МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ РФ
ТОМСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ
БИОЛОГИЧЕСКИЙ ИНСТИТУТ

СТАРТ В НАУКУ

МАТЕРИАЛЫ

LXX научной студенческой конференции
Биологического института

Томск, 26–30 апреля 2021 г.

Томск
2021

CIRCULATING TUMOR CELLS

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Circulating tumor cells (CTCs) are cells that enter the vascular or lymphatic vessels from the primary tumor through the epithelial-mesenchymal transition (EMT) and are subsequently transported through the body through blood circulation. CTCs are quite invasive and can give rise to the subsequent growth of additional tumors (metastases) in distant organs. The detection and analysis of CTCs can assist in the early prognosis and an appropriate prescribing of treatment. Currently, the only method of detecting CTCs, CellSearch, is used in practice to diagnose breast and prostate cancer.

CTCs are used in the role of liquid tissue biopsy and the advantages of this biopsy are in its non-invasiveness, in the possibility of repeated use, and in the fact that it provides more useful information about the risk of metastasis, disease progression, and treatment efficacy. For example, analysis of blood tests from patients with cancer has shown a tendency to increase the detection of CTCs as the disease progresses. The biopsy is a blood test that is easy and safe to complete, and multiple samples can be taken over time. These factors make it possible to bypass the analysis of solid tumors, as they require invasive procedures that can limit patient compliance.

Tracking the disease progression over time makes appropriate changes in the patients' therapy and dramatically improves their prognosis and quality of life. At the same time, a small number of CTCs allows us to predict the development of the disease in the early stages and allows us to refuse surgical intervention. The obvious advantage of non-surgical treatment is avoiding the risk of congenital tumorigenicity in cancer surgery. To this end, technologies with the necessary sensitivity and reproducibility have recently been developed to detect CTCs in patients with metastatic disease.

Academic advisor – senior lecturer E.A. Melnikova