EVALUATION OF CHEMOTHERAPY EFFECTIVENESS IN GLIOBLASTOMA ACCORDING TO MOLECULAR-GENETIC TYPE

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ABSTRACT

Glioblastomas are characterized by high aggressiveness, rapid recurrence, and short survival duration [2,3]. Determining molecular-genetic characteristics plays an important role in selecting an individualized treatment strategy, particularly in predicting response to temozolomide-based chemotherapy [1,4]. In this study, the impact of molecular markers on chemotherapy effectiveness, overall survival, and progression-free survival was evaluated using clinical and statistical analysis..

Purpose of the Study. To evaluate the effectiveness of chemotherapy in patients diagnosed with glioblastoma according to their molecular-genetic type.

Materials and Methods. A retrospective analysis was conducted on data from 62 patients treated between 2022 and 2024. Among them, 38 were male (61.3%) and 24 were female (38.7%), with a mean age of 54.6 ±8.3 years. Patients were divided into two groups based on the presence of molecular markers: Group 1 – patients with identified molecular markers (n = 27; 43.5%); Group 2 – patients without identified molecular markers (n = 35; 56.5%). All patients underwent surgical treatment followed by radiotherapy and standard temozolomide-based chemotherapy. Survival outcomes were evaluated using the Kaplan–Meier method. Differences between groups were assessed using the log-rank test. Independent prognostic factors were identified using a multivariate regression model, and hazard ratios (HR) with 95% confidence intervals (CI) were calculated. A p-value < 0.05 was considered statistically significant.

Results. Overall survival was 19.2 ±1.4 months in Group 1 and 11.6 ±1.1 months in Group 2 (p = 0.003). Progression-free survival was 10.1 ±0.9 months in Group 1 and 5.7 ±0.8 months in Group 2 (p = 0.001). The one-year survival rate was 74.1% in patients with molecular markers and 42.8% in patients without molecular markers. According to multivariate regression analysis, the presence of molecular markers was identified as an independent favorable prognostic factor (HR = 0.52; 95% CI: 0.31–0.86).

Conclusion. The presence of molecular-genetic markers in glioblastoma is significantly associated with increased chemotherapy effectiveness and prolonged overall and progression-free survival. Determining the molecular profile is an important clinical criterion for developing individualized treatment strategies.

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