

Antiepileptic Drug prophylaxis in brain tumor

Antiepileptic drugs (AEDs) are often administered prophylactically following **brain tumor** resection. With conflicting evidence and unestablished guidelines, however, the nature of this practice among tumor surgeons is unknown.

It is currently unclear whether antiepileptic drugs (AEDs) should be routinely administered to patients with brain tumors who have never had a seizure.

The foreseeable benefits of this strategy must be balanced against potential adverse effects and interactions with critical medications such as chemotherapeutic agents and corticosteroids.

Wide knowledge and practice gaps exist regarding the frequency, duration, and setting of AED prophylaxis for seizure-naïve patients undergoing brain tumor resection. Acceptance of universal practice guidelines on this topic is unlikely until higher-level evidence supporting or refuting the value of modern seizure prophylaxis is demonstrated ¹⁾.

Metaanalysis

Multiple disparate metaanalyses have been published on this topic but have not been applied into clinical practice, and, instead, personal preference frequently determines practice patterns in this area of management.

2015

A meta-analysis of randomized trials was conducted to estimate the effectiveness of seizure prophylaxis in people with brain tumors.

A range of electronic databases were searched (1966-2014): MEDLINE, the Cochrane Library Database, EMBASE, CINAHL, Web of Science and the Chinese Biomedical Database (CBM) without language restrictions. Two independent reviewers assessed trials for eligibility and quality, and meta-analysis was performed using the STATA 12.0 software. Integrated Odd Ratio (OR) with its corresponding 95% confidence interval (95%CI) was calculated.

Six RCTs were included with a total of 547 patients with brain tumors. The meta-analysis results revealed that patients with brain tumors who received prophylactic antiepileptic interventions did not have significantly lower epilepsy incidence than those in controlled groups (OR=0.939, 95%CI=0.609-1.448, $z=0.29$, $P=0.775$). Sensitivity analysis suggested the statistical results were robust. No publication bias was detected in this meta-analysis ($P>0.05$).

Although some past studies indicated AEDs can be used in patients with brain tumors to relieve epilepsy, present integrated evidences cannot show in unequivocal terms that brain tumor patients can benefit from seizure prophylaxis ²⁾.

2014

Six meta-analyses published between 1996 and 2011 were included.

The Quality of Reporting of Meta-analyses and Oxman-Guyatt methodological quality assessment tools were used to score these meta-analyses, and the Jadad decision algorithm was applied to determine the highest-quality meta-analysis. According to this analysis, 2 metaanalyses were deemed to be the current best available evidence, both of which conclude that prophylactic treatment does not improve seizure control in these patients. Therefore, this management strategy should not be routinely used ³⁾.

Conclusions:

Should not be used in newly diagnosed brain tumors.

After craniotomy can be used and taper 1 week postop if there has been no seizure.

Case series

2015

650 patients > 18 years of age who underwent brain tumor surgery and included a number of clinical data. Logistic regressions were performed to determine the effect sizes of seizure-related risk factors and to develop prognostic scores for the occurrence of preoperative and early postoperative seizures. RESULTS: A total of 492 patients (334 gliomas) were eligible for logistic regression for preoperative seizures, and 338 patients for early postoperative seizures. Age \leq 60 years (odds ratio [OR] = 1.66, $p = 0.020$), grades I and II glioma (OR = 4.00, $p = 0.0002$), total tumor/edema volume \leq 64cm(3) (OR = 2.18, $p = 0.0003$), and frontal location (OR = 2.28, $p = 0.034$) demonstrated an increased risk for preoperative seizures. Isocitrate-dehydrogenase mutations (OR = 2.52, $p = 0.026$) were an independent risk factor in the glioma subgroup. Age \geq 60 years (OR = 3.32, $p = 0.041$), total tumor/edema volume \leq 64cm(3) (OR = 3.17, $p = 0.034$), complete resection (OR = 15.50, $p = 0.0009$), diencephalic location (OR = 12.2, $p = 0.013$), and high-grade tumors (OR = 5.67, $p = 0.013$) were significant risk factors for surgery-related seizures. Antiepileptics (OR = 1.20, $p = 0.60$) did not affect seizure occurrence. For seizure occurrence, patients could be stratified into 3 prognostic preoperative and into 2 prognostic early postoperative groups. INTERPRETATION: Based on the developed prognostic scores, seizure prophylaxis should be considered in high-risk patients and patient stratification for prospective studies may be feasible in the future ⁴⁾.

see [Antiepileptic drug prophylaxis in glioblastoma](#).

1)

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