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HEART PATHOLOGY IN THE PRACTICE OF FORENSIC MEDICAL AUTOPSY:CARDIOSCLEROSIS

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✓ ***Resume***

Cardiovascular disease is one of the leading causes of death in people around the world. 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 of the heart muscle tissue, characterized by the proliferation of connective tissue in the myocardium. 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.

СУД ТИББИЙ АУТОПСИЯ АМАЛИЁТИДА ЮРАК ПАТОЛОГИЯЛАРИ: КАРДИОСКЛЕРОЗ

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Юрак – қон томир касалликлари – бутун дунёда инсонлар учун асосий ўлим сабабларидан бири бўлиб келмоқда. Юракнинг сурункали ишемик касалликларидан бири бу, кардиосклероз бўлиб, кейинги вақтда кўпгина инсонларда учраб туриши ва ёшариб келаётган патология сифатида эътиборни ўзига тортиб туриши билан аҳамият касб этмоқда. Кардиосклероз – юрак мускул тўқимаси патологияси бўлиб, миокардда қўшувчи тўқиманинг ўсиб бориши билан характерланади. Кардиосклероз – коронар қон томирлар атеросклерози, юрак ишемик касаллиги, ҳар хил генезли миокардитлар ва миокардио-дистрофиялар оқибатида вужудга келадиган патологиядир. Шу мақсадда турли касалликлардан ўлган беморларда ўтказилган аутопсия жараёнида олинган материалларда келган юрак миокард тўқималари патогистологик ўрганиб чиқилди. Ишдан мақсад юрак патологиялари бўйича маълумотларни тўлдириш ҳисобланди.

Калит сўзлар: кардиомиоцит, кардиосклероз,аутопсия, инфаркт.

ПАТОЛОГИЯ СЕРДЦА В ПРАКТИКЕ СУДЕБНОЙ МЕДИЦИНСКОЙ АУТОПСИИ: КАРДИОСКЛЕРОЗ

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Сердечно-сосудистые заболевания - одна из основных причин смерти людей во всем мире. Одним из хронических ишемических заболеваний сердца является кардиосклероз, который в последнее время стал более распространенным у многих людей и привлекает внимание как омолаживающая патология. Кардиосклероз - это патология ткани сердечной мышцы, характеризующаяся разрастанием соединительной ткани в миокарде. Кардиосклероз - патология, вызванная коронарным атеросклерозом, ишемической болезнью сердца, миокардитом различного генеза и дистрофией миокарда. Для этого проводят патогистологическое исследование ткани сердечного миокарда по материалам, полученным при вскрытии трупов больных, умерших от различных заболеваний. Цель исследования - дополнить данные о сердечных патологиях.

Ключевые слова: кардиомиоциты, кардиосклероз, вскрытие, инфаркт.

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 include atherosclerotic (small hearth) cardiosclerosis, post-infarction cardiosclerosis, and chronic aneurysm cardiac pathology. 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 will be able to cite heart pathologies as the main, additional, background disease in the post-autopsy diagnosis, get practical advice on filling out a death certificate [1,2].

The most common electrophysiological mechanisms leading to sudden cardiac death are tachyarrhythmias, such as ventricular fibrillation (VF) or ventricular tachycardia (VT) [5,11].

VT in various conditions in the organ (e.g., vegetative tone imbalance), tissue (mechanism of re-entry, wave interruption and exchange of impact potential), cellular (trigger activity and automation) and extracellular (abnormal activation or deactivation of ion channels). or levels involved in VF formation [3 - 6]. During impulse propagation, an anatomical or functional block can create a circuit along a wave that leads to VT.

Other mechanisms, such as wave rupture, are involved in the formation of ventricular fibrillation from ventricular tachycardia. Although the mechanisms of re-entry and wave disruption mentioned above are most important at the tissue level, VT and VF mechanisms are known to increase cell excitability or reduce repolarization of additional (reserve) cardiomyocytes, which can lead to ectopic cardiomyocytes. Activities that contribute to the development of VT and VF.

Approximately 20-30 percent of patients with sudden cardiac death reported bradyarrhythmia or asystole. In a patient with bradyarrhythmia, it is often difficult to accurately determine the excitatory event because asystole and electromechanical dissociation may be due to persistent VT. In rare cases, initial bradyarrhythmia due to myocardial ischemia may subsequently lead to VT or VF.

In most cases, sudden cardiac death occurs in patients with structural abnormalities of the heart [7,8]. Myocardial infarction (MI) and heart reconstruction after postinfarction are the most common systemic anomalies among patients with sudden cardiac death. In patients with myocardial infarction, the presence of complex forms such as early ventricular fibrillation (PVB), especially polymorphic ventricular extrasystoles (PV), short interval intervals (R-on-T phenomenon), or 3 or VT. more ectopic strokes increase the risk of sudden cardiac death.

