The New York Times
Opinionator

SEPTEMBER 25, 2012, 9:52 PM

Is Alzheimer's Type 3 Diabetes?

By MARK BITTMAN

Just in case you need another reason to cut back on junk food, it now turns out that Alzheimer's could well be a form of diet-induced diabetes. That's the bad news. The good news is that laying off soda, doughnuts, processed meats and fries could allow you to keep your mind intact until your body fails you.

We used to think there were two types of diabetes: the type you're born with (Type 1) and the type you "get." That's called Type 2, and was called "adult onset" until it started ravaging kids. Type 2 is brought about by a combination of factors, including overeating, American-style.

The idea that Alzheimer's might be Type 3 diabetes has been around since 2005, but the connection between poor diet and Alzheimer's is becoming more convincing, as summarized in a cover story in New Scientist entitled "Food for Thought: What You Eat May Be Killing Your Brain." (The graphic - a chocolate brain with a huge piece missing - is creepy. But for the record: chocolate is not the enemy.)

The studies [1] are increasingly persuasive, and unsurprising when you understand the role of insulin in the body. So, a brief lesson.

We all need insulin: in non-diabetics, it's released to help cells take in the blood sugar (glucose) they need for energy. But the cells can hold only so much; excess sugar is first stored as glycogen, and - when there's enough of that - as fat. (Blood sugar doesn't come only from sugar, but from carbohydrates of all kinds; easily digested carbohydrates flood the bloodstream with sugar.) Insulin not only keeps the blood vessels that supply the brain healthy, it also encourages the brain's neurons to absorb glucose, and allows those neurons to change and become stronger. Low insulin levels in the brain mean reduced brain function.

Type 1 diabetes, in which the immune system destroys insulin-producing cells in the pancreas, accounts for about 10 percent of all cases. Type 2 diabetes is chronic or environmental, and it's especially prevalent in populations that overconsume hyperprocessed foods, like ours. It's tragically, increasingly common - about a third of Americans have diabetes or pre-diabetes - and treatable but incurable. It causes your cells to fail to retrieve glucose from the blood, either because your pancreas isn't producing enough insulin or the body's cells ignore that insulin. (That's "insulin resistance"; stand by.)

Put as simply as possible (in case your eyes glaze over as quickly as mine when it comes to high school biology), insulin "calls" your cells, asking them to take glucose from the bloodstream: "Yoo-hoo. Pick this stuff up!"

When the insulin calls altogether too often - as it does when you drink sugar-sweetened beverages and repeatedly eat junk food - the cells are overwhelmed, and say, "Leave me alone." They become resistant. This makes the insulin even more insistent and, to make matters worse, all those elevated insulin levels are bad for your blood vessels.

Diabetes causes complications too numerous to mention, but they include heart disease, which remains our No. 1 killer. And when the cells in your brain become insulin-resistant, you start to lose memory and become disoriented. You even might lose aspects of your personality.

In short, it appears, you develop Alzheimer's.

A neuropathologist named Alois Alzheimer noticed, over a century ago, that an odd form of protein was taking the place of normal brain cells. How those beta amyloid plaques (as they're called) get there has been a mystery. What's becoming clear, however, is that a lack of insulin - or insulin resistance - not only impairs cognition but seems to be implicated in the formation of those plaques.

Suzanne de la Monte, a neuropathologist at Brown University, has been working on these phenomena in humans and rats. When she blocked the path of insulin to rats' brains, their neurons deteriorated, they became physically disoriented and their brains showed all the signs of Alzheimer's. The fact that Alzheimer's can be associated with low levels of insulin in the brain is the reason why increasing numbers of researchers have taken to calling it Type 3 diabetes, or diabetes of the brain.[2]

Let's connect the dots: We know that the American diet is a fast track not only to obesity but to Type 2 diabetes and other preventable, non-communicable diseases, which now account for more deaths worldwide than all other causes combined.

We also already know that people with diabetes are at least twice as likely to get Alzheimer's, and that obesity alone increases the risk of impaired brain function.

What's new is the thought that while diabetes doesn't "cause" Alzheimer's, they have the same root: an over consumption of those "foods" that mess with insulin's many roles. (Genetics have an effect on susceptibility, as they appear to with all environmental diseases.) "Sugar is clearly implicated," says Dr. de la Monte, "but there could be other factors as well, including nitrates in food."

If the rate of Alzheimer's rises in lockstep with Type 2 diabetes, which has nearly tripled in the United States in the last 40 years, we will shortly see a devastatingly high percentage of our population with not only failing bodies but brains. Even for the lucky ones this is terrible news, because 5.4 million Americans (nearly 2 percent, for those keeping score at

home) have the disease, the care for which - along with other dementias - will cost around $200 billion this year.

Gee. That's more than the $150 billion we've been saying we spend annually on obesity-related illnesses. So the financial cost of the obesity pandemic just more than doubled. More than 115 million new cases of Alzheimer's are projected around the world in the next 40 years, and the cost is expected to rise to more than a trillion of today's dollars. (Why bother to count? $350 billion is bad enough.)

The link between diet and dementia negates our notion of Alzheimer's as a condition that befalls us by chance. Adopting a sane diet, a diet contrary to the standard American diet (which I like to refer to as SAD), would appear to give you a far better shot at avoiding diabetes in all of its forms, along with its dreaded complications. There are, as usual, arguments to be made for enlisting government help in that struggle, but for now, put down that soda!

1. NIH: Relative Intake of Macronutrients Impacts Risk of Mild Cognitive Impairment or Dementia and The Whitehall II Cohort Study; Rhode Island Hospital: A Link Between Brain Insulin Resistance and Neuronal Stress in Worsening Alzheimer's Disease

2. Here is a fantastic and detailed summary by Dr. de la Monte: Alzheimer's: Diabetes of the Brain?

Copyright 2012 The New York Times Company | Privacy Policy | NYTimes.com 620 Eighth Avenue New York, NY 10018