



PARALLEL FEATURES BETWEEN CORONARY ATHEROSCLEROSIS AND SUDDEN CORONARY DEATH

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Abstract: Analysis of morphological changes of atherosclerosis of coronary vessels in sudden cardiac death by age, gender and other characteristics is provided.

Keywords: Atherosclerosis of coronary vessels, fibrous plaques, atheromatous changes, calcifications, stenosis of coronary vessels, planimetric examinations, sudden coronary death, myocardial infarction.

RELEVANCE

Sudden coronary death - sudden death is a sudden cessation of life activity of a healthy organism for the sake of others due to a hidden disease. Nowadays, sudden coronary death is one of the problems that need to be solved. Their frequent occurrence among middle-aged people, the fact that their prevention is not perfect, requires complex research.

According to the information of the pathological anatomy center of the Republic of Uzbekistan, stenosis of the descending left coronary artery of the heart is 2.8% in 20-29-year-old men; 8.8% in men aged 30-39; 15.1% in men aged 40-49; 27.9% occur in men aged 50-59. In women, this artery stenosis is only 3.6% at the age of 30-39; 5.6% occurs in 40-49 years old, that is, it is found 2-3 times less than in men.

PURPOSE OF THE RESEARCH

From the archival materials of bodies aged 20 to 60 years and older, conducted by the Andijan Branch of the Republican Forensic Medical Expertise Scientific and Practical Center, registered in the process of forensic medical expertise in the years 2018-2023 (forensic medical reports, to study the age, gender and atherosclerotic changes in the coronary vessels of people with sudden coronary death using photo attachments, forensic histological examination materials).



MATERIALS AND METHODS OF THE RESEARCH

In the study, data on 446 corpses of sudden coronary death registered in the process of forensic medical examination by the Andijan branch of the Republican Forensic Medical Expertise Scientific and Practical Center in 2019-2023 were studied. They were divided into groups according to each 10-year age interval: Group 1 (20-29 years old), Group 2 (30-39 years old), Group 3 (40-49 years old), Group 4 (50-59 years old), Group 5 $60 \leq \text{ages}$. The coronary arteries of the heart were examined in a transverse direction - first the right coronary artery, then the left coronary artery by cutting the part that bends and goes down. They were separated from the upper part of the semilunar valve. Stained with Sudan III dye. Tissues for histological examination were taken from the anterior and posterior walls of the left ventricle (2 cm above the apex, from the middle branch and 2 cm below the fibrotic ring of the mitral valve), from the interventricular septum, and stained with hematoxylin-eosin dye. and histological preparations were prepared. Atherosclerotic changes were morphometrically calculated according to GGAvtandilov in these vessels, taken with a length of 5 cm, and statistically processed.

RESULTS OF THE RESEARCH

45% of persons with sudden cardiac death were men aged 30-60 years (average age 45 years). When the incidence of sudden coronary death was studied in relation to age, in 2019 it was more common in men aged 40-50 years, 32% in 50-60 years, 27% in women in 20-30 years than other age groups, i.e. 33%, 2020 In 2021, 35% occurred in men aged 30-40, 30% in 41-50 years, 44% in women in 30-40 years, in 2021, 31% in men in 40-50 years, 29% in 50-60 years, in women compared to other young people in 2022, 26% in men aged 30-40, 37% in 41-50 years, in women compared to other young people - 46% in 50-60 years, in 2023 in men 27% at 30-40 years old, 32% at 41-50 years old, women at 30-40 years old more - 28%. For these years, 27% of men aged 30-40 years, 32% of 40-50 years of age, 26% of women at 30-40 years of age, and 22% of 50-60 years of sudden coronary death were found for these years. It was noted that these indicators are slightly "younger" in men and women compared to the indicators of the CIS countries.

Atherosclerosis of the coronary arteries in coronary heart disease was evaluated according to the stenosis of the space: 1/2 - 2/3 more stenoses in 75%, less than 1/2 stenoses in 15%, no stenoses in 10% of cases. More than 75% of coronary vessels were observed in several branches, less than 25% of narrowed stenoses of one branch.



