Rabii D. S.

UPDATES IN MORPHOLOGICAL ASPECTS OF CARDIAC AMYLOIDOSIS

State University of Medicine and Pharmacy «Nicolae Testemitanu», Chisinau, Moldova
Department of Morphopathology and Clinical Morphopathology
(scientific advisor - M.D. Vataman V. M.)

Amyloidosis is a pathology characterized by the deposition of amyloid in the extracellular space and deterioration of normal tissue structures with subsequent organ damage. In the case of cardiac amyloidosis, amyloid deposits were detected in all anatomical structures of the heart, including blood vessels. Most often, the heart is affected by: amyloid derived from light chain immunoglobulins (AL), amyloid derived from transthyretin (ATTR) - with hereditary or acquired transmission (senile amyloidosis), serum amyloid (SAA) and amyloid derived from atrial natriuretic peptide (AANF), but there are other types that are extremely rare.

The aim of this review is to outline the latest findings in the morphopathological aspects of cardiac amyloidosis, which will positively influence the rate of correct and timely diagnosis of the pathology and the specific treatment to each subtype of cardiac amyloidosis.

At macroscopic examination of the heart affected by amyloidosis, the major sign is cardiomegaly with thickening of the septum and heart walls. At microscopic examination of biopsy speciemens or necropsy samples, amyloid deposits can be identified by Congo red or Sirius red staining. In the samples colored with Congo red, the amyloid shows a greenish-yellow birefringence under polarized light. The effectiveness of Congo red staining increases in combination with fluorescent microscopy. These methods determine the presence of amyloid, but not its type. For this purpose, are used the immunohistochemistry in paraffin or frozen sections, immunofluorescence and mass spectrometry. According to recent data, mass spectrometry has the highest rate of sensitivity and specificity, followed by immunofluorescence. The last one is more often used, with a higher success rate compared to immunohistochemistry, especially for the AL type of amyloidosis. Mass spectrometry is used only in case of inefficiency of the first two methods.

Cardiac amyloidosis is a pathology underdiagnosed with fatal consequences. The death rate from congestive heart failure, diagnosed postmortem with amyloidosis, is increasing, which requires stringent measures to create a safe and effective method of diagnosis. The diagnosis of amyloidosis based on protein and immunological analysis seems to be the most sensitive method, but it still requires additional research.