

A Prospective Birth Cohort Study on Maternal Cholesterol Levels and Offspring Attention Deficit Hyperactivity Disorder: New Insight on Sex Differences

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Abstract

Growing evidence suggests that maternal cholesterol levels are important in the offspring's brain growth and development. Previous studies on cholesterol and brain functions were mostly in adults. We sought to examine the prospective association between maternal cholesterol levels and the risk of attention deficit hyperactivity disorder (ADHD) in the offspring. We analyzed data from the Boston Birth Cohort, enrolled at birth and followed from birth up to age 15 years. The final analyses included 1479 mother-infant pairs: 303 children with ADHD, and 1176 neurotypical children without clinician-diagnosed neurodevelopmental disorders. The median age of the first diagnosis of ADHD was seven years. The multiple logistic regression results showed that a low maternal high-density lipoprotein level (≤ 60 mg/dL) was associated with an increased risk of ADHD, compared to a higher maternal high-density lipoprotein level, after adjusting for pertinent covariables. A "J" shaped relationship was observed between triglycerides and ADHD risk. The associations with ADHD for maternal high-density lipoprotein and triglycerides were more pronounced among boys. The findings based on this predominantly urban low-income minority birth cohort raise a new mechanistic perspective for understanding the origins of ADHD and the gender differences and future targets in the prevention of ADHD.