NEWS

Maternal obesity, genetics may cooperate to up autism risk

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Women who are overweight or obese when pregnant increase their risk of having a child who is later diagnosed with autism by about 30 percent. The finding is based on a meta-analysis of more than 500,000 mother-child pairs[1].

The analysis also uncovers a 16 percent hike in autism risk for every 5 kg/m^2 increase in a mother's body mass index (BMI), a ratio of weight to height. It adds to mounting evidence that a pregnant woman's body weight influences her child's risk of autism.

However, the analysis also includes data from two studies that suggest genetic factors shape both **maternal weight and autism risk**.

"Whether maternal BMI really causes autism in offspring — or whether the association is actually due to underlying genetic causes — is an open question. But the associations [between autism and maternal obesity] are definitely there," says **Renee Gardner**, assistant professor of public health sciences at the Karolinska Institute in Stockholm, Sweden, who was not involved in the study.

The researchers analyzed five U.S. studies and two Scandinavian ones, with data from more than 8,400 children with autism. The researchers found no increase in autism risk among children born to women who were underweight or of average weight at the start of pregnancy. But autism risk increased by 28 percent for children born to overweight mothers and by 36 percent for those born to obese women.

Father effect:

Two studies in the meta-analysis, which was published in September in *Scientific Reports*, included BMI data from both parents. Combined data from these studies revealed that a father's generous waistline also independently boosts autism risk in his children.

Because a father's weight does not directly affect fetal development, the findings hint that any contribution from his BMI is genetic. The risk from the mother could be partly genetic as well.

"This provides substantial evidence that at least some of the association between maternal BMI and children's risk of autism stems from genetic factors that are associated with both BMI and risk for autism," Gardner says.

Being overweight could still play a causal role, perhaps in combination with genetic factors, she says. Overweight or obese pregnant women may have **higher-than-normal levels of inflammation**, and inflammation may raise a child's risk of **premature birth or autism**.

Two 2016 studies not included in the meta-analysis also suggest that if a woman has both **diabetes and obesity**, her child's risk of autism increases by up to threefold[2,3].

An immune reaction "could well be part of the same picture, perhaps indicating that something beyond the genetic associations is having an effect while the baby is *in utero*," Gardner says.

To unravel the relevant interactions in the womb, scientists will need to gather molecular

information from large numbers of pregnant women and track the health of their children.

Regardless of the exact origins of risk, the findings suggest that women should monitor their weight while pregnant, the researchers say. “The present findings provide strong persuasion for women to keep appropriate weight during pre-pregnancy or pregnancy, so as to reduce [autism] risk in their offspring,” they write in their report. They could not be reached for comment before publication of this article.

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