

Survival statistics show hard fight when malignant brain tumors appear at multiple sites

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LOS ANGELES (Embargoed until 10 a.m. EDT on Aug. 24, 2012) – When aggressive, malignant tumors appear in more than one location in the brain, patient survival tends to be significantly shorter than when the disease starts as a single tumor, even though patients in both groups undergo virtually identical treatments, according to research at Cedars-Sinai Medical Center's Maxine Dunitz Neurosurgical Research Institute.

"We've known that certain independent factors, such as age at diagnosis, amount of [residual tumor](#) after surgery, and the patient's functional status are useful in predicting outcomes in patients with glioblastoma multiforme, but multifocal disease at time of onset has rarely been examined in this context. Two small previous studies were contradictory. Our study appears to confirm observations that disease in patients with more than one lesion is particularly challenging and that these patients tend to have worse outcomes. Matched survival analysis demonstrated that multifocal disease is a strong and negative independent prognostic factor," said Chirag G. Patil, MD, director of the Center for Neurosurgical Outcomes Research in the Department of Neurosurgery at Cedars-Sinai Medical Center.

The researchers compared outcomes of 47 patients who had multiple tumors with 47 who had a single lesion, matching them for age, functional impairment scores, extent of [tumor](#) removal and radiation therapy and chemotherapy. Median overall survival for the multifocal

group was six months, compared to 11 months for those in the single tumor group.

Patil, first author of an article in the Aug. 24 [Journal of Neurosurgery](#), noted that a comparatively large percentage of tumors in the multifocal group appeared to be "treatment resistant," continuing to grow even after patients underwent radiation therapy.

Unlike earlier studies, nearly all of these patients were diagnosed and treated during the "temozolomide era," beginning in 2005 when this drug joined [radiation therapy](#) as the mainstay of glioblastoma treatment. Even so, 11 of the 47 patients in the multifocal group did not receive temozolomide because, the researchers suggest, disease progression is so quick that many patients are unable to start or complete standard therapies.

Patil said researchers believe cells of multifocal tumors may have an increased ability to migrate in the brain and invade normal tissue, leading to more rapid patient decline; recent advances in therapies for glioblastomas have not improved survival in these patients.

"A thorough investigation of the unique biology of these tumors and their invasive and migratory mechanisms is needed so we may develop a new generation of targeted therapies," said Patil, who received a Cedars-Sinai grant that will fund the study of genetic and biological differences between single tumors and those originating at multiple sites.

Glioblastoma multiforme is the most common and aggressive malignant tumor occurring in the brain, and patients typically survive 15 months when undergoing standard treatments. Other single-tumor patients in the larger pool from which those in this study were derived, had median survival of 16 months. The shorter 11-month survival of study patients is believed to result from the matching process: Because many of those

with multiple-site tumors could not undergo complete [tumor removal](#), their corresponding single-site patients had tumors with locations or characteristics that made them appropriate for biopsy only.

More information: *Journal of Neurosurgery*, Aug. 24, 2012

Provided by Cedars-Sinai Medical Center

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