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IDH1 mutation is associated with improved resection rates, progression-free survival and overall survival in patients with anaplastic astrocytomas

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Abstract

Purpose: The introduction of molecular markers in to the diagnosis of gliomas has changed the therapeutic approach to this tumors. The aim of this study was to examine the impact of surgery on anaplastic astrocytomas (AA), which has not previously been fully elucidated.

Methods: This was a retrospective study involving a total of 143 patients who underwent surgery for primary AA in our department between 1995 and 2020.

Results: Total tumor resection was achieved more often in patients with IDH-mutant tumors (41.09%) than in patients with IDH-wildtype tumors (30.76%). The median PFS was 1876 days for patients with IDH1 mutations and 238 days for patients with IDH-wildtype tumors. The 1-, 3-, 5- and 10-year PFS were longer in patients with total tumor resection and IDH-mutant AA (86.2%, 69%, 65.5% and 44.8%, respectively) than in patients with subtotal tumor resection and IDH-mutant AA (83.3%, 55.6%, 41.7% and 25%, respectively) and even longer compared to all IDH-wildtype tumors. The median OS was 2472 days for patients with IDH1 mutations and 434 days for patients with IDH-wildtype tumors. The 3-, 5- and 10-year OS times were longer in patients with total tumor resection and IDH-mutant AA (89.2%, 85.2% and 72.6%, respectively) than in patients with subtotal tumor resection and IDH-mutant AA (85.9%, 73.7% and 52.6%, respectively) and were even longer compared to all IDH-wildtype tumors.

Conclusion: Total tumor resection is more common with IDH-mutant AA than with IDH-wildtype tumors. Patients with IDH-mutant AA had significantly better PFS and OS after total tumor resection than after subtotal tumor resection and biopsy.

Keywords: Anaplastic astrocytomas; IDH mutation; Overall survival; Progression-free survival; Resection rates; Surgery.