Differential expression of E-cadherin gene in human neuroepithelial tumors

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ABSTRACT. Cadherins are cell-to-cell adhesion molecules that play an important role in the establishment of adherent-type junctions by mediating calcium-dependent cellular interactions. The *CDH1* gene encodes the transmembrane glycoprotein E-cadherin which is important in maintaining homophilic cell-cell adhesion in epithelial tissues. E-cadherin interacts with catenin proteins to maintain tissue architecture. Structural defects or loss of expression of E-cadherin have been reported as a common feature in several human cancer types. This study aimed to evaluate the expression of E-cadherin and their correlation with clinical features in microdissected brain

tumor samples from 81 patients, divided into 62 astrocytic tumors grades I to IV and 19 medulloblastomas, and from 5 white matter non-neoplasic brain tissue samples. E-cadherin (*CDH1*) gene expression was analyzed by quantitative real-time polymerase chain reaction. Mann-Whitney, Kruskal-Wallis, Kaplan-Meir, and log-rank tests were performed for statistical analyses. We observed a decrease in expression among pathological grades of neuroepithelial tumors. Non-neoplasic brain tissue showed a higher expression level of *CDH1* gene than did neuroepithelial tumors. Expression of E-cadherin gene was higher in astrocytic than embryonal tumors ($P = 0.0168$). Low-grade malignancy astrocytomas (grades I-II) showed higher *CDH1* expression than did high-grade malignancy astrocytomas (grades III-IV) and medulloblastomas ($P < 0.0001$). Non-neoplasic brain tissue showed a higher expression level of *CDH1* gene than grade I malignancy astrocytomas, considered as benign tumors ($P = 0.0473$). These results suggest that a decrease in E-cadherin gene expression level in high-grade neuroepithelial tumors may be a hallmark of malignancy in dedifferentiated tumors and that it may be possibly correlated with their progression and dissemination.

Key words: Cancer; Neuroepithelial tumors; *CDH1* expression; Real-time polymerase chain reaction