

Conglomeration of perinatal and neonatal conditions increase risk of autism

July 14 2011, by Deborah Braconnier

(Medical Xpress) -- In a new study published in *Pediatrics*, researchers reveal that in addition to possible genetic vulnerability and environmental factors, certain perinatal and neonatal conditions show as increased risk in the later development of autism.

Hannah Gardener ScD, who, at the time of the study was from the Harvard School of Public Health, meta-analyzed 40 studies that had been published before April 2007. Within these studies the researchers discovered 60 potential pregnancy and delivery complications and conducted a summary effect estimate for each one.

The 16 that had the most significant association with an autism risk were neonatal anemia (eight times the risk), meconium aspiration (seven times the risk), birth injury or trauma (five times the risk), ABO or RH incompatibility (four times the risk), [birth weight](#) under 3.3 pounds (triple the risk), maternal [hemorrhage](#) (double the risk), and a summer birth accounted for a 14 percent increased risk.

Other factors that the researchers say contributed to an increased risk of autism were feeding difficulties, fetal distress, a low 5-minute Apgar score, abnormal presentation, congenital malformation, hyperbilirubinemia, umbilical-cord complications, small for [gestational age](#) and [multiple births](#).

Unfortunately many of these pregnancy and delivery complications are closely related and occur at the same time so it becomes difficult to

independently associate one or another with an definite risk for autism.

The study was able to rule out certain conditions that had previously been thought to contribute to autism. These were anesthesia during birth, post-term birth, high birth weight, assisted [vaginal delivery](#) and head circumference.

[Autism Spectrum Disorders](#) are now believed to affect as many as one in 110 children in the United States and it is believed that the cause is a combination of genetics and environment. This study reveals many conditions that can contribute to the risk of autism, but the question of whether one alone can increase the risk, if multiple complications need to occur, or if the complications need to occur in genetically vulnerable infants still needs to be answered.

More information: Perinatal and Neonatal Risk Factors for Autism: A Comprehensive Meta-Analysis, *Pediatrics*, Published online July 11, 2011, [doi: 10.1542/peds.2010-1036](https://doi.org/10.1542/peds.2010-1036)

ABSTRACT

Background: The etiology of autism is unknown, although perinatal and neonatal exposures have been the focus of epidemiologic research for over 40 years.

Objective: To provide the first review and meta-analysis of the association between perinatal and neonatal factors and autism risk.

Methods: PubMed, Embase, and PsycInfo databases were searched for studies that examined the association between perinatal and neonatal factors and autism through March 2007. Forty studies were eligible for the meta-analysis. For each exposure, a summary effect estimate was calculated using a random-effects model. Heterogeneity in effect estimates across studies was examined, and, if found, a meta-regression was conducted to identify measured methodological factors that could explain between-study variability.

Results: Over 60 perinatal and neonatal factors were examined. Factors associated with autism risk in the meta-analysis were abnormal presentation, umbilical-cord complications, fetal distress, birth injury or trauma, multiple birth, maternal hemorrhage, summer birth, low birth weight, small for gestational age, congenital malformation, low 5-minute Apgar score, feeding difficulties, meconium aspiration, neonatal anemia, ABO or Rh incompatibility, and hyperbilirubinemia. Factors not associated with autism risk included anesthesia, assisted vaginal delivery, postterm birth, high birth weight, and head circumference.

Conclusions: There is insufficient evidence to implicate any 1 perinatal or neonatal factor in autism etiology, although there is some evidence to suggest that exposure to a broad class of conditions reflecting general compromises to perinatal and neonatal health may increase the risk. Methodological variations were likely sources of heterogeneity of risk factor effects across studies.

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