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# CAUSES OF SUDDEN DEATH BASED ON RETROSPECTIVE FORENSIC ANALYSIS

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**Abstract**
We conducted an analysis of the causes of sudden death in the general population and among individuals aged 18 to 40 based on a retrospective study of forensic autopsy data collected over three years. It was established that one of the leading causes of sudden death in young individuals is cardiovascular pathology associated with prior connective tissue inflammation. In the young age group, the primary pathology contributing to a high risk of sudden death is connective tissue inflammation following collagen-related diseases.

**Keywords**: Sudden cardiac death, age, risk factors, predictors, cardiomyopathy, arrhythmia, morphological features.

## INTRODUCTION

### Objective

To study the frequency of sudden cardiac death, structure and causes of sudden cardiac death based on population mortality data and to analyze factors contributing to sudden death in the general population from 18 to 40 years old based on a retrospective study of forensic autopsy data conducted over a 3-year period.

**Materials and methods of the study.** A comparative analysis of mortality rates in 78 cases was conducted based on data from the Republican Scientific and Practical Center for Forensic Medical Examination (RSPCFME) in Tashkent. Morphological, histological, forensic chemical and analytical methods were used in the study.

Results of the study and their discussion. It was found that cardiovascular pathology (CVS) occupies a leading position in the structure of sudden death (SD) in Tashkent. Based on data from the Republican Scientific and Practical Center for Forensic Medical Examination, 78 autopsy cases of those who died from sudden cardiac death (SCD) at the age of up to 40 years were studied. Among them, 56 were men (71.7%) and 22 women (28.3%). When analyzing the causes of SCD, it was found that: cardiomyopathy was detected in 44% of cases, heart defects in 6%, acute coronary insufficiency in 12%, vascular pathology in 16%, and myocardial dystrophy in 8%. In addition, macro- and microscopic changes, as well as toxicological parameters of blood were studied using the chromatography method. Macroscopically, by weighing and measuring, an increase in the size of the heart and myocardial mass due to hypertrophy of the left ventricle myocardium were detected in 14 cases, and dilated hypertrophy was detected in 9 cases. Microscopic examination with hematoxylin and eosin staining revealed fibrosis in 17 cases, fatty



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infiltration of cardiomyocytes in 22 cases, inflammatory infiltration in 14 cases. Based on the materials of the Republican Scientific and Practical Center of Forensic Medicine, we studied a total of 78 autopsy cases of deceased from SCD under the age of 40, among which there were 56 men (71.7%) and 22 women (28.3%). When analyzing the causes of SCD, cardiomyopathy was found in 44%, heart defects in 6%, acute coronary insufficiency in 12%, vascular pathology was detected in 16%, myocardial dystrophy in 8% of cases. The following parameters were also studied: macro and microscopic changes and toxicological parameters of blood using the chromatography method. Macroscopically, using the weighing and measurement method, in 14 cases the size of the heart and the mass of the myocardium were increased due to hypertrophy of the myocardium of the left stomach, in 9 cases dilated hypertrophy was revealed. Microscopically, heme-eosin staining revealed fibrosis in 17 cases, fatty infiltration of cardiomyocytes in 22 cases, and inflammatory infiltration in 14 cases. Analysis of all cases examined allowed us to identify physical activity as a key provoking factor in the development of sudden cardiac death. In all episodes of sudden death that occurred against the background of physical activity, pathological changes were detected in the heart, its conduction system, and in the coronary vessels.

## CONCLUSION

Thus, our study and analysis of the cardiovascular system over the past 3 years allowed us to establish the following patterns. Cardiovascular pathology in the structure of the entire cardiovascular system is the dominant environment of urban populations. In the group of young people, the main pathology that forms a high risk of cardiovascular disease is inflammation of the connective tissue against the background of collagen diseases that lead to cardiovascular pathology.

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