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FORENSIC EXAMINATION OF THE CAUSES OF SUDDEN DEATH

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Abstract
The analysis of the causes of sudden death of the general population and individuals aged 18 to 40 years was based on a retrospective study of forensic data conducted over three years. It has been established that one of the main causes of the sudden death of the young is cardiovascular pathology, which is associated with the anterior inflammation of the connective tissues. The main mechanism of sudden cardiac death in this age group is the arrhythmogenic mechanism. The development of terminal symptom complexes is facilitated by triggering factors, such as physical tension, psycho-emotional stress, and alcohol use.

Keywords: sudden cardiac death, age, risk factors, predictive factors, cardiomyopathy, arrhythmia, morphological features

INTRODUCTION

Sudden cardiac death is an important problem in modern medicine and remains one of the leading causes of death in the world, especially among young people. The systematic work of a forensic expert is the study of sudden death, its structure, causes, the search for pathomorphological criteria and the establishment of a forensic diagnosis in the past. Statistical indicators of sudden death are indicators that reflect the level of demographic, economic, social, and political development of a country [1-3]. Under the conditions of verification of the diagnosis, if the cause of death is not suspected among doctors, relatives and friends of the deceased, the death certificate is issued without an autopsy: the main neurological form, which is established throughout life, is indicated as the cause of death. Forensic examination of sudden death (TO) is mandatory and is conducted for young people under the age of 40 because any sudden, sudden death at a young age casts doubt on the violent nature of death: alcohol, drug addiction, psychoactive substance use, and the traumatic nature of the death. Forensic examination of stroke cases in young people requires a different methodological approach to finding the root cause of death, as autopsy does not reveal serious blood vessel damage from the atherosclerotic process, which is more typical for people over 40 years of age. According to various authors [4-5], the causes of sudden cardiac death in young people include various myocardial pathology, myocarditis, hypertrophic cardiomyopathy, aortic stenosis, aortic rupture, rupture of the thoracic aorta in Marfan's disease, and acute coronary insufficiency. In adolescents who died suddenly (TO's), the causes were chronic myocarditis (not diagnosed during life), long QT syndrome, spasm of the coronary arteries in the absence of atherosclerosis, coronary artery abnormalities, and ruptured aortic aneurysms. It has been established that the main mechanism of onset of stroke at a young age is cardiac arrhythmia disturbances with the development of ventricular fibrillation or asteroid [6,8]. The morphological

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diagnostic criteria for the onset of death due to arrhythmic genesis are not specific, and the forensic expert is not entitled to establish a disturbance of the rhythm as the cause of death without an ECG conducted before the onset of death. The main tasks of the sectional investigation of such cases are to find and establish the basic nousological form, with the subsequent formation of a forensic diagnosis. The single concept of IUO was first proposed by WHO experts in 1964. Over time, it was supplemented and expanded, but today the main criteria for VS remain the following: nonviolent nature - sudden and unforeseen nature for the deceased and his immediate surroundings, absence of a lifelong disease that can cause death, the presence of a non-fatal disease that is compensated at the time of death and prevents its occurrence. The time period in which the terminal stages of the VS are carried out can vary from a few minutes to a few hours. The unity of views on YUu' allows many authors to consider it as a concept of a group [9,10]. According to the criterion of time, there is a distinction between instantaneous cardiac death — death within seconds — and rapid cardiac death. Based on this time criterion, the foreign authors propose the following definition of UO: nonviolent death due to heart disease, manifested by sudden loss of consciousness within 1 hour of the onset of acute symptoms, previous heart disease may be known or unknown, but death is always unexpected [11]. Today, WHO experts have clearly defined the time criteria for WHO: "sudden death is considered death within 6 hours of the onset of the first symptoms of heart disease." According to official data, IU occupies a leading role (70–80%) in stroke structure [7, 13], the causes of which include coronary and non-coronary myocardial injuries, heart defects, infectious, toxic, metabolic myocardial injuries, etc. [12,14]. In the group of people over 44 years of age1 and in the elderly, coronary artery stenosis and arterial hypertension occupy a leading and stable place among all causes of the heart, where the main morphological substrate of vascular damage is atherosclerotic plaque, which or that causes the development of coronary heart disease [1]. In this age group, vascular damage with atherosclerosis is systemic, and autopsy studies reveal signs of vascular damage at different sites: coronary vessels and cerebral vessels with varying degrees of aortic stenosis, renal vessels.