Less frequently, sudden cardiac death occurs in patients without clear systemic heart disease [9,10]. Such conditions, as a rule, imply hereditary arrhythmia syndromes.

Although many patients have anatomical and functional heart substrates prone to the development of ventricular arrhythmias, only a small proportion of these patients experience sudden cardiac death. Identifying patients at risk of sudden cardiac death remains a challenge.

The most popular predictor of sudden cardiac death is significant left ventricular (LV) dysfunction of any etiology [8,11–13]. A link between regional ischemia, LV dysfunction, and transient conditions (e.g., ischemia, acidosis, hypoxemia, wall tension, medications, metabolic disorders) has been proposed as the basis for sudden cardiac death.

Goals and objectives.

The aim of the study was to identify the most common cardiac pathologies in the Bukhara region and, based on pathohistological findings, to develop the most common pathologies, consequences and prevention measures.) and macroscopic and microscopic analysis in the pathohistology department of the Bukhara Regional Bureau of Forensic Medicine. A total of 24 dead patients underwent heart tissue examination.

Materials and methods

Based on macroscopic and microscopic studies of cardiac tissue during the study, a total of 24 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 μm were made from paraffin blocks and stained with hematoxylin and eosin. The examination revealed the following pathologies:

Research results

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 during the organizational phase of myocardial tissue after infarction and is caused by the growth of connective tissue in the myocardium, which is involved in the replacement of lost cardiomyocytes, and is mainly called large-hearted cardiosclerosis.

Chronic aneurysm of the heart - occurs due to large focal cardiosclerosis and manifests itself in the clinic with 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.

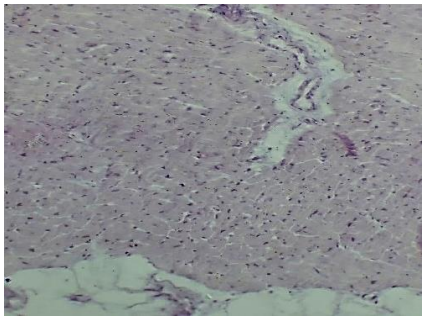

Figure 1. Growth of white connective tissue in the myocardium, narrowing of blood vessels as a result of fibrous tissue growth. Dye hematoxylin - eosin.

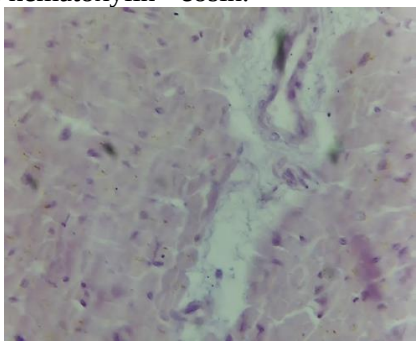

Figure 2. Narrowing of the vascular cavity as a result of fibrous tissue growth. The dye is hematoxylin-eosin

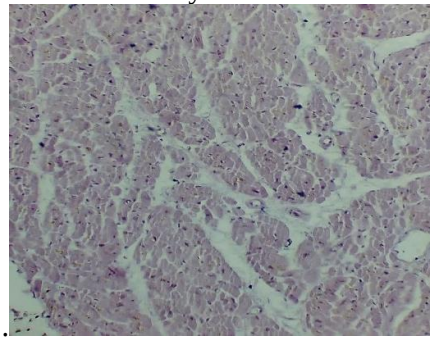

Figure 3. Diffuse cardiosclerosis. Growth of connective tissue. Hypertrophy of some cardiomyocytes. The dye is hematoxylin-eosin.

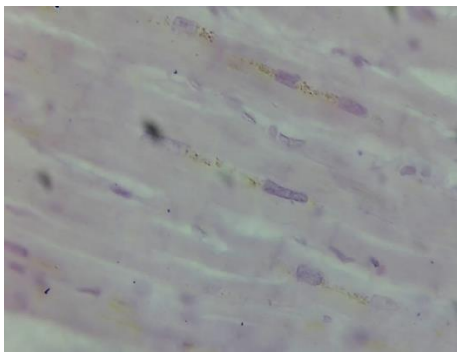

Figure 4. Cardiomyocyte focal atrophy and lipofuscinosis. Dye hematoxillin-eosin.

Conclusion

This data opens up the real prospect of a significant reduction in deaths due to heart pathologies and provides undoubtedly useful information not only for pathologists, but also for all professionals involved in the diagnosis, prevention and treatment of heart disease.

This information can help improve the performance of medical facilities at any level.

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