Extent of resection associated with likelihood of survival in glioblastoma

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The extent of resection in patients with glioblastoma, an aggressive and often fatal brain tumor, was associated with the likelihood of survival and disease progression, according to a new study published online by *JAMA Oncology*.

Glioblastoma multiforme (GBM) is the most common malignant brain tumor in adults. The optimal combination of medical, surgical and radiation therapy has not been defined. The surgical component can range from minimally invasive biopsy to a craniotomy (opening of the skull) with the goal of gross total resection (GTR). But not every patient receives an aggressive resection. The anatomy of the brain and concern about injury to important surrounding structures with resulting impairment mean the goal of GTR can be difficult to attain.

Michael Glantz, M.D., of the Penn State Milton S. Hershey Medical Center, Hershey, Penn., and coauthors compared GTR with subtotal resection (STR) or biopsy with overall and progression-free survival in a meta-analysis of 37 studies (41,117 patients).

The study reports a lower relative risk of death at one and two years. The authors suggest GTR may increase the likelihood of 1-year survival compared with STR by about 61 percent and may increase the likelihood of two-year survival by about 19 percent. The one-year risk for mortality for STR compared with biopsy was reduced and the risk for mortality was less for any resection compared with biopsy at years one and two, according to the results.

Overall, a reduction in mortality was associated with an increasing extent of resection. GTR also was associated with decreased disease progression over one year, according to the results.

The authors note the results should be interpreted in the context of important caveats, including that GTR and STR groups differed on a number of factors and that the extent of tumor resection was defined by authors in studies, often imprecisely.

"Although the available studies are retrospective and mostly carry a high risk for bias and confounding, an overwhelming consistency of the evidence (including three class 2 studies) supports the superiority of GTR over STR and biopsy. ... Therefore, when clinically feasible, the body of literature favors GTR in all patients with newly diagnosed GBM," the authors conclude.

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