No association between antiepileptic drug use and dementia

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Epilepsy is a common neurological condition with a prevalence of around 2%. Many antiepileptic drugs are available to prevent epileptic seizures, allowing up to 80 percent of patients to become seizure-free. However, previous research has found a positive association between the use of AEDs and dementia.

The goal of the present study, which will be published in the next issue of *Journal of Alzheimer's Disease*, was to investigate the hypothetical association between AED use and dementia risk in 101,150 individuals receiving treatment from more than 1,400 physicians in Germany.

"In recent years, it has been suggested that there is a bidirectional relationship between epilepsy and dementia," explains lead investigator Prof. Karel Kostev, Dr. MS, from the IQVIA Epidemiology Team based in Frankfurt, Germany. "In view of this, the prescription of antiepileptic drugs might be an effective strategy to prevent cognitive decline and dementia in patients affected by epilepsy. However, some researchers have assumed that AEDs could affect cognition by inhibiting neurotransmission and suppressing neuronal excitability".

This retrospective cohort study used data from the Disease Analyzer database (IQVIA), which compiles information obtained directly and in anonymous format from computer systems used by general practitioners and specialists. This database has already been used in several studies focusing on dementia in recent years.

This study included patients aged ?60 whose first dementia diagnosis was documented between January 2013 and December 2017 (index date). Controls without dementia were matched (1:1) to dementia patients by age, gender, physician (general practitioner or neuropsychiatrist), diagnosis of mild cognitive impairment, and observation time prior to the index date (in years). The index date for the controls was a randomly selected visit between January 2013 and December 2017.

The study included 50,575 patients with dementia and 50,575 controls without dementia. The mean age was 81.0 years (SD=7.4 years), and 61.5% of patients were women. Overall, there was no significant association between any use of AEDs and dementia risk (odds ratio [OR]=0.99). Furthermore, the duration of AED therapy was not associated with a risk of dementia (OR=1.00 per therapy year).

The only group of drugs associated with increased dementia risk were generic levetiracetam brands (OR=1.70, p0.05).

"The major message of this study is an all-clear for epilepsy patients, who should not fear that their AED use will result in a higher risk of dementia," noted first author Louis Jacob, Ph.D., of the University of Versailles Saint-Quentin-en-Yvelines (France), "However, it is possible that some of the newest generic brands of levetiracetam may have negative effects on cognitive function in older individuals with epilepsy, and these effects have not yet been investigated."The authors of the study also note that: "These findings must be interpreted with great caution, and more research should be conducted to corroborate these results before any conclusions are drawn".

The study is subject to some limitations, since no data from special epilepsy centers or on epilepsy severity were available. The main strengths of this study are the use of real-world data, the high number of

cases and controls available for analysis, and the number of comorbidities and co-prescribed drugs included in the multivariate regression analyses.

More information: Louis Jacob et al, Is There an Association Between Antiepileptic Drug Use and Dementia Risk? A Case-Control Study, *Journal of Alzheimer's Disease* (2019). DOI: 10.3233/JAD-181194

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