

Abstract:

Colorectal cancer is one of the most common malignancies that often presents with a poor prognosis.

Inhibitory molecules VISTA and PD1 are two immune regulatory proteins that were of great interest in past studies due to the importance of the role of these markers in cancer, but there is still a need for investigation and study in this field.

The aim of this study is to investigate the expression level of two inhibitory molecules VISTA and PD1 in the peripheral blood of patients with colorectal cancer, as prognostic biomarkers in order to estimate the clinical value.

In this study, 3 ml of peripheral blood was taken from 40 patients with colorectal cancer and 20 healthy individuals. The expression level of PD-1 and VISTA protein in the peripheral blood of these people was measured using flow cytometry and PE-conjugated antibodies, and the data was analyzed using Flujo software. The gene expression of these two markers was also measured by real-time reverse transcription polymerase chain reaction (qRT-PCR), after extracting RNA from whole blood by Trizol method and synthesizing cDNA from it.

Statistical calculations and graphs were done using PRISM and SPSS 27.0.1 software. In this study, the Kolmogorov Smirnov statistical test was used to check the normality of data distribution. Due to the abnormal distribution of some data, non-parametric statistical tests were used to further analyze the results. In general, Mann-Whitney test, Kruskalwallis test and Will-Coxon test were used to check the expression level of two markers. Finally, P values less than 0.05 were considered as significant values.

The results of flow cytometry showed that the expression of PD-1 molecule on the level of lymphocytes and monocytes of patients with colorectal cancer increased significantly compared to healthy people. It was also found that the expression of VISTA on the level of monocytes, lymphocytes and the whole blood cell population of patients has increased significantly compared to healthy people.

The results of the Real-time PCR method showed that the expression level of the PD-1 molecule gene in the peripheral blood of people with colorectal cancer increases significantly compared to healthy people. But in the case of VISTA, although an increase was shown, the results were not statistically significant.

As a result, this study shows that PD-1 and VISTA can act as two potential biomarkers for CRC and help to develop new and more effective methods for the diagnosis and treatment of colorectal cancer, especially immunotherapy.

Keywords: cancer, colorectal, PD-1, VISTA, prognosis