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## Type III diabetes: A misnomer for dementia

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Diabetes mellitus (DM) is a disease of the peripheral organs while diabetes insipidus (DI) is a disease of the brain. Both forms of diabetes are characterized by excess levels of blood sugar or glucose. Whereas the former is due to insulin resistance or insufficiency the latter is due to insufficiency of hypophyseal anti-diuretic hormone (ADH). But the causes underlying the accumulation of glucose in circulation are different for DM and DI. While type-1 diabetes (T1D) is due to autoimmune destruction of insulin-producing pancreatic islets of Langerhans (IL), type-2 diabetes (T2D) is a lifestyle disease due to exhaustion of IL to produce insulin in response to hyperglycemia. Whereas glucose fuel unavailability in the mitochondria leads to deficit of energy production in the form of ATP, its accumulation in blood leads to complications due to inflammatory damage to blood vessels. The brain uses glucose as a primary source of energy. Cognitive function becomes impaired when blood glucose drops to low levels, and severe hypoglycemia may cause neuronal damage. Recently, Alzheimer's disease (AD) has been hypothesized to be type-3 Diabetes (T3D), presumably caused by insulin resistance in the brain, an organ absolutely dependent upon glucose as fuel for ATP biosynthesis. This can create a dangerous spiral, in which a hypoglycemic event caused by T2D can lead to mental deterioration and vice versa. If the brain is starved of energy, it is possible that neurological problems like dementia and Alzheimer's disease are more likely to develop. It is found that clinically significant hypoglycemia is associated with a two-fold increased risk for developing dementia and likewise patients with dementia were more likely to experience a severe hypoglycemic event with brain damage in the cerebral cortex and hippocampus.

### Biography

Aanchal Sareen has completed her higher education from India in 2014 and presently pursuing MD in General Medicine from Ukraine. Her research was published in International Medical Student's Conference 2017 Krakow, Poland (pharmacy and internal medicine fields). She also has been an active Member at Uzhhorod Medical Students Conference, Ukraine 2017.

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