Clinicopathological significance of Epo, EpoR, Ki-67 and Bax expression in colorectal cancer

Lomperta K.[1,2,A,C,D], Grudzinska M.[1,C,E], Jakubowska K.[2,C,E], Samocik P.[3,C], Kozlowski L.[4,C], Fudala A.[1,C], Wincewicz A.[5,C,E], Koda M.[1,A,B,F]

1. Department of General Pathomorphology, Medical University of Bialystok, Bialystok, Poland
2. Department of Pathology, Maria Sklodowska-Curie Memorial Bialystok Oncology Center, Bialystok, Poland
3. Department of Urology, J. Sniadecki Provincial Hospital of Bialystok, Bialystok, Poland
4. Department of Oncological Surgery, Maria Sklodowska-Curie Memorial Bialystok Oncology Center, Bialystok, Poland
5. Non Public Health Care Unit - Department of Pathology, Kielce, Poland

A- Conception and study design; **B** - Collection of data; **C** - Data analysis; **D** - Writing the paper;
E- Review article; **F** - Approval of the final version of the article; **G** - Other (please specify)

ABSTRACT

Introduction: Expression of Epo, a glycoprotein secreted by the fetal liver and the adult kidney in response to cellular hypoxia and its receptor have been described in human solid tumors, such as colon and breast cancer.

Purpose: Since activation of Epo-EpoR signaling pathway in erythroid progenitor and precursor cells leads to promotion of proliferation and differentiation or prevention of programmed cell death through Bcl-xl and Bcl-2 it was of interest to investigate expression of Epo, EpoR, apoptosis regulator – Bax and marker of proliferating cells - Ki-67 and assess correlation between them, with regard to clinicopathological variables of colorectal cancer.

Materials and methods: The correlations between expression of Epo, EpoR, Bax and Ki-67 in colorectal cancer were analyzed in regard to patient age, sex, primary localization, histopathological type, grading, staging and lymph node invasion. Statistical analyses were performed by using the Spearman rank correlation test applying a significance level of $p<0,05$.

Results: Correlation between Bax and EpoR is positive and statistically significant at all groups of patients except group pT1+pT2. Positive correlation between Bax and Epo is statistically significant at following groups of patients: all patients, age ≤ 60, age >60, male, female , primary localization in rectum, primary localization in colon, adenocarcinoma, G2, G3. Statistical analysis revealed no significant correlations between expression of neither Ki-67 with Epo nor Ki-67 with EpoR in all groups of patients.

Conclusions: Epo seems to be a pleiotropic cytokine, which can exert its biological effect on several cell types, including neoplastic cells. The effect of Epo-EpoR signaling can differ in various cells and conditions.

Keywords: Colon cancer, erythropoietin, erythropoietin receptor

DOI: 10.5604/01.3001.0012.8330