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# Dementia, Subtype of Seizures, and the Risk of New Onset Seizures: A Cohort Study

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## Abstract

**Background:** Seizure disorders have been identified in patients suffering from different types of dementia. However, the risks associated with the seizure subtypes have not been characterized.

**Objective:** To compare the occurrence and risk of various seizure subtypes (focal and generalized) between patients with and without a dementia diagnosis.

**Methods:** Data from 40.7 million private insured patient individual electronic health records from the U.S., were utilized. Patients 60 years of age or more from the Optum Insight Clinformatics-data Mart database were included in this study. Using ICD-9 diagnoses, the occurrence of generalized or focal seizure disorders was identified. The risk of new-onset seizures and the types of seizures associated with a dementia diagnosis were estimated in a cohort of 2,885,336 patients followed from 2005 to 2014. Group differences were analyzed using continuity-adjusted chi-square and hazard ratios with 95% confidence intervals calculated after a logistic regression analysis. Results: A total of 79,561 patient records had a dementia diagnosis, and 56.38% of them were females. Patients with dementia when compared to those without dementia had higher risk for seizure disorders [Hazard ratio (HR) = 6.5, 95%CI = 4.4-9.5]; grand mal status (HR = 6.5, 95%CI = 5.7-7.3); focal seizures (HR = 6.0, 95%CI = 5.5-6.6); motor simple focal status (HR = 5.6, 95%CI = 3.5-9.0); epilepsy (HR = 5.0, 95%CI = 4.8-5.2); generalized convulsive epilepsy (HR = 4.8, 95%CI = 4.5-5.0); localization-related epilepsy (HR = 4.5, 95%CI = 4.1-4.9); focal status (HR = 4.2, 95%CI = 2.9-6.1); and fits convulsions (HR = 3.5, 95%CI = 3.4-3.6).

**Conclusion:** The study confirms that patients with dementia have higher risks of generalized or focal seizure than patients without dementia.

**Keywords:** Databases; dementia; epilepsy; new-onset seizures.

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