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Research shows new prognosis tool for deadly brain cancer

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A diagnosis of glioblastoma multiforme (GBM) is generally a death sentence, but new research from the University of Wisconsin-Madison lab of Dr. John Kuo shows that at least one subtype is associated with a longer life expectancy. This discovery could help with better patient prognoses and lead to targeted drug treatments for GBM subtypes.

People diagnosed with GBM live on average less than 15 months after diagnosis, even after undergoing aggressive surgery, radiation and chemotherapy. But not all GBM cancers are the same, and Kuo's study outlines a new method for sub-typing GBM tumor lines by the proteins they express.

The paper, published early online by the journal Clinical Cancer Research, shows that people who have a subtype of GBM that expresses a particular protein, known for short as CNP, may have a less aggressive subtype of cancer. The survival rate for those with the subtype is sometimes measured in years, not months.

The group isolated tumor lines from five human patients and grew them in the lab, and then looked for biomarkers specific to each line. They later transplanted the tissue into the brains of mice with compromised immune systems.

The researchers also looked for the CNP subtype in samples from 115 human patients and then looked at data on survival rates for those patients. They found that some patients with the protein lived much

longer, as long as 10 years after diagnosis.

"We found that this protein was correlated with a less invasive type of cancer in mice, and when we looked at samples of human tumors, remarkably, we also found that the less invasive tumors expressed the CNP protein," says Kuo, assistant professor of neurological surgery and human oncology at UW School of Medicine and Public Health.

Kuo says the sub-typing could lead to more accurate prognosis for patients with a GBM diagnosis. Currently, most sub-typing of GBM tumors is based on mRNA, which can be difficult to do. But Kuo says that most hospitals can run assays for proteins, making the test simpler and easier.

In addition, says Michael Zorniak, Kuo's graduate student and lead author on the paper, the new way of typing tumors could lead to designer chemotherapy for GBM.

"As we understand how tumors are differentiated, we can start devising personalized therapies that are targeted to the specific sub-type of cancer," he says. "This can help us gain leverage against this difficult cancer."

For example, researchers could create monoclonal antibodies that bind only to the CNP type of cancer, in the way that some subtypes of breast cancer are currently targeted.

More information: The research will be published in the July issue of *Clinical Cancer Research*, a journal of the American Association for Cancer Research, and is available on-line here: clincancerres.aacrjournals.org … 078-0432.CCR-12-0339