

High blood sugar could mean lower risk of one type of brain tumor

June 20 2016, by Misti Crane

In a surprising twist, benign brain tumors that have previously been tied to obesity and diabetes are less likely to emerge in those with high blood sugar, new research has found.

The discovery could shed light on the development of meningiomas, tumors arising from the brain and spinal cord that are usually not cancerous but that can require risky surgery and affect a patient's quality of life.

Because previous research had established that the slow-growing tumors are more common among people who are obese and those who have diabetes, researchers led by The Ohio State University's Judith Schwartzbaum set out to look for a relationship between meningiomas and blood markers, including glucose.

After all, [high blood sugar](#) is a component of diabetes and a precursor to its development. Furthermore, Type 2 diabetes and obesity are closely linked.

But when they compared blood tests in a group of more than 41,000 Swedes with meningioma diagnoses 15 or fewer years later, they found that high [blood sugar](#), particularly in women, actually meant the person was less likely to face a brain tumor diagnosis.

"It's so unexpected. Usually diabetes and high blood sugar raises the risk of cancer, and it's the opposite here," said Schwartzbaum, an associate

professor of epidemiology and a researcher in Ohio State's Comprehensive Cancer Center. The work appears this month in the *British Journal of Cancer*.

"It should lead to a better understanding of what's causing these tumors and what can be done to prevent them."

Though meningiomas are rarely cancerous, they behave in a similar way, leading scientists to wonder if some relationships between possible risk factors and tumor development would be similar, Schwartzbaum said.

The researchers, looking at data collected from 1985 to 2012, identified 296 cases of meningioma, more than 61 percent of them in women.

Women with the highest fasting blood sugar were less than half as likely as those with the lowest readings to develop a tumor.

The relationship was not statistically significant when researchers looked at men's fasting sugar readings and tumor development.

But when they compared the less-reliable non-fasting sugar readings (those taken without a period of no food or drink that could influence the results), they found that both men and women with high blood sugar had a lower likelihood of meningioma diagnosis.

A diabetes diagnosis before meningioma also appeared to decrease the risk of this tumor, although Schwartzbaum said the data likely had incomplete information on diabetes.

The results could lead to a clearer explanation of how the tumors develop and grow and could potentially start researchers down the road to improved diagnostic techniques, Schwartzbaum said.

"These tumors take years to develop, and an earlier diagnosis would certainly lead to better surgical outcomes," she said.

About seven in 100,000 U.S. residents receive a meningioma diagnosis annually. Meningiomas can cause headaches, weakness in the limbs, seizures, vision problems and personality changes. They represent about a third of all tumors that originate in the brain, according to the American Brain Tumor Association.

Possible explanations for the relationship could be found by closer examination of the role of sex hormones and the interplay between glucose levels and those hormones, Schwartzbaum said. It's also possible that sugar levels dip during early [tumor development](#) because the [tumor](#) is using glucose to grow, she said.

"There are so many things still to be learned, but I am glad that people are now serious about studying these so-called benign tumors," Schwartzbaum said.

Because information in the database is limited, the researchers weren't able to account for all the confounding factors that could have contributed to their results, including body mass index, blood pressure and hormone levels.

Provided by The Ohio State University

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