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Clinical and Molecular Parameters for Risk Stratification in Mexican Children with Medulloblastoma

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Background. Clinical, histological, and more recently, molecular factors have been described as important in survival of the patient with medulloblastoma. Best survival results include aggressive chemotherapeutic protocols. More exact risk analysis may differentiate patients who require aggressive treatments from those with low risk who may respond adequately to less aggressive protocols.

Methods. Twenty six patients were included over a 10-year period and were followed for at least 5 years. Personal variables were obtained from their clinical records. Immunochemistry studies were performed on their formalin-fixed paraffin-embedded tissues. Statistical analysis included χ^2 test, odds risk, linear regression models, and Kaplan–Meier survival analysis.

Results. Metastatic disease and chemotherapy with VP16-carboplatin reduce the patient's probability of survival, whereas anaplastic histology increases the probability of death. Global survival and disease-free survival were 66.6 and 45.02%, respectively. Only two patients overexpressed the ERBB2 protein, and no significant difference was found in survival in terms of ERBB2 overexpression.

Conclusions. Risk stratification has become very important in medulloblastoma. We found an increased hazard of death when metastatic disease was present. Gene expression in Mexican children requires a larger sample in order to be analyzed. © 2007 IMSS. Published by Elsevier Inc.

Key Words: Medulloblastoma, Risk stratification, Prognosis, Central nervous system tumors, Pediatric cancer.

Introduction

Medulloblastoma (MDB) represents 20% of all tumors of the central nervous system (CNS) in pediatric patients in Mexico and corresponds to 40% of posterior fossa tumors (1). Patients <3 years of age, partial tumor resection during surgery with 1.5 cm^3 of residual disease, and patients with tumor extension into neuraxis at diagnosis or infiltration of brain stem have been traditionally identified as high-risk patients. Survival rates for these patients have been reported to be as low as 10–40% at 2 years follow-up (2–4). However, recent reports indicate that these clinical variables are an inadequate method for defining disease risk (5–9). Recently, molecular markers have been related with outcome. TrkC correlates with a favorable outcome, whereas C-myc expression. ERBB2 expression (gene at 17q21.1 that encodes the ERRB2 receptor protein tyrosine kinase, a 185 kD type 1 membrane glycoprotein that controls cell growth with similar features to the epidermal growth factor receptor), chromosome 17p loss,[3] or anaplastic histology may identify high-risk patients (10–13).

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