Comparison of adjuvant radiation therapy alone and chemotherapy alone for low-grade gliomas without surgical resection.

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Abstract
BACKGROUND: The combined use of chemotherapy (CT) and radiotherapy (RT) is becoming increasingly common in the treatment of surgical resected low-grade gliomas (LGGs). However, whether RT or CT is associated with improved overall survival (OS) for low-grade gliomas without surgical resection is less clear.

METHODS: The US National Cancer Data Base was used to identify patients with histologically confirmed, WHO grade 2 gliomas who received either RT alone or CT alone but did not undergo surgical resection from 2004 to 2013. OS was evaluated by Kaplan-Meier analysis,
RESULTS: In total, 1126 patients with WHO grade 2 gliomas were included, among whom 715 (63.5%) received RT alone and 411 (36.5%) CT alone. CT alone was associated with significantly longer OS when compared to RT alone on multivariable analysis and propensity-score matched analysis. Age <60 years, time from diagnosis to start of adjuvant therapy (RT or CT) >30 days were also associated with longer OS. In subgroup analysis based on age, the survival advantage of CT alone over RT alone persisted in both the age <60 and age >60 subgroups. In subgroup analyses based on histology of glioma, CT alone was associated with longer OS in the astrocytomas and oligodendrogliomas group, but not in the oligoastrocytomas group.

CONCLUSIONS: Our results suggest that CT alone was independently associated with longer OS when compared with RT alone in LGGs patients without surgical resection. This survival advantage persisted in both age subgroups but varied by histology of gliomas.

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