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SUDDEN CORONARY DEATH. ETIOLOGY AND EPIDEMIOLOGY OF THE SUDDEN CORONARY DEATH.

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ANNOTATION
Sudden coronary death is death in the presence of witnesses, occurring instantly or within 6 hours, most often caused by ventricular fibrillation and having no signs allowing a diagnosis other than ischemic heart disease.
Sudden death occupies a major place in the structure of death from cardiovascular diseases. In the vast majority of those who suddenly died, the cause of death was coronary heart disease (CHD), usually caused by the development of atherosclerosis of the coronary arteries. Therefore, many issues related to the problem of sudden death, especially issues of its primary prevention, should be considered in connection with the prevention of atherosclerosis in general.
KEYWORDS
Anoxia, asystole, ventricular fibrillation, atherosclerosis, myocardial infarction, myocarditis, cardiosclerosis, mitral valve prolapse, cardiomyopathy , pirouette.

Sudden coronary death is death in the presence of witnesses, occurring instantly or within 6 hours, most often caused by ventricular fibrillation and having no signs allowing a diagnosis other than ischemic heart disease.
Sudden death occupies a major place in the structure of death from cardiovascular diseases. In the vast majority of those who suddenly died, the cause of death was coronary heart disease (CHD), usually caused by the development of atherosclerosis of the coronary arteries. Therefore, many issues related to the problem of sudden death, especially issues of its primary prevention, should be considered in connection with the prevention of atherosclerosis in general. But, despite the commonality of the basic process in the coronary arteries, the mechanism of development of myocardial infarction, angina pectoris and sudden death, as manifestations of coronary artery disease, has its own characteristics. Often sudden death is the first and last manifestation of this disease. Consequently, it is inappropriate to talk about a single essence of such different manifestations of even one disease, especially since sudden death, although rarely, is also recorded with heart lesions of another origin. The term “sudden death” has been used in the literature for more than 250 years, but to date it has not its single definition. Sudden death refers to either immediate death or death occurring within a few minutes, 1 hour or 6 hours or even 24 hours from the time of persistent symptoms of a disease that ends in death. (Gromov L.I., Savina E.A., Wichert A.M., Kuller L). However, using the time factor as the main criterion does not ensure sufficiently large homogeneity of this group of deaths. With this approach, the group of sudden deaths includes patients whose death occurs, albeit in the early stages of the disease, but against the background of cardiogenic shock, pulmonary edema, or cardiac rupture. Definitions are known that also include the characteristics of the disease at the time of death. In 1964, a group of WHO experts first recommended a unified definition of sudden death, according to which the non-violent death of a healthy or sick person who was in satisfactory condition, occurring unexpectedly within 6 hours, is classified as sudden. A few years later, it was proposed that sudden death be

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considered a natural death that occurs unexpectedly within 24 hours of the onset of acute symptoms.

Epidemiology of sudden death.

Death rates from cardiovascular diseases (CVD) in various countries of the world over the past 15-20 years have had multidirectional trends, both towards an obvious decrease or stabilization, and further growth.
The statistics of mortality from VCS in general and the factors that determine it have not been sufficiently studied. In the USA from 1970-85, every 60-75 seconds every year 1 person died suddenly from cardiac arrest.
The problem of sudden cardiac death, which has attracted the attention of cardiologists for many decades, has become acute again in recent years when extensive WHO-led epidemic studies have demonstrated a significant incidence of sudden death in the adult population. According to morphological data, with sudden death there are often no changes in the heart that are incompatible with life; in many cases of sudden circulatory arrest, with the timely use of resuscitation measures, a return to life is possible. Extensive research is being conducted to develop measures to prevent sudden death in cardiac patients.

Etiology of sudden death.

Etiological risk factors are of great importance in understanding the occurrence of death. Among the identified risk factors for VCS, the first place goes to myocardial infarction (62 percent of all cases) and its complications, such as cardiogenic shock - 15.6 percent, pulmonary edema - 39.2 percent, heart rhythm disturbances - 35.3 percent, also there may be a combination of cardiogenic shock with pulmonary edema or rhythm disturbances with pulmonary edema. In second place are rhythm disturbances (atrial fibrillation) - 7.8 percent, in third place are cardiomyopathies - 5.9 percent, in fourth place are angina pectoris and heart defects - 3.9 percent, in fifth place are thromboembolism of the pulmonary artery trunk - 1 .9 percent. In addition, other risk factors are identified, such as myocarditis, conduction disorders of unknown etiology (complete atrioventricular block, long QT syndrome), post-myocardial cardiosclerosis, mitral valve prolapse.
Morphological studies of sudden deaths have shown that the most common etiological factor of sudden death is ischemic heart disease, and the severity of atherosclerotic lesions of the coronary arteries and myocardial changes is one of the important risk factors for sudden death. In most cases, in those who suddenly died, foci of acute ischemic changes in the myocardium are detected. Less often, sudden arrhythmic death is observed in patients with rheumatic and congenital heart defects, postmyocardial cardiosclerosis, obstructive and dilated cardiomyopathies , alcoholic myocardial dystrophy, as well as in patients with syndromes of ventricular overexcitation and prolonged QT interval, mitral valve prolapse, etc.
There are isolated cases of sudden arrhythmic death of persons without organic heart pathology. Analysis of ECG monitoring data at the time of sudden circulatory arrest shows that in approximately 90 percent of cases, the mechanisms of the latter are ventricular fibrillation, which is often preceded by episodes of paroxysmal ventricular tachycardia, turning into ventricular flutter. Sometimes ventricular tachycardia preceding fibrillation has a bidirectional fusiform shape on the ECG (pirouette type). In a significant proportion of cases, immediately before the development of ventricular fibrillation, ventricular extrasystoles are recorded, especially volleys of polymorphic complexes, starting with an early extraordinary contraction.

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Less commonly, ventricular fibrillation develops as a result of acute disruption of intraventricular conduction. On the ECG, a progressive widening of the QRS complexes is observed, and then flutter and ventricular fibrillation appear. This phenomenon may occur due to the use of antiarrhythmic drugs that slow down intraventricular conduction. One of the possible mechanisms of sudden arrhythmic death is ventricular asystole. According to various authors, primary ventricular asystole is observed in 5-20 percent of cases of sudden circulatory arrest. Ventricular asystole may be due to atrioventricular block or sinus node weakness. The development of cardiac asystole can be facilitated by ectopic arrhythmia, which inhibits the function of the minus node or atrioventricular conduction. Thus, asystole sometimes occurs after a single extrasystole or a group of extrasystoles, against the background of a paroxysm of supraventricular or ventricular tachycardia, atrial fibrillation or flutter.

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