



## MACROSCOPIC AND MICROSCOPIC CHARACTERISTICS OF CARDIOSCLEROSIS

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### Summary

One of the chronic ischemic heart diseases is cardiosclerosis, which has recently become more common in many people and is attracting attention as a rejuvenating pathology. Cardiosclerosis is a pathology caused by coronary atherosclerosis, ischemic heart disease, myocarditis of various origins and myocardial dystrophy. For this, a histopathological examination of the tissue of the cardiac myocardium is carried out according to the materials obtained during the autopsy of the corpses of patients who died from various diseases. The aim of the study is to supplement data on cardiac pathologies.

**Key words:** cardiomyocytes, cardiosclerosis, autopsy, heart attack.

## МАКРОСКОПИЧЕСКИЕ И МИКРОСКОПИЧЕСКИЕ ХАРАКТЕРИСТИКИ КАРДИОСКЛЕРОЗА

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**Резюме.** Одной из хронических ишемических болезней сердца является кардиосклероз, который в последнее время все чаще встречается у многих людей и привлекает внимание как омолаживающая патология. Кардиосклероз – патология, обусловленная коронарным атеросклерозом, ишемической болезнью сердца, миокардитами различного генеза и миокардиодистрофией. Для этого проводят гистопатологическое исследование ткани сердечного миокарда по материалам, полученным при вскрытии трупов больных, умерших от различных заболеваний. Цель исследования – дополнить данные о кардиальной патологии.

**Ключевые слова:** кардиомиоциты, кардиосклероз, аутопсия, инфаркт.





## KARDIOSKLEROZNING MAKROSKOPIK VA MIKROSKOPIK XUSUSIYATLARI

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### Annotatsiya

Surunkali ishemik yurak kasalliklaridan biri kardioskleroz bo'lib, u so'nggi paytlarda ko'p uchraydi va yoshargan patologiya sifatida e'tiborni tortmoqda. Kardioskleroz - koronar ateroskleroz, yurakning ishemik kasalligi, turli xil kelib chiqadigan miokardit va miokard distrofiyasi tufayli yuzaga keladigan patologiyadir. Shu maqsadda turli kasalliklardan vafot etgan bemorlarning autopsiya qilish paytida olingan materiallar bo'yicha yurak miokard to'qimalarining gistopatologik tekshiruvi o'tkazildi. Tadqiqotning maqsadi yurak patologiyalari haqidagi ma'lumotlarni to'ldirishdir.

**Kalit so'zlar:** kardiomiotsitlar, kardioskleroz, otopsiya, yurak xuruji.

### Relevance

Many types of heart disease end with the death of the patient, and in some cases, heart pathologies occur in the body unrelated to the death of the patient and are found at autopsy as an additional disease. Examples of such pathologies are atherosclerotic (small hearth) cardiosclerosis, post-infarction cardiosclerosis, chronic aneurysm of the heart. Knowing the main diseases of the heart and complications of the underlying disease, cardiac pathologies that come as an additional disease, pathologists and forensic experts have the opportunity to cite heart pathologies as the main, additional, background disease in the post-autopsy diagnosis, to receive practical advice on correct completion of the death certificate. One of the dangerous manifestations of coronary heart disease is cardiosclerosis (Bayurova N. V., 2021). Cardiosclerosis is expressed in the pathology of the heart muscle (myocardium), in which connective tissue grows. It forms scars of various sizes, replacing dying myocardial fibers, and causes deformation of the heart valve. The size of the heart muscle increases, which gradually leads to hypertrophy of the heart and a decrease in its contractility. According to the morphological principle, the following types of this disease are distinguished:

- Focal;
- Diffuse.





The diffuse type is characterized by the spread of connective tissue to the entire myocardium, and the focal type to separate parts of the muscle, and it is most often a complication after a heart attack or myocarditis.

For etiology or reasons, this pathology is a consequence of a number of diseases. There are the following types:

- Postinfarction;
- Atherosclerotic;
- Myocarditis.

The post-infarction form is usually the result of a previous heart attack. Scars form at the site of necrotic damage, which reduces the contractility of the heart muscle.

