The Risk of Late-Onset Alzheimer's Dementia (Load) and Diabetes: Correlation and Impact

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The main feature of diabetes, a prevalent chronic metabolic disease, is elevated blood sugar levels brought on by hypoinsulinism or insulin resistance [1]. The frequency of diabetes has been steadily increasing in recent years [2]. Chronically high levels of blood sugar can cause major health concerns and a major decline in life quality by causing important damage to organs like the heart, kidneys, neurons, blood vessels, and retina to fail or degenerate [3]. According to experimental researches, excessive blood sugar produces reactive oxygen species, which lead to brain inflammation [4,5]. Additionally, it causes a dramatic decrease in rat brain neurons, cell death of hippocampal neurons, and pathological alterations in the brain, all of which have an impact on cognitive processes and eventually result in dementia and cognitive deficits [6-9].

A neurological disease called dementia severely impairs a person's capacity to lead a normal life [10]. Dementia is more likely to occur in older people, and diabetes makes nerve and blood vessel damage worse, which increases the likelihood of dementia [11-13].

Dementia may result from type 2 diabetes for a number of causes. Diabetes effects on the heart are one factor, since heart and brain health are intertwined [14]. Dementia can result from strokes, which are linked to heart disease and high blood pressure [15,16]. Strokes, however, don't seem to be the whole solution because some research shown that diabetes raised the chance of dementia even in cases when strokes were prevented [17]. Another aspect has to do with the frequent hypoglycemic episodes that accompany diabetes. Tight blood sugar management can result in hypoglycemia, dementia, and memory loss even if it has been shown to lower the long-term risks of heart disease and strokes [18]. This is probably because low blood sugar is known to harm the hippocampus, which is the brain's memory center [19]. The theory that hyperglycemia causes Alzheimer's disease directly is one of the most interesting possibilities. Because Alzheimer's and diabetes have many molecular and cellular characteristics, Alzheimer's disease has even been referred to as "type 3 diabetes" [20]. For instance, insulin is necessary for the development of amyloid plaques and is implicated in the phosphorylation of tau, which results in the creation of neurofibrillary tangles [21,22]. Put another way, insulin resistance in the brain can result in the plaques and tangles associated with Alzheimer's disease, but insulin resistance in the body can cause type 2 diabetes [21,22].

According to reviews, the onset of dementia is linked to diabetes, hypertension, dyslipidemia, and obesity, with diabetes being the most significant predictor of dementia in people over 65 [23,24]. The processes of diabetes-related dementia are being better understood thanks to recent research and ongoing developments in hypoglycemic drugs. In addition to improving cognitive deficits, new drug classes such as SGLT-2 inhibitors and GLP-1 receptor agonists may help lower the incidence of diabetes-related dementia or postpone its start

[25,26]. Furthermore, individuals are choosing healthier lives in greater numbers as public knowledge of diabetes and its consequences rises; this could potentially lower the incidence of diabetes and its complications [27-29]. Research has documented the interaction between peripheral metabolic dysregulation, insult compensatory systems, brain insulin resistance, and neuroinflammation in type 2 diabetes and late-onset Alzheimer's dementia (LOAD) linkage [30].

Therefore, people can reduce risk of late-onset Alzheimer's dementia (LOAD) and risk of type 2 diabetes. People must to be encouraged: a) to engage in aerobic exercise at least 30 minutes each day, five days each week; b) to eat a Mediterranean-style menu of foods; c) to maintain a healthy body weight; d) to treat high blood pressure; e) to treat high cholesterol; f) to don't smoke.

Finally, engaging in social activities, maintaining a happy outlook, learning new things, and listening to music can all optimize brain function and lower the risk of dementia.

Disclosure Statement

The authors declare that there are no conflicts of interest.

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