

Stress Exposure in Pregnancy Observed in Mothers of Children With Autism

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Summary: Findings could help to better identify women who have greater risk for having children with autism when exposed to stressors during a specific time window of their pregnancy, researchers believe.

Source: University of Missouri Columbia

<http://neurosciencenews.com/autism-pregnancy-stress-4401/>

More research needed to understand gene-stress interaction.

Stress during pregnancy has been linked to several conditions, including some instances of autism spectrum disorder. Now, researchers at the University of Missouri School of Medicine have observed a variant of a stress-sensitive gene and exposure to stress during pregnancy among two groups of mothers of children with autism. The researchers believe the finding could be a step toward helping identify women who have greater risks for having children with autism when exposed to stressors during a specific time window during pregnancy.

“Autism was thought to be largely a genetic disorder, but previous research has shown that environmental influences such as stress can play an important role in the development of the condition,” said David Beversdorf, M.D., associate professor in the departments of radiology, neurology and psychological sciences at the University of Missouri and the MU Thompson Center for Autism and Neurodevelopmental Disorders, and senior author of the study. “We know that some mothers who experience significant levels of stress don’t have children with autism, but others do. To help understand why, we studied a gene that is known to affect stress and found a link between it and the development of autism with exposure to stress.”



In both groups, mothers of children with autism who have the variation of the stress-sensitive gene reported experiencing more stress during the end of the second and the beginning of the third trimester of pregnancy, compared to mothers who did not carry the altered gene. NeuroscienceNews.com image is adapted from the MU Health press release.

Led by Beversdorf's graduate student, Patrick Hecht, Ph.D., in collaboration with Xudong Liu, Ph.D., with Queen's University in Ontario, Canada, the researchers studied two separate groups of mothers of children with autism spectrum disorder — a group of families at MU and a group of families at Queen's University. The mothers were surveyed about stress during their pregnancy, such as loss of a job, moving or divorce. The mothers' blood was tested for a variation of the stress-sensitive gene known as 5-HTTLPR, which regulates the neurotransmitter serotonin in the nervous system. When a variation of the gene is present, the availability of serotonin is altered, causing an increased reaction to stress.

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"Though this was an observational study and future confirmation of this finding is needed, it's possible we could, one day, identify women who may be at a greater risk of having a child with autism when exposed to stress," said Beversdorf, who also serves as the William and Nancy Thompson Endowed Chair in Radiology. "More research is needed to understand the mechanisms of how this gene-stress interaction works, but hopefully this could someday help prevent some cases of autism."

The study, "Maternal Serotonin Transporter Genotype Affects Risk for ASD with Exposure to Prenatal Stress," recently was published by Autism Research, the journal of the International Society for Autism Research. Research reported in this publication was supported by Mizzou Advantage, the MU College of Medicine Mission Enhancement Fund and the Ongwanada Fund. The researchers have no conflicts of interest to declare related to this study.

ABOUT THIS NEUROLOGY RESEARCH ARTICLE

In addition to Beversdorf, Liu and Hecht, the research team included Melissa Hudson with Queen's University; Susan Connors, M.D., with Massachusetts General Hospital for Children; and Michael Tilley, Ph.D., with Central Methodist University.

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Source: Ken Kingery – [University of Missouri Columbia](#)

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Original Research: [Abstract](#) for “Maternal serotonin transporter genotype affects risk for ASD with exposure to prenatal stress” by Patrick M. Hecht, Melissa Hudson, Susan L. Connors, Michael R. Tilley, Xudong Liu and David Q. Beversdorf in *Autism Research*. Published online April 19 2016 doi:10.1002/aur.1629

University of Missouri Columbia. “Stress Exposure in Pregnancy Observed in Mother’s of Children With Autism.” NeuroscienceNews. NeuroscienceNews, 7 June 2016. <<http://neurosciencenews.com/autism-pregnancy-stress-4401/>>.

Abstract

Maternal serotonin transporter genotype affects risk for ASD with exposure to prenatal stress

Stress exposure during gestation is implicated in several neuropsychiatric conditions, including autism spectrum disorder (ASD). Previous research showed that prenatal stress increases risk for ASD with peak exposure during the end of the second and the beginning of the third trimester. However, exposures to prenatal stress do not always result in ASD, suggesting that other factors may interact with environmental stressors to increase ASD risk. The present study examined a maternal genetic variation in the promoter region of the serotonin transporter gene (5-HTTLPR) affecting stress tolerance and its interaction with the effect of environmental stressors on risk for ASD. Two independent cohorts of mothers of ASD children recruited by the University of Missouri and Queen’s University were surveyed regarding the prenatal environment and genotyping on 5-HTTLPR was performed to explore this relationship. In both samples, mothers of children with ASD carrying the stress susceptible short allele variant of 5-HTTLPR experienced a greater number of stressors and greater stress severity when compared to mothers carrying the long allele variant. The temporal peak of stressors during gestation in these mothers was consistent with previous findings. Additionally, increased exposure to prenatal stress was not reported in the pregnancies of typically developing siblings from the same mothers, regardless of maternal genotype, suggesting against the possibility that the short allele might increase the recall of stress during pregnancy. The present study provides further evidence of a specific maternal polymorphism that may affect the risk for ASD with exposure to prenatal stress.

“Maternal serotonin transporter genotype affects risk for ASD with exposure to prenatal stress” by Patrick M. Hecht, Melissa Hudson, Susan L. Connors, Michael R. Tilley, Xudong Liu and David Q. Beversdorf in *Autism Research*. Published online April 19 2016 doi:10.1002/aur.1629