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COMMON CHEMOTHERAPY REGIMENS USED IN ADULT MEDULLOBLASTOMA

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Relevance. Medulloblastoma (MDB) accounts for only 1-4% of primary brain tumors in adults. Unlike pediatric patients, adults lack standardized chemotherapy protocols and are often treated using pediatric regimens, which exhibit significant toxicity in adult populations. In Belarus, specific chemotherapy regimens exist only for high-risk pediatric patients, leaving adult treatment unstandardized.

Aim: to identify and categorize chemotherapy regimens used in adult medulloblastoma patients in Belarus (1980-2019) and evaluate their impact on survival outcomes.

Materials and methods. A retrospective analysis was conducted using data from the cancer registry of the N.N. Alexandrov National Cancer Centre of Belarus. From 656 patients, 203 adult patients (≥ 18 years) were included. Among them, 33 patients (16.3%) received chemotherapy for primary MDB. Regimens, dosages, drug substitutions, and survival outcomes were extracted. Regimens were categorized into four drug classes: platinum-based, alkylating agents, topoisomerase II inhibitors, and vinca alkaloids. Survival analysis was performed using Kaplan-Meier methods, Spearman correlation, and regression; with the help of PubMed.

Results and their discussion. Among 33 patients receiving chemotherapy, 15 (45.45%) received unchanged regimens, while 18 (54.55%) required drug substitutions due to intolerance, poor somatic condition, or cost. The most common regimen was Cisplatin + Vincristine + Lomustine ($n=5$), followed by Temozolomide monotherapy ($n=4$), and Etoposide + Carboplatin/Cisplatin + Cyclophosphamide + Vincristine ($n=4$). In total, 15 different regimens were documented, confirming no unified approach to chemotherapy existed.

Survival outcomes differed significantly by treatment approach. Patients receiving complex therapy (surgery + radiation + chemotherapy, $n=26$) achieved a median survival of 453 weeks (8.7 years). In contrast, patients receiving surgery + radiation without chemotherapy ($n=87$) had a median survival of only 166 weeks (3.2 years), while those receiving surgery alone ($n=58$) survived only 18 weeks (4.5 months). Chemotherapy showed a significant correlation with 5-year survival (Spearman coefficient 0.191, $p=0.008$). Cox regression confirmed that patients not receiving adjuvant chemotherapy had a 2.1 times higher risk of unfavorable outcome (Exp(B) 2.13 [1.144-3.955], $p=0.017$). Outpatients receiving oral chemotherapy had higher survival than inpatients.

Regarding toxicity, 23 patients (11.3% of the total cohort) died from treatment complications. The high rate of drug substitutions (54.55%) indicates chemotherapy-related toxicity was a significant problem. Age was a major factor: patients under 50 years ($n=146$) had a median survival of 178 weeks, while patients over 50 years ($n=57$) had only 20 weeks.

Conclusions. Chemotherapy significantly improves survival in adult medulloblastoma patients even with non-standardized regimens. Complex therapy (surgery + radiation + chemotherapy) yields the best outcomes (453 weeks median survival). Patients not receiving adjuvant chemotherapy have a 2.1 times higher risk of death. However, the high rate of drug substitutions (54.55%), wide variety of regimens (15 different protocols), and significant treatment-related mortality (11.3%) highlight toxicity concerns when pediatric-derived protocols are applied to adults, especially those over 50 years.