With repeated heart attacks, the amount of scar tissue increases and there is a threat of chronic aneurysm (protrusion of the muscle wall, weakened and stretched connective tissue). An aneurysm rupture is fatal. Therefore, patients should be under the constant supervision of a doctor in the hospital, they are also recommended peace and psychological comfort.

The atherosclerotic form, as a rule, is the result of atherosclerosis of large vessels, as well as coronary heart disease. The process of development of the disease is long and occurs as a result of hypoxia of cells that do not receive the required amount of oxygen due to diseased vessels. IHD is aggravated, the amount of cholesterol increases, a diffuse form of the disease develops. Appears arrhythmia, poor exercise tolerance.

The myocardial form develops due to inflammation in the myocardium. This type of pathology often affects young patients with a history of chronic infections, allergies. In this case, the right ventricle of the heart is affected, it increases in volume, the blood supply becomes insufficient.

Often the disease develops asymptotically. Gradually, as a result of sclerotization of blood vessels, heart rhythm disturbances begin, heart failure may develop.

The main symptoms of postinfarction and atherosclerotic forms are:

- Increased heartbeat;
- Labored breathing;
- Swelling;
- Violations of the rhythm of the heartbeat.

The disease is often accompanied by arterial hypertension. The stages of exacerbation can alternate with fairly long periods of remission.

You should not put off going to the doctor. An experienced cardiologist will make the correct diagnosis and prescribe treatment, taking into account the severity of the condition. Whatever pathologies cause cardiosclerosis (myocardial enlargement, the presence of inflammatory processes, vasoconstriction), its underlying causes lie in:





- Lack of sufficient physical activity;
- Overeating;
- Alcohol abuse;
- Stress;
- Too much physical activity;
- Smoking.

### **Goals and Objectives**

The aim of the study is to identify the most common cardiac pathologies in the Bukhara region and, based on pathohistological findings, to develop which pathologies are more common, their consequences and preventive measures and macroscopic and microscopic analysis in the pathohistology department of the Bukhara Regional Bureau of Forensic Medicine. A total of 22 dead patients underwent heart tissue examination.

### **Materials and Methods**

Based on macroscopic and microscopic studies of cardiac tissue during the study, a total of 22 cardiac tissue pathogistologic studies were performed. For general morphology, 2 pieces from each heart, ie 1.5x1.5 cm from the upper and middle part, were cut and solidified in 10% neutralized formalin. After washing for 2-4 hours in running water, it was dehydrated in increased concentrations of alcohols and xylene, then paraffin was poured and the blocks were prepared. Incisions of 5–8  $\mu\text{m}$  were made from paraffin blocks and stained with hematoxylin and eosin. The examination revealed the following pathologies:

### **Results and Conclusions**

The results of pathohistological examinations of the heart showed that in most cases atherosclerotic (small hearth) cardiosclerosis was observed in the heart, followed by post-infarction cardiosclerosis and chronic aneurysm pathology of the heart.

Atherosclerotic (capillary) cardiosclerosis is characterized by the appearance of flowable perivascular foci and the parallel placement of these foci around the cardiomyocytes. This condition is caused by the growth of connective tissue in the myocardium. The connective tissue serves to replace cardiomyocytes in the cardiac myocardium that die as a result of hypoxia, dystrophy, and atrophy.

Post-infarction cardiosclerosis - occurs in the organizational phase of infarcted myocardial tissue, arises from the growth of connective tissue into the myocardium







that is involved in the replacement of lost cardiomyocytes, and is mainly referred to as large-hearted cardiosclerosis.

Chronic aneurysm of the heart is caused by large focal cardiosclerosis and is clinically manifested by enlargement of the heart wall.

When making a post-autopsy diagnosis, pathologists and forensic medical experts have the opportunity to cite cardiac pathologies as the main, additional, background disease, to receive practical advice on the correct completion of the death certificate. The underlying disease is a nosological unit that causes death by itself or through complications.

Background disease is a disease that is important in the emergence and development of the underlying disease, although it does not depend on the etiology of the underlying disease.

