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Postsurgical Approaches in Low-Grade Oligodendroglioma: Is Chemotherapy Alone Still an Option?

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BACKGROUND: Patients with low-grade gliomas (LGGs) with isocitrate dehydrogenase (*IDH*) mutation (mut) and 1p19q codeletion (codel) have a median overall survival of longer than 10 years. The aim of this study is to assess the role of postsurgical treatments.

SUBJECTS, MATERIALS, AND METHODS: We evaluated patients with LGGs with *IDH* mut and 1p19q codel; *IDH1/2* was performed by immunohistochemistry and quantitative polymerase chain reaction. In all wild-type cases, we performed next-generation sequencing. 1p19 codel analysis was performed by fluorescence in situ hybridization.

RESULTS: Among the 679 patients, 93 with LGGs with IDH mutation and 1p19q codel were included. Median follow-up (FU) was 96.1 months. Eighty-four patients (90.3%) were high risk according to Radiation Therapy Oncology Group criteria. After surgery, 50 patients (53.7%) received only FU, 17 (18.3%) chemotherapy (CT), and 26 (30.1%) radiotherapy (RT) with (RT + CT, 8 patients, 8.6%) or without (RT, 18 patients, 19.4%) chemotherapy. Median progression-free survival (mPFS) was 46.3 months, 50.8 months, 103.6 months, and 120.2 months in patients with FU alone, with CT alone, with RT alone, or with RT + CT, respectively. Median PFS was

significantly longer in patients who received postsurgical treatment (79.5 months, 95% confidence interval [CI]: 66.4-92.7) than patients who received FU (46.3 months, 95% CI: 36.0-56.5). Moreover, mPFS was longer in patients who received RT (alone or in combination with CT, *n* = 26, 113.8 months, 95% CI: 57.2-170.5) than those who did not (*n* = 67, 47.3 months, 95% CI: 36.4-58.2). In particular, temozolomide alone did not improve PFS with respect to FU.

CONCLUSION: RT with or without chemotherapy, but not temozolomide alone, could extend PFS in IDH mut 1p19q codel LGGs.

IMPLICATIONS FOR PRACTICE: Low-grade gliomas with high-risk features, defined according to Radiation Therapy Oncology Group criteria, receive radiotherapy and/or chemotherapy as postsurgical treatments. Radiotherapy, however, has serious long-term effects (cognitive impairment), which are to be taken into account in these young patients. Moreover, low-grade gliomas with isocitrate dehydrogenase mutation and 1p19q codeletion (oligodendrogliomas) have an extremely long survival and a better prognosis. This study suggests that postsurgical treatments prolong the time before tumor progression in patients with good prognosis as well as those with oligodendroglioma. Moreover, temozolomide alone might not be effective in prolonging progression-free survival.

KEYWORDS: 1p19q codeletion; Isocitrate dehydrogenase mutation; Low-grade glioma; Next-generation sequencing; Postsurgical treatment

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