Fracture risk and correlating factors of a pediatric population with attention deficit hyperactivity disorder: a nationwide matched study.

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Abstract
The aim of this study was to investigate the risk of fracture and the difference between sexes from a nationwide database of fracture risk among children aged 4-17 years with or without attention deficit hyperactivity disorder (ADHD, ICD-9-CM codes 314). The Longitudinal Health Insurance Database (LHID 2000) was used to analyze fracture characteristics of children from the National Health Insurance that covered 96.1% of the Taiwanese population (N = 21.4 million). A total of 7200 ADHD children aged between 4 and 17 years whose diagnosis had been confirmed in at least three outpatient clinics between 1 January 2000 and 31 December 2009 were included, and a cohort of 36,000 children without ADHD matched for age, sex, and urbanization was recruited for analysis. The incidence rate of fractures in ADHD children was 21.0 (95% confidence interval = 19.4-22.7) per 1000 person-years, significantly (P < 0.001) higher than 15.0 (95% confidence interval = 14.4-15.6) in non-ADHDs. After adjusting by age, sex, urbanization level, and geographic region, the statistically significant (P < 0.001) hazard ratios (HR) of fracture for ADHD children compared with non-ADHD children included 1.62 in girls and 1.38 in boys, 1.53 in the skull, neck, and trunk (ICD-9-CM 800-809), 1.28 in the upper extremity (ICD-9-CM 810-819), and 1.84 in the lower extremity (ICD-9-CM 820-829). The HR also (P < 0.001) increased significantly in all age groups, including 1.35 in 4-6, 1.37 in 7-9, and 1.54 in 10-17 years. ADHD should be listed among risk factors of children’s fractures in each sex, all age groups, and all body areas that the parents, teachers, caregivers of ADHD children, and pediatric orthopedists should be aware of. Besides, ADHD girls were more affected than ADHD boys, especially after 10 years of age, whereas the adjusted HR was the highest in the lower extremities. Nationwide analysis matched for age and sex showed that ADHD should be considered the risk factor of children’s fracture, especially for girls older than 10 years of age.