Concomitant (additional) disease is a nosological unit that is not etiologically and pathogenetically related to the underlying disease and its complications, does not affect its course and does not lead to death.

- These data open up the real prospect of a significant reduction in cardiac pathologies and consequent mortality, and provide the necessary information not only for pathologists, but also for all specialists involved in the diagnosis, prevention and treatment of heart disease.

- This information can help to improve the performance of medical institutions at any level

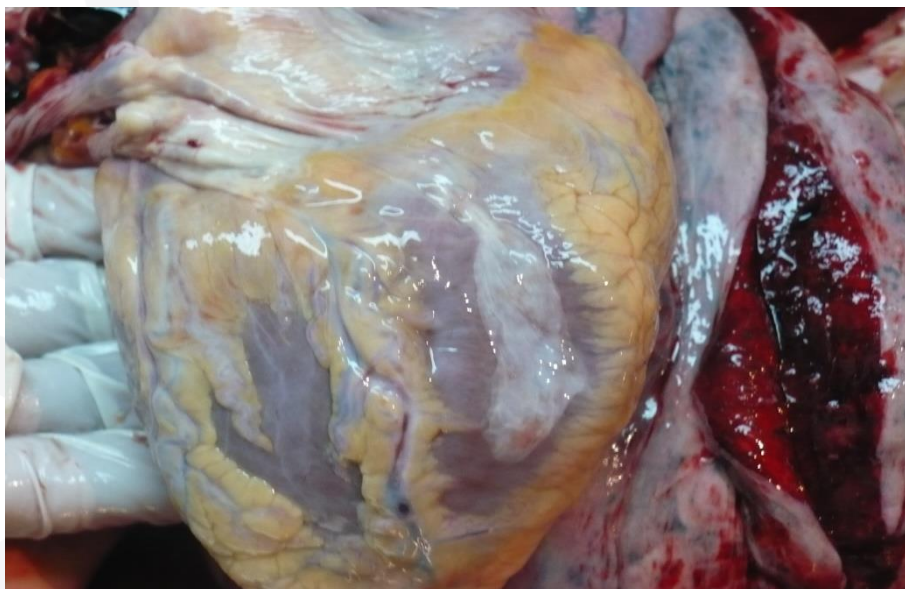


PHOTO 1. CARDIOSCLEROSIS. MACRO PREPARATION.

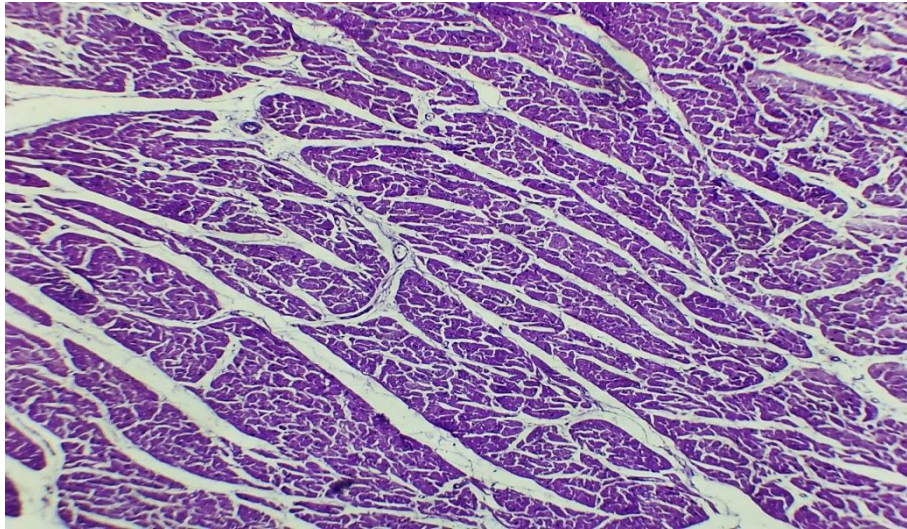


PHOTO 3. CARDIOSCLEROSIS. MICRO PREPARATION.

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