Lower risk of fractures under methylphenidate treatment for ADHD: A dose-response effect


Abstract

Methylphenidate (MP), a widely used and abused stimulant medication for ADHD, negatively affects bone mass. However, previous epidemiological studies demonstrated that MP is not associated with increased incidence of fractures in children, and may even have a protective effect due to behavior modification. This study aimed to investigate the association between MP and fracture risk in a retrospective cohort of healthy military recruits, aged 18-25, with at least one year of service between 2008 and 2017. Subjects were divided into five groups: subjects without ADHD; untreated subjects with ADHD; and subjects with ADHD and prescriptions of 1-90, 91-180, or 181+ tablets during the study period. The primary outcome was at least one fracture diagnosis during the study. Among 682,110 subjects (409,175 men [60%]), 50,999 (7.5%) had fractures. MP was used by 1681 (0.4%) men and 2828 (1%) women. The fracture rates in the no ADHD, untreated ADHD, ADHD 0-90, ADHD 91-180, and ADHD 181+ groups were 10.4%, 16.4%, 8.7%, 4.8%, and 5.8% in men, and 3.6%, 7.1%, 4.6%, 4.4%, and 3% in women, respectively. Multivariate regression analysis confirmed an inverse dose-response association between MP and fractures in men (p < 0.001). In women, untreated ADHD was associated with a significantly higher fracture risk, compared to healthy controls (OR = 1.82, p < 0.001). The study confirms previous literature and demonstrates an inverse dose-response association between MP and fracture risk in men.