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CARDIAC DEATH IN PEOPLE: RISK FACTORS

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Abstract: The article provides a review of the literature on the causes of sudden cardiac death (SCD) in young people. We present our own results of a retrospective study of deaths of persons <39 years of age based on forensic autopsies over a period of 10 years.

Keywords: Pathology of the heart and blood vessels, young age, sudden cardiac death, morphological signs, risk factors, connective tissue dysplasia.

INTRODUCTION

Sudden death (SD) of any age category is an urgent problem for study by clinicians of many specialties, ranging from pediatricians, cardiologists, neurologists, gerontologists, pathologists, forensic experts, etc. This is due to the main components of the concepts - suddenness, surprise for others, the absence, at first glance, of the main reason that caused the death, and a very short time period during which all terminal stages are realized. The concept of VS includes causes of death from diseases of the respiratory system, central nervous system, endocrine pathology, diseases of the gastrointestinal tract, etc.

MATERIALS AND METHODS

According to statistics, SCD accounts for 50% to 90% of all cases of heart disease worldwide and is caused by various heart diseases [2]. Among all cardiac causes, for many years the leading and stable position has been occupied by heart pathology caused by stenotic lesions of the coronary vessels and arterial hypertension (AH) [1]. However, over the past 10 years, certain changes have emerged in the structure of SCD, both in the age of the deceased and in nosology. When diagnosing the causes of death in persons > 40–50 years of age and in the elderly, the cardiac cause is always quite obvious, but in a sectional study of persons of young working age (< 39 years), identifying and establishing the underlying disease is very problematic.

RESULTS AND DISCUSSION

In persons > 40–50 years of age, the cause of SCD in 95% is some form of coronary heart disease (CHD), manifested by acute myocardial ischemia against the background of atherosclerotic stenosis of the coronary arteries. Moreover, vascular damage by atherosclerosis is systemic in nature, when a sectional study reveals signs of damage to vessels of various locations - the brain, aorta, renal vessels with varying degrees of stenosis [1].

In young people <39 years of age, vascular damage by atherosclerosis is either absent altogether or diagnosed only in the early stages (lipoidosis). The causes of SCD in young people are various types of pathology of the myocardium and conduction system of the heart, aortic stenosis, aortic rupture, thoracic aortic rupture in Marfan disease [1]. In adolescents who died suddenly, the causes of SCD were chronic myocarditis, not diagnosed during life, long QT syndrome, aortic stenosis, spasm of the coronary arteries in the absence of atherosclerosis, anomalies of the coronary arteries, rupture of aortic aneurysms. The main cause of death, especially among those who died <19 years of age, is sudden coronary death (primary cardiac arrest) as a form of coronary artery disease. The mechanism of coronary death is most often due to ventricular fibrillation or asystole.

When studying sectional cases of VS in young people who died suddenly, it was found that VS almost always occurs outside the hospital; A significant proportion of SCD in young people occurs without witnesses, and it is extremely difficult to accurately determine the circumstances of death. Over the course of 10 years, it has been established that diseases of the cardiovascular system occupy a leading place in the structure of VS, accounting for an average of 74% (Table 1).

Table 1

Aircraft indicators for 2014–2023

Years	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Non-violent death (cases per year)	3,454	3,649	4,425	3,692	3,992	4,013	3,922	3,793	3,750	3,561
Death from cardiovascular diseases (cases per year)	2,395	2,612	3,179	2,887	2,922	3,143	3,038	2,973	3,027	2,644
%	69,33 %	63,35 %	71,84 %	78,19 %	73,1 %	78,32 %	77,46 %	78,38	80,7 %	74 %

Over the last 10 years, diseases of the respiratory system accounted for 9% of all cases of VS, diseases of the central nervous system - 3%, diseases of the digestive system - 4%, neoplasms - 3.6%, infectious diseases - 6.4%. Among infectious diseases, one or another form of tuberculosis with complications, in some cases not detected during life, was diagnosed as the main cause of death. As a rule, this cause of death was observed in people leading an asocial lifestyle, with varying degrees of signs of nutritional cachexia and organ pathology due to chronic alcohol intoxication. Of course, the structure of VS is influenced by the circumstances and place of death (death at home, death in hospital), the duration of the disease and the diagnosis established during lifetime. For example, the low percentage of VS in oncological diseases is due in the presented studies to the legislatively enshrined right of relatives to refuse to perform an autopsy, subject to intravital tumor verification (Article 67 of the Federal Law No. 323), and cases of long-term diseases of the central nervous system - genetic Morragic cerebral infarctions, ischemic infarctions and their consequences, as a rule, are subject to pathological autopsies and are not the basis for a forensic medical examination.

Morphological findings during a sectional study were made during a detailed study of the myocardium in the projection of the zone of the conduction pathways of the heart - the His bundle and its branches. Macroscopic examination of the myocardium revealed a sharp disturbance of blood supply in the area of the interatrial and interventricular septa, in the areas of projection of the atrioventricular node and the His bundle, manifested by the presence of uneven blood supply to the myocardium with alternating foci of ischemia and sharp congestion of the myocardium, variegation of the myocardium with serial transverse incisions of the septum, in some cases, the formation of small focal hemorrhages.

CONCLUSION

SCD in diseases of the cardiovascular system is a large and important problem that is being solved in all countries of the world, because its frequency of distribution reflects the economic and social standard of living of the country's population. Of course, the key importance for the prevention and reduction of SCD is the development of criteria and methods for the prevention of diseases of the cardiovascular system, the introduction of modern medical technologies, a

systematic approach to patient management, as well as the identification and reduction of risk factors for VVS - smoking, excess body weight , arterial hypertension.

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