an identical structure (8).

Due to the abovementioned, the aim of our study was to find main species characteristics of morphology of spleens in the humans and rats commonly used as an experimental animal.

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Fig. 1. Spleen of the rat. Azur-II and eosin. x 100.

Fig. 2. Spleen of the human. Azur-II and eosin. x 100.