

IMMUNOHISTOCHEMICAL MARKERS IN COLORECTAL ADENOCARCINOMA

Akbota Aitkulova^{1*}, Tomiris Kadenova¹, Tatiana Rogounovitch², Saule Rakhimova¹, Ainur Akilzhanova¹, Dos Sarbassov¹

¹ Center for Life Sciences, National Laboratory Astana, Nazarbayev University, Astana, 010000, Kazakhstan

² Nagasaki University, Nagasaki, 850-0000, Japan

*Corresponding author (s): akbota.aitkulova@nu.edu.kz

Background: The caudal type homeobox 2 transcription factor (CDX2) is an emerging biomarker in CRC and is currently used in the clinic for diagnosis of intestinal adenocarcinomas as it is a relatively sensitive and specific intestinal marker. [1]. Ki67 is broadly used to evaluate cell proliferation and aggressiveness in various malignant tumors. However, its prognostic value in colon cancer is controversial [2].

To investigate the prognostic significance of CDX2 and Ki67 in colon cancer, the associations of these marker expression levels from 16 patients with metastatic colorectal carcinoma stage III-IV were analyzed.

Materials and methods: Immunohistochemistry staining was performed according to standard protocol. Primary mouse monoclonal antibody Ki-67 (MIB-1 clone) and CDX2 (DAK-CDX2 clone), DAKO, dilution 1:100 was used to evaluate tumor proliferative activity on Ventana BenchMark ULTRA System (Roche). CDX2 antibody expression was assessed using the Allred scoring scale from 0 to 3. Ki-67 labeling index (LI) was calculated using image analysis software CountoCell (Seiko TeclTD) on a series of 5 to 12 images at x40 magnification.

Results: According to the results for antibodies to CDX-2, all samples showed a staining intensity equal to 3 on the Allred scale. Thus, all samples were classified as well-differentiated colon adeno-

carcinoma. Besides, all samples had a high proliferative activity index (> 30%). The number of patients with a Ki67 expression level of >25 ≤50% - 2; >50 ≤75% - 5; >75% -9. In addition, in patients treated with surgery and adjuvant chemotherapy, high Ki67 expression was equally high.

Conclusion: CDX2 is a highly specific marker in CRC that plays an important role in tumor progression and can be used as an auxiliary marker for the risk of malignant transformation in colorectal adenocarcinomas. Despite the controversial role of Ki-67 in CRC, our data showed that it could be used as a useful additional prognostic factor.

Acknowledgement: The authors express their gratitude to the oncologists from KazIOR for their assistance in collecting tissue samples.

This research has been funded by the Science Committee of the Ministry of Science and Higher Education of the Republic of Kazakhstan (NoAP22788205, AP23489913).

Key words: CRC, ICH, CDX2, Ki-67

References:

1. Dalerba P, Sahoo D, Paik S, et al. CDX2 as a prognostic biomarker in stage II and stage III colon cancer. *N Engl J Med* **374**, 211–222 (2016).
2. Qi Liu, Dongmei Ran, Liping Wang, et al. Association between Ki67 expression and therapeutic outcome in colon cancer. *Oncol Lett.* **10**, 25(6):272 (2023).