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Editorial

We Can Reveal a Malignant Tumor If Take a Look in a Mirror of Autoantibodies - a

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Mutations of oncogenes or inhibitors of oncogenes can lead to the emergence of isolated dormant malignant tumor cells, but only rare are sufficient for inducing an active malignant tumor growth, i.e., for appearance cancer as illness. Will or will not occur the active growth of malignant tumor depends in essence on the condition of reparative-regenerative systems of a particular organ and the whole organism. In other word the malignancy rather is not self-contained local, but systemic event [1].

Based on these considerations we can conclude that molecular genetic testing allows evaluate the risk of disease, but the RISK is not synonymous with the DISEASE and in most cases is not accompanied by the development of illness. Methods of molecular genetics are certainly effective in some peculiar cases: namely to predict tumor congenital syndromes ("family cancers"). The last arise with high probability when inactivating mutations in the tumor suppressor genes take place. For example, in individuals with defects in BRCA1 and/or BRCA2 genes cancers of the breast and/or ovaries develop with a probability of over 50% during the life. Several dozens of genetic defects, with a high probability accompanied by the development of malignant tumors during the lifetime of the individual were described. However, the frequency of occurrence of all "family cancers" does not exceed 2-5% of the total number of malignant tumors. And over 95% of cancers are multifactorial diseases, which does not occur without certain influences of the environment (non-mutagenic often), and which can't be predicted by molecular genetic methods [2]. If so, which methods can be used for mass-scale check-ups for the most cancer cases?

In the blood of all healthy subjects from birth to death are present natural autoantibodies of the IgG class (n-Ab) designed for binding any antigens of own organism. Such n-Ab are an essential instrument used for clearance of the organism from moribund cells of different types and their antigens released in the extracellular environment, and besides for clearance from macromolecules present in excess as well as from non-functional (defective) macromolecules [3].

Under normal conditions, the physiological levels of apoptosis of the specialized cells of different organs (and replace them with new ones), almost the same in all healthy adults. This determines approximately the same release in the extracellular environment of different cytoplasmic antigens and antigens of fragmented cell membranes.

In turn, it is known that the level of production of n-Ab is determined by the quantity and availability of relevant self-antigens ("Kovalev's" rule) [4]. Therefore, normally, the contents of n-Ab of different antigen specificity, is a very similar in different healthy individuals. However the development of any chronic diseases, including different forms of cancer, is based upon the activation of apoptosis and/or necrosis of certain cells, and/or on the change of the expression of some antigens. The last leads to increased synthesis of n-Ab to respective antigens of the affected organ (in accordance to "Kovalev's rule"). Therefore, the analysis of changes of marker n-Ab can be a convenient tool for detecting different chronic diseases, including cancer, at the preclinical stages, and for monitoring the possible relapse of the disease after treatment.

In studies 2008-2015, we have shown the possibility of early detection of actively growing malignant tumors through identification of characteristic changes in the profiles of the n-Ab directed to a few dozens of tumor-associated proteins [5]. It is important that the characteristic change in profiles of n-Ab can be detected already at early stages of progression of malignant tumor disease. And besides, our preliminary data indicate: change in profiles of n-Ab allowed to distinguish between actively growing malignant tumor and dormant (latent) tumor.

Unfortunately, today's level of sensitivity and specificity of such methods does not exceed 70-75%. However, these methods are evolving rapidly. We believe that simple and cheap immunochemical approaches intended for early detection of malignant process will be widely introduced into the practice of preventive oncology if their specificity and sensitivity will be increased to 90-95%.

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