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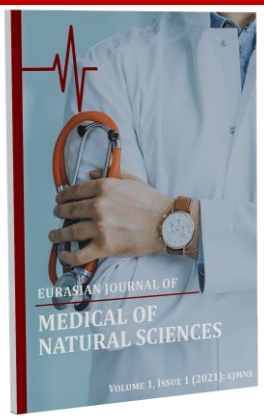

RISK FACTORS CARDIOVASCULAR DISEASES AND BREAST CANCER CLINICAL CHARACTERISTICS OF THE EXAMINED PERSONS

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ABSTRACT

The clinical criteria for angina pectoris were paroxysmal pains of a typical localization, of a pressing, compressive nature, arising during physical exertion, relieved at rest or after taking nitroglycerin.

Clinical examination methods. Patients, depending on the presence of coronary heart disease, were divided into 2 groups. The first (main) group consisted of 97 patients with breast cancer in combination with coronary heart disease. The second (control) group included 135 patients without coronary heart disease.

Clinical criteria for angina pectoris were paroxysmal pains of a typical localization, pressing, compressive nature, occurring during physical exertion, relieved at rest or after taking nitroglycerin.

Electrocardiographic criteria for angina pectoris were horizontal or oblique depression of the ST segment by more than 1 mm on the surface, loading and daily ECG recorded from the period of the pain attack. To calculate the heart rate, the interval R-R was usually measured – the distance between the vertices of the teeth R or S, that is, the duration of one cardiac cycle. Heart rate = 60/(R-R). Heart rate calculation with an incorrect rhythm, the number of QRS complexes was calculated in 3 seconds and multiplied by 20.

Blood pressure was measured in a calm, comfortable environment at room temperature. 30-60 minutes before the measurement, it was recommended to exclude the use of tonic drinks, caffeine, alcohol, smoking, as well as physical activity.

The diagnosis of breast cancer was established on the basis of a comprehensive examination, including mammography, ultrasound of the mammary glands and lymph nodes, computer or magnetic resonance imaging, histochemical methods of research. The following classification of breast cancer by stages is used:

- Stage 0 – tumor in situ;
- Stage 1 – the size of the tumor is no more than 2 cm, there are no metastases;
- Stage 2 – neoplasm of 2 to 5 cm in size, possible lesion of regional lymph nodes, provided that it is smaller than the size of the tumor;

● Stage 3 – a tumor larger than 5 cm, lesion of regional lymph nodes, germination of the neoplasm into the skin of the breast, chest wall, single distant lesions are possible;

Stage 4 – the size of the tumor does not matter, there are ulceration of the breast skin, metastases to regional and distant lymph nodes, organs.

Table №1. Classification of TNM (Staging according to criterion T)

Stage	Signs
Tx	Insufficient data to assess the tumor
T0	There are no signs of a primary tumor
Tis (DCIS)	Ductal cancer in situ
Tis (Pedget)	Paget's cancer (lesion of the nipple and/or areola) without signs of a tumor
T1mic	Microinvasion - the tumor in the largest dimension is less than or equal to 0.1 cm
Tla	The size of the neoplasm in the largest dimension is from 0.1 to 0.5 cm
T1b	The tumor in the largest dimension is from 0.5 to 1 cm
T1c	The size of the malignant formation is from 1 to 2 cm in the largest dimension
T2	The size of the tumor in the largest dimension is from 2 to 5 cm
T3	Neoplasm larger than 5 cm in the largest dimension
T4	A tumor of any size that directly spreads to the chest wall - ribs, intercostal muscles, anterior dentate muscle (without pectoral muscles), and/or skin
T4a	Germination of the chest wall, excluding invasion only into the pectoral muscles
T4b	Edema (including "orange peel") or ulceration of the skin of the breast or satellites in the skin of the gland
T4c	Combination of T4a and T4b signs
T4d	Inflammatory (edematous) breast cancer

Table №2. Classification by stages

Stage	Signs
Nx	There is not enough data to assess the lesion of regional lymph nodes
N0	There are no signs of metastatic lesion of regional lymph nodes
N1	Metastases in displaced axillary lymph nodes (on the affected side)
N2	Metastases in axillary lymph nodes on the affected side, soldered together or fixed; or clinically determined metastases in internal mammary (parasternal) lymph nodes in the absence of clinically obvious axillary lymph node lesions
N2a	Metastases in axillary lymph nodes on the side of the lesion, soldered together or fixed
N2b	Clinically detectable metastases in internal mammary (parasternal) lymph nodes in the absence of clinically obvious lesions of axillary lymph nodes
N3	Metastases in subclavian lymph nodes on the affected side; or clinically determined metastases in internal mammary (parasternal) lymph nodes in the presence of clinically obvious axillary lymph node lesions; or Metastases

	in supraclavicular lymph nodes on the affected side (regardless of the condition of axillary and internal mammary lymph nodes)
N3a	Metastases in subclavian lymph nodes on the affected side
N3b	Metastases in internal mammary (parasternal) lymph nodes
M0	no distant metastases
M1	there are distant metastases

Table №3 Quantitative characteristics of oncological pathology in comparison groups depending on the received chemotherapy drug

