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## National Medical Research Center for Oncology at the Ministry of Health of the Russian Federation The All-Russian Scientific & Practical Conference with international participation

# FUNDAMENTAL RESEARCH IN ONCOLOGY 2023

<image>

Rostov-on-Don, Russia, November 01-02, 2023

Dear Colleagues!

We are pleased to inform you that the All-Russian Scientific & Practical Conference on fundamental oncology with international participation, titled FUNDAMENTAL RESEARCH IN ONCOLOGY 2023, has been held.

About 200 experts took an active part in the work thereof, among which were full academicians and corresponding members of the Russian Academy of Sciences, professors, doctors and candidates of science. It is such a large cohort of highly qualified experts from Moscow, Tomsk, Krasnoyarsk, Novosibirsk, Rostov-on-Don, Saratov, Simferopol, Minsk, Osaka and London, representing various scientific centers and cities, who joined their efforts to demonstrate the living vitality of the fundamental science and answer the main question about the relevance, timeliness and demand for fundamental research in modern oncology. You can find Conference papers published herein, in November issue 29 of the journal Cardiometry. course exceeded 6.0 ng/mguCr, a significant rise of the indicator was detected in 41.7% of the cases.

*Conclusion.* The results obtained by us bear witness to the significance of uKIM-1/Cr as a potential risk factor for the development of AKI. An initially elevated uKIM-1/Cr level or its increase at the beginning of the next course of chemotherapy may be the basis

for taking enhanced preventive measures or changing the antitumor treatment regimen to a less nephrotoxic one. The development of reliable objective criteria for kidney damage using uKIM-1/Cr and the optimal timing of their analysis require their further research.

*Keywords*: KIM-1, Nephrotoxicity, Cisplatin, Chemotherapy

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### TUMOR GROWTH ADHESION

#### Bocharova O.A.<sup>1</sup>, Karpova R.V.<sup>1</sup>, Bocharov E.V.<sup>1</sup>, Aksenov A.A.<sup>2</sup>, Kucheryanu V.G.<sup>2</sup>

<sup>1</sup>N.N. Blokhin Russian Cancer Research Center, Moscow, Russia <sup>2</sup>Institute of General Pathology and Pathophysiology, Moscow, Russia

**Background.** The concept that the key mechanism of the tumor process is the disruption of adhesive interactions is based on the participation of local, general and central mechanisms.

**Methods**. Immunofluorescent, immunohistochemical, immunoenzyme, morphological, biochemical research methods, as well as statistical analysis were used in the research.

Result. The local features of adhesion dysregulation include insufficient expression of histospecific adhesion molecules resulting from a genetic mutation, which damages an important mechanism of antitumor tissue defense, disrupting the processes of proliferation and differentiation. Deficiency of histononspecific homotypic adhesion molecules, which arises much later, escalates the disorders. This leads to general contact "breakdowns": firstly, to a decrease in the expression of ligands of the  $\beta$ 2 family of leukocyte integrins (LFA-1, Mac-1) on the surface of immune effectors, and secondly, to increased expression on tumor cells of molecules of adhesion to the substrate, late activation antigens VLA (very late activation) of the β1-integrin family. The first event limits the interaction of molecules of the ICAM family with their counterreceptors from the  $\beta$ 2-integrin family, reducing the elimination of target cells by immune effectors, which contributes to shielding the tumor from immune surveillance. The second "breakdown" promotes tumor invasion and the formation of blood vessels - heterotypic adhesion with other cells and tissues, which additionally stimulates the processes of cell proliferation and tumor growth. Thus, adhesion molecules can be compared to a phoenix bird: disappearing at the beginning of the process (between "native" cells), they appear again, but in a different capacity (strengthening adhesion to "foreign" cells), elevating the totalitarian behavior of the tumor. It should be taken into account that tumor cells, due to adhesion dysregulation, lose their differentiation, losing their maturity, and are "isolated from society", being unable to carry out their specific, "adult" functions. Therefore, tumor growth can be considered as rapid aging of organ cells.

Conclusion. Features of local adhesion dysregulation, which provides the basic properties of the tumor: loss of tissue control of proliferation, anaplasia, invasion, metastasis, deficiency of immune surveillance, can be controlled by central mechanisms involving the dopaminergic system, which is able, using immunoadhesive interactions, to regulate the active phase of immune reactions against tumors, interfering with the process and thus interrupting the development of a malignant neoplasm initiated by a local mutation in a specific tissue. The concept reveals the stress character of cancer etiology and creates prospects for new methods of diagnosis, prevention and treatment of tumors, which could be another step towards solving the problem of malignant neoplasms.

*Keywords:* Homotypic, Heterotypic adhesion,  $\beta$ 1 and  $\beta$ 2 integrins, Cadherines, Dopamine, Malignant neoplasms, Aging, Mutations.