Diagram 1

Dynamics of acute coronary death in the population of Andijan region in 2019-2023

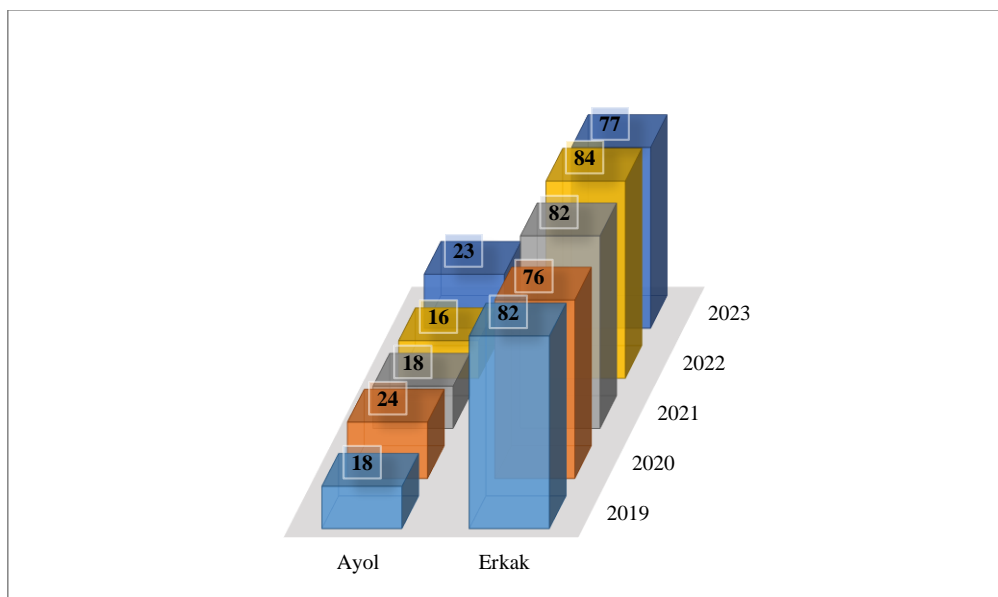


Table 1

Age-related dynamics of atherosclerotic damage to the intima of coronary vessels

Group	Left anterior descending artery	Circumferential artery on the left side	Right coronary artery
20-29	1.3±0.2	1.1 ±0.02	0.3±0.05
30-39	4±0.5	1.5±0.2	3.1±0.3
40-49	18±1.0	5.4±0.3	11±0.4
50-59	32±2	22±2.4	30±2
60≤	36±3	24±3.4	40±3.2

70-75% of people who died from cardiovascular diseases had stenosing atherosclerosis, 15% had myocardial infarction, and 15% had post-infarction cardiosclerosis. 25% showed symptoms of myocardial ischemia, 10-15% showed coronary thrombosis, 10% showed angioneurotic changes.