	Total number of patients	**The number of patients in the Dox group is 300**	**The number of patients in the Dox group is 550**	**Number of patients in the Herceptin group**	**Number of patients in the Paclitaxel group**
T1	22	5	4	9	4
T2	151	38	46	43	24
T3	18	2	8	1	7
T4	41	7	1	10	23
M0	203	47	55	56	45
M1-2	19	2	1	7	9
Mx	7	3	0	0	4
N0	52	7	12	29	4
N1	133	37	32	25	39
N2	20	3	7	3	7
N3	11	1	1	4	5
N4	0	0	0	0	0
Nx	13	3	7	0	3

Patients with breast cancer, depending on the presence of coronary heart disease and the therapy performed , were divided into the following groups:

Group 1A - patients with breast cancer and coronary heart disease who received doxorubicin at a dose of 550 mg/m2

- Group 1B - patients with breast cancer and coronary heart disease who received doxorubicin at a dose of 300 mg/m2
- Group 1B - patients with breast cancer and coronary heart disease who received paclitaxel
- Group 1G - patients with breast cancer and coronary heart disease who received herceptin

Group 2A - patients with breast cancer, without coronary artery disease, who received doxorubicin at a dose of 550 mg/m2

- Group 2B - patients with breast cancer without coronary artery disease who received doxorubicin at a dose of 300 mg/m2
- Group 2B - patients with breast cancer without coronary artery disease who received paclitaxel

● Group 2G - patients with breast cancer without coronary artery disease who received herceptin

To study the quality of life, the SF – 36 questionnaire was used, where 8 criteria were studied:

GH – general health,
PF – physical functioning,
SF – Social functioning,
RP – physical condition,
RE – emotional state,
BP – pain intensity,
VT – vital activity,
MH – mental health self-assessment.

2.2. Laboratory research methods

Laboratory and functional studies were conducted before the start of chemotherapy and a month after chemotherapy.

Assessment of the blood lipid spectrum: serum levels of HCL, HDL, LDL and TG were studied on a semi-automatic biochemical analyzer "HumaLyzer 2000" (Human, Germany) according to standards using reagents from the company "Deacon". Venous blood was used, which was taken from patients on an empty stomach in the morning from the cubital vein.

The content of C-reactive protein was quantified by express test on a portable automatic fluorescent immunoanalyzer "Wondfo" (RainSenDa, China) using multipoint calibration and expressed in mg/l. When interpreting the results obtained, the following recommendations were clearly followed: with CRP < 1 mg /l – the risk of vascular complications is low, with CRP 1-3 mg / l – the average risk, with CRP > 3 mg /l – high. If the patients' CRP level was > 10 mg/l, the measurement was repeated and the patient was examined to detect infectious and inflammatory diseases.

Instrumental research methods. Electrocardiography (ECG) was performed using a 12-channel electrocardiograph "BTL-08 MT", BTL (UK). The electrocardiograph was connected to a computer and using the Innobase for Windows software, all examinations with their date, time and name of the patient were stored in the device's memory and transferred for storage and further processing to a personal computer. The ECG showed signs of ischemic changes in the T-wave, ST segment, changes in the voltage of the R-wave and the appearance of pathological Q-waves.

Echocardiography (EchoCG) was performed on a stationary ultrasound device "Vivid S70N" by General Electric. The study was performed in standard parasternal and apical projections. The volumes of the cavities of the right and left atria and ventricles, the thickness of the interventricular septum and the posterior wall of the left ventricle (LVL) in diastole in mm, myocardial contractility, hypo- and akinesis zones were evaluated. The ejection fraction was determined by the Simpson method. We also calculated the dimensions of the chambers of the heart – of course-diastolic (CDR) and of course-systolic (CSR) sizes (mm) and the volumetric characteristics of the left ventricle – of course-diastolic (CDR) and of course-systolic (CSR) volumes (ml). Deviations from the norm included increases in the size and volume of LV (BWW >160 ml, CSR >70 ml). An assessment of myocardial deformity was also

carried out in the Strain mode. Longitudinal myocardial deformation GLS (global longitudinal strain) was measured, as well as an assessment of intersegmental dissynchrony TSI (tissue synchronization imaging)

Statistical processing of research results. All the data obtained during the study were entered into summary tables of the Excel spreadsheet editor with subsequent sorting depending on the therapy used and the clinical characteristics of the patients. In the case of parametric quantities under the condition of a normal distribution, the group characteristic was described as an arithmetic mean value ± its standard deviation. The intergroup comparison was carried out using the paired and unpaired Student's criterion for paired comparison and comparison of 2 groups. In the case of multiple comparisons, the value of the Student's criterion was corrected by the Bonferroni correction for multiple comparisons (for comparing 4 groups, the value of the Student's criterion was corrected by the divisor 6). Frequency analysis was used to describe nonparametric quantities. The intergroup comparison of frequency features was carried out using the chi-squared tabular criterion with an assessment of its reliability according to the tables, taking into account the number of degrees of freedom. The correlation analysis was carried out using the Pearson correlation criterion and evaluating its reliability according to tables depending on the number of correlated pairs. The predictor value of the signs was assessed by sensitivity indicators (the ratio of the number of truly positive test results to the total number of pathology), specificity (the ratio of truly negative test results to the total number of persons without pathology), prognostic significance (the ratio of the sum of truly positive and truly negative test results to the total number of tests performed). The choice of the value (cut-off point) of the predictor marker was based on the median value determined during the study. The relative risk of pathology in the presence of a trait was estimated as the ratio of the absolute risks of pathology in the presence of a trait to the absolute risk of pathology in the absence of a trait.

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