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## NEUTROPHILIC EXTRACELLULAR TRAPS IN TISSUES WITH DIFFERENT TREATMENT MODES OF COLORECTAL CANCER

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An important feature of malignant tumors is their relatively autonomous growth, regulated by locally produced factors, which include “microenvironment factors” of tumors produced by both the tumor cells themselves and the cells of the stroma surrounding them. A permanent component in the structure of microenvironment of tumors are neutrophilic granulocytes. But their role in oncogenesis is not fully established. There is evidence that in addition to antitumor activity neutrophils can demonstrate antitumor activity, provoking metastasis. In response to microbial and non-microbial stimuli, neutrophils actively form network-like structures in the extracellular space consisting of nucleic acids and enzymes – neutrophil extracellular traps (NET). Fibrous structures of NET represent the main DNA chain containing histones and proteins – products of neutrophil granules. The main protective function is the destruction of pathogens [1]. Views about the role of neutrophil traps in Oncology vary greatly. On the one hand, there is evidence of anticarcinogenic properties of NET associated with direct destruction of tumor cells and stimulation of the immune system. Cytotoxicity in relation to tumor cells is manifested by the components of NET (myeloperoxidase, proteinase and histones), while DNA strands are considered as a kind of tool for capturing tumor cells and limiting their further spread [2, 3]. On the other hand, NET can promote migration and immune avoidance of tumor cells. The possible role of the flow of neoplastic process As a prognostic biomarker in NET is suggested [4, 5]. The aim of this study was to investigate extracellular neutrophil traps in colorectal cancer.

**Materials and Methods.** The study is carried out within the framework of the scientific and technical program “Personalized approach in the management of a number of significant diseases”, developed by the NAO “Medical University of Karaganda”. A set of patients with cancer of the colon and rectum was carried out under the conditions of the KGP “Regional Oncology center” of Karaganda, Kazakhstan. The clinical diagnosis was established according to ICD 10, for the classification of

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the stage of cancer, the classification of TNM developed by the International anti-Cancer Union was used. For statistical processing of the results the procedures of mathematical statistics implemented in the application programs "STATISTICA 10.0" and EXCEL were used. 19 patients with stage II colorectal cancer were examined. The patients were divided into II groups: the first group included 9 patients in whom the tumor was removed by surgery immediately after diagnosis verification. The second group included 10 patients who had been previously treated with radiation before the operation. To determine the NET, smears were selected - prints from the surgical material (from tumor tissue, from the microenvironment of the tumor and from healthy tissues). NET were calculated for 100 neutrophils. The total number of leukocytes in the peripheral blood of patients was also determined.

**Results.** As a result of the study, it was found that in patients of group 1 in tumor tissue, tumor microenvironment and in healthy tissues, the amount of NET varied, but averaged 21, 24 and 8 traps, respectively. In patients of group 2 in tumor tissue and tumor microenvironment, the number of NET also varied, but averaged 13 and 19 traps, respectively. In healthy tissues, NET was not observed. Analysis of the number of neutrophils showed that the average peripheral blood of patients in group 1, this figure was 7.05, in patients of the second group – 5.96.

**Conclusion.** As follows from the data obtained, radiation therapy helps to reduce the formation of FNL, and reduce the number of neutrophils in patients with colorectal cancer stage II.

Thus, it is interesting to assess the ability of neutrophils to form extracellular traps in socially significant diseases. It is necessary to conduct further studies that will expand the idea of NET depending on the clinical stages and properties of tumors (degree of morphological differentiation, anatomical type of growth). The results of the study may contribute to the study of the mechanisms of development of extracellular traps and identify new goals for therapeutic effects.

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