



Fund “Nauka” Project № 19011 Resume

“Cardiotoxicity of traditional and modern antineoplastic therapies”

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The problem of the cardiotoxic effects of systemic antineoplastic therapy is of increasing concern to the cardiology community. The growing population of cancer patients faces the challenge of dealing with various cardiovascular complications, early diagnosis, and prevention. Epidemiological data show that 33% of patients who survive malignancy die as a result of cardiovascular disease. The literature is replete with data on the effects of systemic antitumor therapy on left ventricular function. However, data on right ventricular involvement are scarce. Right ventricular dysfunction in patients with heart failure is known to be a potent determinant of patients' functional capacity and survival, regardless of left ventricular ejection fraction.

The study will follow 90 patients on systemic anticancer therapy for breast cancer, gastrointestinal tumors, and tumors of the female reproductive system in terms of cardiac function. The main goal is to evaluate the impact of chemotherapeutic regimens on the right ventricular systolic and diastolic function. The study is aimed at finding an easy-to-use algorithm for the echocardiographic assessment of the right and left ventricles, which would allow early prediction of the onset of clinically evident cardiotoxic effects. The patient's follow-up will be performed by physical examination, electrocardiogram, echocardiography – at baseline, at 3-4th week, third month, 6th, 12th, and 18th month. A biochemical marker for myocardial damage (Troponin I) will be examined in the first four follow-up visits. The set tasks include: establishing the dynamic changes in the ultrasound parameters for the systolic and diastolic function of the right and left ventricles, assessed by 2DEcho, tissue Doppler and speckle tracking; comparison of the changes for the right ventricle and left ventricle by time and severity of occurrence; detection of the correlations between the deviations in the echocardiographic parameters and the values of troponin I and finally development of an algorithm for early prediction of myocardial damage and risk stratification of patients. The latter will serve locally for more effective collaboration between cardiologists and oncologists to select chemotherapy regimens and properly prevent permanent heart damage.