Does Prenatal Exposure to Acetaminophen and Antibiotics Increase the Risk of Autism Spectrum Disorder?

Jyoti Rana

Dr. Jutta Heller

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Abstract

Autism spectrum disorder (ASD) is a complex neurodevelopmental condition that is influenced by both genetic and environmental factors. ASD symptoms typically emerge in early childhood and have lifelong effects on cognitive development, social interaction, and quality of life. Over the past two decades there has been a 300% increase in the number of individuals diagnosed with ASD. Several epidemiological studies have reported associations between maternal medication use during pregnancy and increased ASD diagnoses in offspring. However, these associations remain controversial due to the potential influence of confounding by indication, in which the underlying maternal conditions requiring treatment, such as infection, inflammation, fever, or pain, may themselves influence fetal neurodevelopment. The main goal of this review is to explore whether prenatal exposure to commonly used medications such as acetaminophen and antibiotics is associated with increased ASD risk. Evidence from epidemiological cohort studies, biomarker analyses, and family-based designs, including sibling comparison studies, was evaluated to determine whether prenatal medication exposure independently contributes to ASD risk. Across multiple lines of evidence, studies that more rigorously control for maternal health conditions and shared familial factors consistently report a reduction or disappearance of the observed association. These findings suggest that confounding from underlying maternal conditions and familial genetic risk may largely explain the relationship between prenatal medication exposure and ASD.