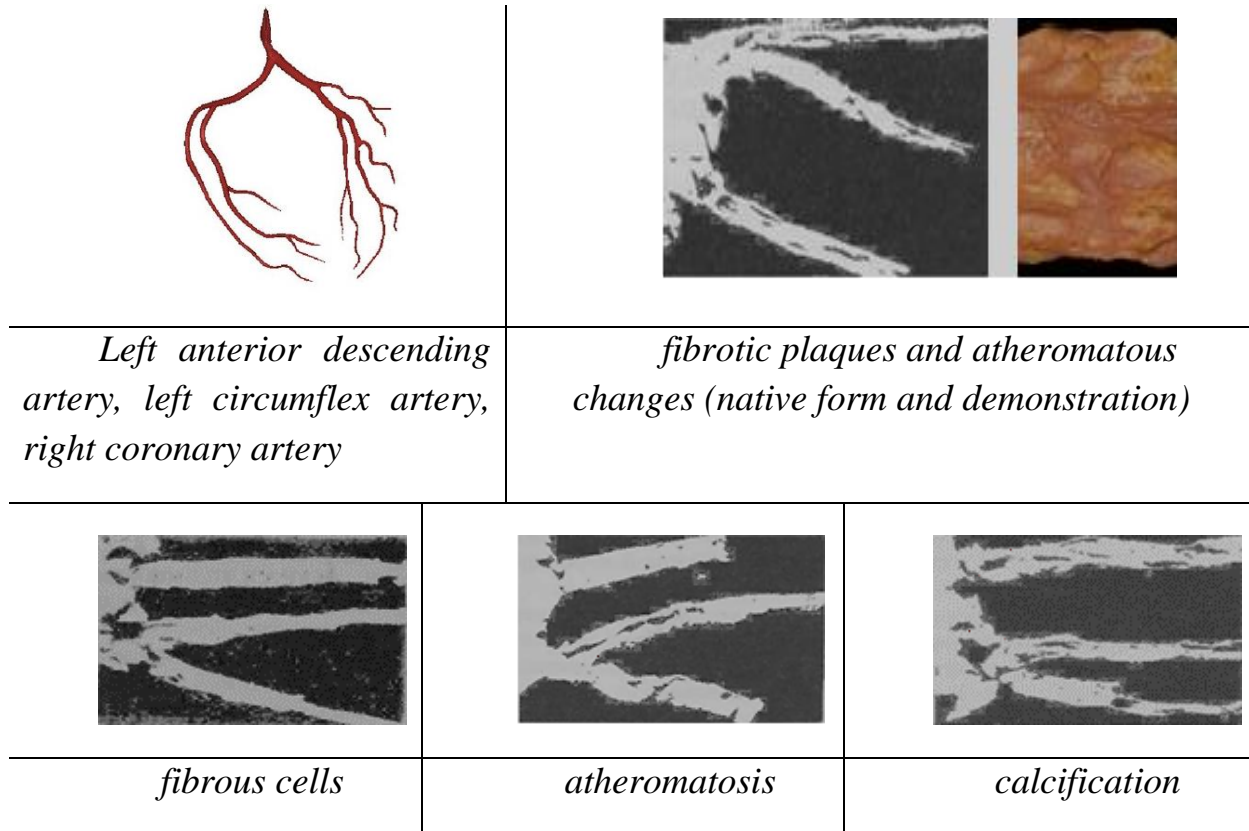
When examining the myocardium and coronary vessels of corpses with sudden coronary death, the wave-like passage of some groups of cardiomyocytes in the myocardium, fragmentation, the growth of focal fatty tissue in the epicardium, myocardium, atherosclerotic small focal cardiosclerosis, stenosing coronary atherosclerosis i.e. 1/2 - 2/3 of it was observed with fibrous cells, atheromatous



changes, calcification.

Complicated and calcified changes were observed in 1 case. Atherosclerotic changes were observed in 20% of cases in the right coronary artery. Lipid spots in 4 cases, fibrous plaques in 2 cases, complicated and calcified in 1 case.

Figure 1



When examining the coronary vessels of the 4th group (50-59 years old) in the study: no atherosclerotic changes were observed in 5% of cases in the anterior descending artery from the left side (Fig. 1). In 7 cases, changes with lipid spots, in 7 cases with lipid spots and fibrous cells, and in 3 cases complicated changes were detected. In the left circumflex artery, 60% of cases (lipid spots), 4 cases of lipid spots and fibrous plaques, and 15 cases of complicated and calcified changes were observed. Atherosclerotic changes were observed in 15% of cases in the right coronary artery. Lipid stains were observed in 4 cases, fibrous plaques in 2 cases, complicated and calcified changes in 1 case.

When the coronary vessels of the 5th group (60 and older) in the study were examined: in the left anterior descending artery (Fig. 1) in 8 cases, changes with lipid spots, in 4 cases with lipid spots and fibrous plaques, Complicated changes were detected in 2 cases. In the left circumflex artery, 75% of cases (lipid spots), 5



cases of lipid spots and fibrous plaques, and 25 cases of complicated and calcified changes were observed. Atherosclerotic changes were observed in 20% of cases in the right coronary artery. Lipid stains were observed in 4 cases, fibrous plaques in 2 cases, complicated and calcified changes in 2 cases.

CONCLUSION

The parallelism of changes in coronary vessels and myocardium in sudden coronary death increases with age. Most often in middle-aged people, it was observed in 40-50-year-old men, showing atherosclerotic changes according to planimetric indicators and relatively "rejuvenating" sudden coronary deaths.

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