Medical Xpress

Diabetes medication reduces dementia risk

June 23 2015

Treating people with type 2 diabetes, also known as 'age-related diabetes' with antidiabetics reduces their risk for Alzheimer's and other types of dementia. The risk is most significantly reduced by the drug pioglitazone. Researchers of the German Center for Neurodegenerative Diseases draw this conclusion from an analysis of health insurance data. Their findings are published in the journal *Annals of Neurology*.

Patients with type 2 diabetes have a dysfunctional sugar metabolism because the essential hormone insulin does not work effectively. Once the disease reaches an advanced stage, the body stops producing insulin altogether, which means that it has to be administered externally. Type 2 diabetes most commonly occurs in late adulthood, and it has long been known that it can affect the patient's mental health: Patients have a greater risk of developing dementia than non-diabetics. However, how does antidiabetic medication influence this risk? Neurologist Michael Heneka and the demographers Anne Fink and Gabriele Doblhammer investigated this issue in the current study. Their work is based on data from the years 2004 to 2010 provided by the German public health insurance company AOK. These data set comprises information about diseases and medication related to more than 145,000 men and women aged 60 and over.

Long-term treatment reduced dementia risk

The analysis confirmed previous findings that diabetics have an increased risk of developing dementia. However, it was also found that this risk can significantly be modified by pioglitazone. This drug is taken

as tablets. It is applied in short-term as well as in long-term treatment of diabetes as long as the body is still capable of producing its own insulin.

"Treatment with pioglitazone showed a remarkable side benefit. It was able to significantly decrease the risk of dementia," says Doblhammer. "The longer the treatment, the lower the risk." Risk reduction was most noticeable when the drug was administered for at least two years. Diabetics given this treatment developed dementia less often than non-diabetics. Doblhammer: "The risk of developing dementia was around 47 percent lower than in non-diabetics, i.e. only about half as large."

Metformin - another frequently prescribed antidiabetic drug - also lowered the risk of developing dementia. However, the effect was lower than that of pioglitazone.

Protection against nerve cell damage

Pioglitazone improves the effect of the body's own insulin. Moreover, laboratory tests have long indicated that it also protects the nerve cells. The current results are therefore no surprise to neuroscientist Michael Heneka. "Pioglitazone is an anti-inflammatory drug that also inhibits the deposition of harmful proteins in the brain," he says.

However, Heneka emphasizes that the exact mechanisms are not yet understood: "Our study suggests that pioglitazone has a preventive effect. This happens when the drug is taken before symptoms of dementia manifest. Thus, it protects in particular against Alzheimer's, the most common form of dementia. The causes for this, whether pioglitazone only has this protective effect in diabetics or if it would also work in non-diabetics - all these questions have yet to be answered. The next logical step would therefore be clinical studies. These studies would specifically investigate the effect of pioglitazone and other antidiabetics on dementia."

More information: Effect of pioglitazone medication on the incidence of dementia, Michael T. Heneka, Anne Fink, Gabriele Doblhammer. *Annals of Neurology* 2015, DOI: 10.1002/ana.24439

Provided by German Center for Neurodegenerative Diseases