Gauging brain cancer survival time may get easier, study says

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People with overactive version of a specific enzyme live less than half as long, research suggests.

(HealthDay)—Life expectancy of people with aggressive brain cancer may be easier to determine with a new method under development at the University of Alabama at Birmingham, researchers say.

The UAB researchers found that patients with an overactive version of a specific enzyme live less than half as long as those with a less active version. This overactive enzyme can help predict how resistant the brain cancer will be to chemotherapy, and also help doctors arrive at treatment recommendations, the researchers said.

In conducting the study, published April 10 in the journal *PLoS ONE*, the researchers examined tumors from 84 patients with a form of brain cancer known as glioblastoma multiforme (GBM). This deadly and

aggressive cancer quickly becomes resistant to available treatments. With a combination of surgery, radiation and the chemotherapy drug temozolomide, patients with this form of brain cancer typically survive an average of 12 to 15 months.

The study revealed, however, that 25 percent to 30 percent of the patients whose tumor cells had an overactive version of an enzyme known as cytochrome c oxidase (CcO) live less than half as long as patients with a less active version.

"Our study reports for the first time the role of [CcO] as a prognostic marker in GBM patients' tumor tissues," study leader Corinne Griguer, an associate professor of neurosurgery in the UAB School of Medicine, said in a university news release. "High CcO activity comes with a 25-fold increase in risk of death."

The researchers said patients with the overactive enzyme lived for an average of six months. Those with a less active version lived for 14 months. Examination of a second group of glioblastoma multiforme patients from Europe confirmed their findings, the researchers said.

They concluded that tumor cells with increased CcO activity generate more energy and are more resistant to chemotherapy. The overactive enzyme also interferes with a protein, called cytochrome c, that triggers the self-destruction of cells infected or damaged by diseases such as cancer. When this happens, cancer cells can survive an abnormally long time.

But the researchers aren't stopping with this finding. "Giving some GBM patients bad news about their prognoses without also giving them better treatment options doesn't seem right to me," said Griguer, noting that the team is experimenting with another enzyme to try to predict patients' survival benefit from the chemo drug temozolomide.

"Our ultimate goal is to use the same mechanism that predicts shorter survival in some to design drugs that target cells not killed right away by chemotherapy," she said.

More information: The U.S. National Institutes of Health provides more information on brain cancer.