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## Fluorescent studies of human blood plasma albumin alterations in colorectal cancer patients

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The novel fluorescent probe ABM (derivative of benzanthrone) was used to characterize blood plasma albumin from colorectal cancer patients in context of the hosts immunological parameters and state of cancer progression. For study patients with colorectal cancer were examined : 1) 10 day before and 10 days after their surgical treatment ; 2) as disease worsened (Stages IIa, IIIb, IV); 3) advanced cancer patients. The aim of studies was to evaluate the potential utility of measures of ABM fluorescence parameters as a standart tool in the analysis of host immune status and for a clinical interpretation of alterations in albumin per se and lymphocytes functional activity in patients. ABM binds with blood plasma albumin with high level of selectivity. Probe ABM is very sensitive to all known conformational changes of albumin in the region pH 3-12. Spectral parameters of ABM binding with plasma albumin reflects albumin "effective" concentration (equivalent of "healthy" albumin in patients plasma), alterations of albumin globule, its physical and functional properties, characteristics of binding sites properties. A result clarifies a heterogenous nature of ABM binding and revealed different conformation of albumin in each observed group of patient. The results showed strong correlation with select immunological parameters (CD4+, CD8+, ratio CD4+/CD8+, CD38+, CD16+ , level of immunoglobulines IgA, IgG, IgM etc.). Decrease in the CD4+/CD8+ ratio mainly depend on an increase in the T- suppressor cells in patients without metastases, whereas it is due to a decrease in the T-helper cell in most patients with metastatic disease. Surgical treatment affects immunological parameters and apperead to elevate lymphocytes functional activity. The preoperative immune state of patients is important for their survival. Immunosupression increased gradually with progress of cancer; capacity of albumin binding reserve and „effective" concentration decrease. These findings suggest likely physical (structural) and functional alterations in the patients plasma were a function of cancer stage.. In advanced cancer, in contrast to other groups, the absolute number of lymphocytes had direct (not inverse) correlation with ABM fluorescence intensity. The higher level of lymphocytes number, T-cell proliferative activity, and albumin "effective " concentration have a beneficial effect on overall survival. There was excellent agreement between changes in spectral characteristics and both clinical and pathological estimates of disease severity. Measures of ABM fluorescence intensity values in blood plasma might be a useful tool in the evolution of the immune status of patients in clinics. including prognosis, prediction of therapeutic efficacy, treatment outcomes. The fluorescence-based method is less expensive, not very time-consuming, technically simple, 100 times more sensitive than standart ones.

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