THE PURPOSE OF THE WORK

analyzing the frequency of data on sudden death among the general population aged 18 to 40 years based on the study of the frequency of data on sudden deaths, the structure and causes of this data in terms of population mortality and a retrospective study of forensic medical documents obtained over a period of 3 years**.**

RESEARCH MATERIALS AND METHODS

A comparative analysis of mortality rates for a three-year period (2021–2024) was carried out based on the data of the Republican Scientific and Practical Center for Forensic Medical Examination in Tashkent. Morphological, histological, forensic chemical and analytical methods were used within the framework of the research.

RESULTS OF EXAMINATION AND DISCUSSION

It has been found that cardiovascular system (CVS) pathology plays a leading role in sudden death (SDS). Tashkent. According to the data of the Republican Scientific and Practical Center of

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Forensic Medicine, half of 78 people under the age of 40 who died as a result of sudden cardiac death (ICU) were studied. Of these, 56 are men (71.7 percent) and 22 are women (28.3 percent). When analyzing the causes of VS, cardiopathy was detected in 44% of cases, heart defects in 6%, acute coronary insufficiency in 12%, vascular pathology in 16%, myocardial dystrophy in 8%. In addition, macro- and microscopic changes, as well as blood toxicological indicators were studied using the chromatographic method. By macroscopic weighing and measurement, an increase in heart volume and myocardial mass due to left-sided myocardial hypertrophy was detected in 14 cases, and enlarged hypertrophy was detected in 9 cases. Microscopic examination of hematoxylin-eosin staining revealed fibrosis in 17 cells, inflammatory infiltration of cardiomyopathy in 22 cells, and inflammatory infiltration in 14 cells. Based on the materials of the Republican Scientific and Practical Center of Forensic Medicine, we studied 78 autopsy cases of patients under 40 years of age who died from VSS, of which 56 were men (71.7%) and 22 were women (28.3%). In the analysis of the causes of VSS, cardiopathy was detected in 44%, heart defects in 6%, acute coronary insufficiency in 12%, vascular pathology in 16%, myocardial dystrophy in 8% of cases. The following indicators were also studied: macroscopic and microscopic changes and toxicological indications of blood using chromatography techniques. Macroscopic weighing and measurement revealed an increase in the size of the heart and myocardial mass in 14 cases due to the presence of left-sided myocardial hypertrophy, and in 9 cases enlarged hypertrophy. Microscopic findings included hemo-eosinosis fibrosis in 17 cases, inflammatory infiltration of cardiomyopathy in 22 cases, and inflammatory infiltration of cardiomyopathy in 14 cases. Analysis of all the cases investigated made it possible to identify physical burden as a major predictor of sudden cardiac death. In all cases of sudden death caused by physical stress, pathological changes were observed in the heart, its conductive system, as well as in the vessels of the heart.

CONCLUSIONS

Thus, our research and analysis over the past three years has proven that the following laws have been strengthened. Cardiovascular pathology predominates in the composition of all cardiovascular diseases, and among urban residents it is stable from 64% to 67%. In a young adult group, the main pathology develops, causing an increased risk of complications, inflammation of the connective tissues occurs against the background of repeated collagen diseases and leads to disruption of the anatomical and topographic relationship of the first few organs of the cardiovascular system. This pathology, which cannot be diagnosed in a timely manner throughout life, is carried out by the development of neoplastic terminal tumors. The development of an algorithm for the medical diagnosis of sudden death, in particular in the youth group, will significantly improve the quality of examinations in the category of nonviolent death, systematize mortality rates, facilitate the search for neurological forms of sudden death.

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