SUBTYPES OF HUMAN ATYPICAL LYMPH NODES, DEFINED BASED ON COMPARATIVE MORPHOLOGICAL ANALYSIS

The study was performed as a part of research work “Normal and abnormal morphogenesis of the components of cardiovascular system in human and experimental animals” (state registration number 0114U005592).

ABSTRACT. Background. Lots of articles describe structure of lymph nodes with blood in their sinuses, but there are still many controversies between them due to the absence of single system of classification. Objective. The purpose of this work was to characterize the structure of human atypical lymph nodes and offer the new system of their classification. Methods. Atypical lymph nodes were taken during autopsy from patients who died due to cardiovascular or respiratory pathology. Standard histological methods were used including staining with hematoxylin and eosin. Results. Based on comparative morphological study we subdivided all atypical lymph nodes into three subtypes. I - Hemolymph node – it receives mixture of blood and lymph; during filtration through the system of sinuses all erythrocytes are eliminated, while efferent lymph vessels receive pure lymph. Such nodes are usually revealed close to kidneys and spleen. II – Hemal nodes – they receive blood through direct communication between blood vessels and sinuses; depending on the type of afferent vessel they are further subdivided into arterial and venous. Their efferent vessels contain blood with comparatively high content of leukocytes. III – Hyperemic lymph node – there are no afferent vessels bringing blood to the sinuses, but there are lots of dilated blood vessels with signs of hemoconcentration. All atypical lymph nodes contain different number of extravasated erythrocytes, assuming the possibility to filtrate blood antigens. Conclusion. Analyzing different types of human lymph nodes we offer a new system of their classification; the major criteria are summarized in the article.

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Citation:
Fig. 1. A. Histological section through the hemolymph node. Green arrows indicate the subcapsular sinus containing a mixture of blood and lymph, black arrows indicate the cortical sinus with somewhat less amount of erythrocytes, arrowheads indicate medullary sinus containing lymph. White arrows indicate plethoric sinusoids. ×40. B. Afferent vessel of hemolymph node containing a mixture of blood and lymph. C. Vessels of renal medulla. Arrows indicate the vessels containing a mixture of blood and lymph. Hematoxylin&Eosin staining. A, B - ×40, C - ×100.
Fig. 2. Histological section A-C through the venous hemal node, D-F – through arterial hemal node. A. Panoramic image of the venous hemal node. B. Inflow of the afferent vein (V) into the hemal node sinus (S). C. Medullary sinus of the venous hemal node, with well-defined reticular tissue. D. Panoramic image of the arterial hemal node. Arrow indicate the afferent artery. E. Inflow of the sinusoid capillary (arrow) into the arterial hemal node sinus (S). F. Medullary sinus of arterial hemal node, with ill-defined reticular tissue. Hematoxylin&Eosin staining. A, D × 40, B,C,E ×400, F ×200.
Fig. 3. Human hyperemic lymph node. A. Panoramic image of the hyperemic lymph node, in which there are many blood vessels. In the same time, sinuses of this node are filled with lymph. B. Fragment of hyperemic lymph node with the signs of erythrocytes’ extravasation. Arrows indicate erythrophagocytosis. Hematoxylin&Eosin staining. A × 40, B ×400.

References


