Childhood Epilepsy, Febrile Seizures, and Subsequent Risk of ADHD

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Pediatrics Jul 2016, e20154654
DOI: 10.1542/peds.2015-4654

Abstract

OBJECTIVES:
Epilepsy, febrile seizures, and attention-deficit/hyperactivity disorder (ADHD) are disorders of the central nervous system and share common risk factors. Our goal was to examine the association in a nationwide cohort study with prospective follow-up and adjustment for selected confounders. We hypothesized that epilepsy and febrile seizures were associated with subsequent ADHD.

METHODS:
A population-based cohort of all children born in Denmark from 1990 through 2007 was followed up until 2012. Incidence rate ratios (IRRs) and 95% confidence intervals (95% CIs) for ADHD were estimated by using Cox regression analysis, comparing children with epilepsy and febrile seizure with those without these disorders, adjusted for socioeconomic and perinatal risk factors, as well as family history of neurologic and psychiatric disorders.

RESULTS:
A total of 906,379 individuals were followed up for 22 years (~10 million person-years of observation); 21,079 individuals developed ADHD. Children with epilepsy had a fully adjusted IRR of ADHD of 2.72 (95% CI, 2.53–2.91) compared with children without epilepsy. Similarly, in children with febrile seizure, the fully adjusted IRR of ADHD was 1.28 (95% CI, 1.20–1.35). In individuals with both epilepsy and febrile seizure, the fully adjusted IRR of ADHD was 3.22 (95% CI, 2.72–3.83).

CONCLUSIONS:
Our findings indicate a strong association between epilepsy in childhood and, to a lesser extent, febrile seizure and subsequent development of ADHD, even after adjusting for socioeconomic and perinatal risk factors, and family history of epilepsy, febrile seizures, or psychiatric disorders.