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Study shows that fever during pregnancy more than doubles the risk of autism or developmental delay

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A team of UC Davis researchers has found that mothers who had fevers during their pregnancies were more than twice as likely to have a child with autism or developmental delay than were mothers of typically developing children, and that taking medication to treat fever countered its effect.

"Our study provides strong evidence that controlling fevers while pregnant may be effective in modifying the risk of having a child with autism or developmental delay," said Ousseny Zerbo, lead author of the study, who was a Ph.D. candidate with UC Davis when the study was conducted and is now a postdoctoral researcher with the Kaiser Permanente Northern California Division of Research. "We recommend that pregnant women who develop fever take anti-pyretic medications and seek medical attention if their fever persists."

Published online in the Journal of Autism and Developmental Disorders, the study is believed to be the first to consider how fever from any cause, including the flu, and its treatment during pregnancy could affect the likelihood of having a child with autism or developmental delay.

The results are based on data from a large, case-control investigation known as the Childhood Autism Risk from Genetics and the Environment (CHARGE) Study. Another recent study based on CHARGE data found that mothers who were obese or diabetic had a

higher likelihood of having children with autism.

Irva Hertz-Picciotto, a professor of public health sciences at UC Davis and principal investigator of CHARGE, pointed out that fever is produced by acute inflammation — the short-term, natural immune system reaction to infection or injury — and that chronic inflammation, which no longer serves a beneficial purpose and can damage healthy tissue, may be present in mothers with metabolic abnormalities like diabetes and obesity.

"Since an inflammatory state in the body accompanies obesity and diabetes as well as fever," said Hertz-Picciotto, "the natural question is: Could inflammatory factors play a role in autism?"

She explained that when people are infected by bacteria or viruses, the body generally reacts by mounting a healing response that involves the release of pro-inflammatory cytokines from white blood cells into the bloodstream. Some cytokines are able to cross the placenta, and therefore could reach the fetal central nervous system, potentially altering levels of neurotransmitters and brain development.

"We definitely think more research is necessary to pinpoint the ways that inflammation could alter brain development," said Hertz-Picciotto.

CHARGE includes an ethnically diverse population of children aged 2 to 5 years born in California and living in Northern California. The current study included 538 children with autism, 163 children with developmental delay but not autism, and 421 typically developing children whose mothers answered standardized questionnaires about whether they had the flu and/or fever during pregnancy and if they took medications to treat their illnesses.

The results showed that flu during pregnancy was not associated with

greater risks of having a child with autism or developmental delay. Fever from any cause during pregnancy, however, was far more likely to be reported by mothers of children with autism (2.12 times higher odds) or developmental delay (2.5 times higher odds), as compared with mothers of children who were developing typically. For children of mothers who took anti-fever medication, the risk of autism was not different from the risk in children whose mothers reported no fever.

According to Irva Hertz-Picciotto, results based on CHARGE data are noteworthy because of the study's large population-based sample and detailed information on participants. Other CHARGE evaluations have found that taking prenatal vitamins prior to and during the first month of pregnancy may help prevent autism and that living near a freeway or in areas with high regional air pollution is associated with higher risk of autism in children.

"CHARGE has obtained a wealth of environmental, demographic and medical information on young children and their parents and provides a solid basis for a variety of epidemiologic studies," said Hertz-Picciotto. "Those studies are helping us find ways to protect childhood neurodevelopment."

More information: The study is available at www.springerlink.com/content/x … 2q07w228t313/?MUD=MP

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