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Relationship between magnetic resonance imaging and molecular pathology in patients with glioblastoma multiforme.

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Abstract

BACKGROUND: Glioblastoma multiforme (GBM) is the most common and lethal primary brain tumor in adults. Magnetic resonance imaging (MRI) is routinely used in the diagnosis, characterization and clinical management of GBM. The diagnosis and treatment of GBM is largely guided by histopathology and immunohistochemistry. This study aimed to identify the relationship between magnetic resonance features and molecular pathology of GBM.

METHODS: MRI images of 43 glioblastoma patients were collected. Four imaging features, degree of edema, contrast tumor enhanced/T2 ratio, multiple lesions and tumor across the midline, were selected to identify their relationship with P53, Ki-67 and O(6)-methylguanine-DNA methyltransferase (MGMT) expression in patients with GBM. The relationship between imaging features and molecular pathology was studied by chi-square test using the software SPSS 13.0.

RESULTS: High expression of P53 was found correlated with low contrast tumor enhanced/T2 ratio, low expression of Ki-67 was correlated with multiple lesions and high expression of Ki-67 may be related with tumor across the midline, low expression of MGMT was correlated with edema.

CONCLUSION: Some MRI features such as the degree of edema, contrast tumor enhanced/T2 ratio, multiple lesions and tumor crossing the midline are correlated with P53, Ki-67 and MGMT of GBM.

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