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Congress of Neurological Surgeons systematic review and evidence-based guidelines for the role of surgery in the management of patients with diffuse low grade glioma: update

Navid Redjal^{1 2}, Mateo Ziu³, Serah Choi⁴, Patrick R Ng⁵, Brain V Nahed⁶, Jeffrey J Olson⁷

Affiliations

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Abstract

Target population Adults with imaging suggestive of a WHO grade II diffuse gliomas (oligodendrogliomas or astrocytomas)
Question In adults with imaging suggestive of a WHO grade II diffuse gliomas (oligodendrogliomas or astrocytomas), does surgical resection improve overall survival compared to observation or biopsy?
Updated Recommendation from the Prior Version of These Guidelines: Level III: In adults with imaging suggestive of a WHO grade II diffuse gliomas (oligodendrogliomas or astrocytomas), surgical resection is suggested over observation or biopsy to improve overall survival.
Question Q2 In adults with imaging suggestive of a WHO grade II diffuse gliomas (oligodendrogliomas or astrocytomas), does maximal surgical resection improve progression free survival (PFS) and overall survival (OS) compared to subtotal resection/biopsy?
Unchanged Recommendations from the Prior Version of These Guidelines: Level II It is recommended that GTR or STR be accomplished instead of biopsy alone when safe and feasible so as to decrease the frequency of tumor progression recognizing that the rate of progression after GTR is fairly high. Level III Greater extent of resection can improve OS in WHO grade II diffuse gliomas patients.
New Recommendations: Level III: It is suggested that extent of resection be maximized as is safely possible for IDH mutant and IDHwt WHO grade II diffuse gliomas. to improve PFS and OS. Level III: There is insufficient evidence that greater extent of resection of 1p19q codeleted oligodendrogliomas (WHO grade II diffuse gliomas) improves OS
Question Q3 In adults with imaging suggestive of a WHO grade II diffuse gliomas (oligodendrogliomas or astrocytomas), does the addition of intraoperative MRI and/or intraoperative ultrasound during surgery improve extent of resection?
Unchanged Recommendation from the Prior Version of These Guidelines: Level III: The use of intraoperative MRI is suggested to increase the extent of resection for adults with WHO grade II diffuse glioma.
New Recommendation: Level III: The use of intraoperative ultrasound is suggested to increase the extent of resection compared to conventional surgery for adults with WHO grade II diffuse glioma.
Question 4 In adults with imaging suggestive of a WHO grade II diffuse glioma (oligodendrogliomas or astrocytomas) with seizures, does maximal surgical resection improve seizure control compared to observation or subtotal resection/biopsy?
Updated Recommendation from the Prior Version of These Guidelines: Level III: In adults with imaging consistent with a WHO Grade II diffuse glioma who present with seizure activity, surgical resection of greater than 90% of the lesion, when it can be accomplished safely, is suggested over observation or lesser extent of resection/biopsy to improve seizure

control. New Questions and Recommendations

Question 5 In adults with imaging suggestive of a WHO grade II diffuse glioma (oligodendrogliomas or astrocytomas), does use of intraoperative fluorescent guided surgery improve extent of resection? **Recommendation Level III:** Intraoperative fluorescent guided surgery with 5-ALA is not suggested to improve the extent of resection for WHO grade II gliomas.

Question 6 In adults with imaging suggestive of a WHO grade II diffuse glioma (oligodendrogliomas or astrocytomas) in eloquent brain cortex, does awake craniotomy or other methods of intraoperative mapping increase extent of resection compared to conventional surgery without these techniques? **Recommendation Level III:** It is suggested that awake craniotomy and other methods of intraoperative mapping can be used to increase the extent of resection for adults with WHO grade II diffuse glioma.

Question 7 In adults with imaging suggestive of a WHO grade II diffuse glioma (oligodendrogliomas or astrocytomas) in eloquent brain cortex, does use of advanced preoperative imaging modalities in the form of fMRI and/or DTI decrease surgical morbidity? **Recommendation Level III:** The use of functional MRI and DTI related modalities are suggested to decrease surgical morbidity in adults with WHO grade II diffuse glioma.

Keywords: Astrocytoma; Biopsy; Diffuse low grade glioma; Oligodendroglioma; Surgery.

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