

## EOSINOPHILIC GRANULOCYTE IN PERIPHERAL BLOOD AS BIOLOGICAL MARKER FOR COLON CANCER PROGNOSIS

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The main aim of modern coloproctology is to find available and reliable marker for detection of colorectal cancer (CRC) and its prognosis estimation, especially, if this marker is possible to obtain through minimally invasive procedure. One of the commonest diagnostic procedures is blood analysis, that is the basic method dealing with blood cells count. Eosinophilic granulocytes are mentioned in context of cancerogenesis of some malignant tumors, but their role is described predominantly in tissues [1-3], but less attention is paid to their amount changes in peripheral blood [4]. The aim of this investigation is to determine possible correlation between number of eosinophils in peripheral blood ( $Eo_{PB}$ ) and morphological characteristics of CRC before and after operation as possible prognostic marker.

**Materials and methods.** In the investigation 197 patients with CRC, treated in Red Cross Hospital, Smolensk were included. All of them were divided into 3 groups: I – patients with primary diagnosis of CRC; II – patients, admitted for surgical treatment (radical or palliative depending on CRC stage); III – patients, admitted for control examination after successful radical treatment in the past.

Histological examination was performed using hematoxylin an eosin stain, mucicarmine and alcian blue stains. The cases were assessed according to TNM system. In the case histories  $Eo_{PB}$  was analyzed before and recently after radical operation and in remote period in case of control examination.

Statistical analysis was performed using software STATISTICA 6.0, using Mann-Whitney test (U), sign test (G) and Spearman rank correlation. The results were considered statistically significant at  $p \leq 0,05$ .

**Results.** Comparison of  $Eo_{PB}$  before and after radical surgical treatment (before discharge from the Hospital) revealed no significant differences ( $G=68,18$ ,  $p=0,135$ ). Comparison of  $Eo_{PB}$  before radical surgical treatment and in remote period also demonstrated no significant differences ( $U= 1336,5$ ,  $p = 0,99$ ).

We have revealed some interesting and statistically significant correlations between  $Eo_{PB}$  and TNM parameters: there was noticeable negative correlation between  $Eo_{PB}$  before and after radical operation and depth of invasion (T); moderate negative correlation between  $Eo_{PB}$  and expansion of lymphogenic metastases (N) and moderate negative correlation between exact tumor size and  $Eo_{PB}$  before radical operation. There were no significant correlations for comparable parameters after radical operation (table. 1).

**Table 1.**

Results of statistical analysis of correlations between  $Eo_{PB}$  and morphological parameters of CRC.

	Spearman	p-level
$Eo_{PB}$ before operation & T	-0,66	0,000020
$Eo_{PB}$ before operation & N	-0,37	0,029
$Eo_{PB}$ before operation & tumor size	-0,37	0,032
$Eo_{PB}$ before operation & M	-0,03	0,83
$Eo_{PB}$ after operation & N	0,11	0,53
$Eo_{PB}$ after operation & M	0,24	0,19
$Eo_{PB}$ after operation & tumor size	0,24	0,18

Comparison of  $Eo_{PB}$  in patients before and after radical operation with patients having haematogenic metastasis revealed significantly higher number of  $Eo_{PB}$  in cured patients as in patients having palliative operation due tumor dissemination ( $U=51,5$ ;  $p=0,0223$ ), while before operation there were no significant differences in  $Eo_{PB}$  ( $U=102,5$ ;  $p=0,6962$ ) (fig.1). 3шс.

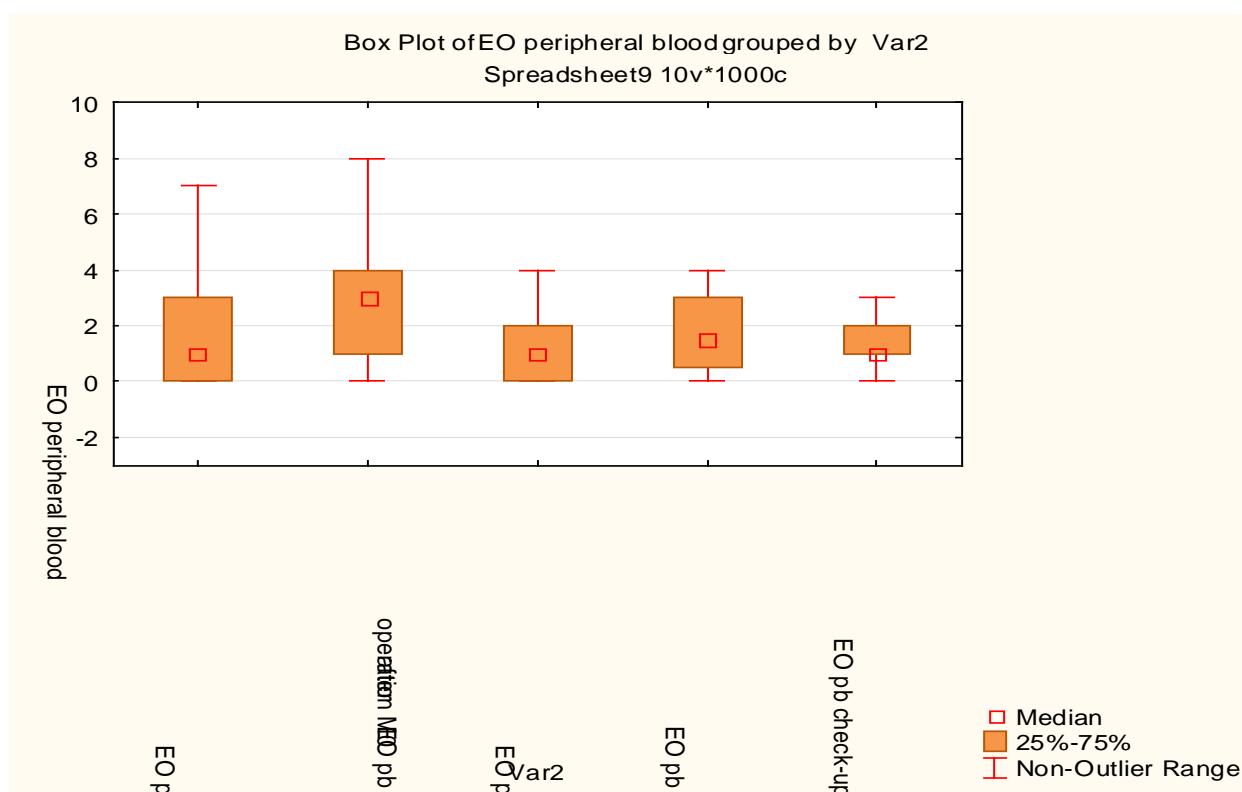


Figure 1. Comparison of  $Eo_{PB}$  in patients with and without haematogenic metastasis before and after operation.

Histological type of CRC due to its different biological aggressiveness also influenced  $Eo_{PB}$ . Before radical operation  $Eo_{PB}$  was higher in patients with more differentiated variants of CRC comparing with signet ring cell carcinoma or poorly differentiated adenocarcinoma ( $U=20,0$ ;  $p=0,048$ ), but after radical operation this differences have vanished ( $U=35,0$ ;  $p=0,45$ ).

Summarizing the results, it is obvious, that  $Eo_{PB}$  is higher in patients with CRC with better prognosis according to stage, clinical group and histological type of the tumor. But these correlations exist only before surgical treatment and disappear after removing of the tumor, that allows  $Eo_{PB}$  to be considered as marker of CRC prognosis.

## References:

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