

Mother's prenatal stress predisposes their babies to asthma and allergy

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Women who are stressed during pregnancy may pass some of that frazzlement to their fetuses in the form of increased sensitivity to allergen exposure and possibly future asthma risk, according to researchers from Harvard Medical School who presented their findings at the American Thoracic Society's 2008 International Conference in Toronto on Sunday.

"While predisposition to asthma may be, in part, set at birth, the factors that may determine this are not strictly genetic. Certain substances in the environment that cause allergies, such as dust mites, can increase a child's chance of developing asthma and the effects may begin before birth," said Rosalind J. Wright, M.D., M.P.H., assistant professor of medicine at Brigham & Women's Hospital and Harvard Medical School.

Mother's stress during pregnancy can also influence the babies developing immune system. While animal studies suggest that the combination of stress and allergen exposure during pregnancy may magnify the effects on the immune system, this is the first human study to examine this directly. The researchers analyzed levels of maternal stress and mother's exposure to dust mite allergen in their homes while pregnant with respect to cord blood IgE expression—a marker of the child's immune response at birth—in 387 infants enrolled in the Asthma Coalition on Community, Environment, and Social Stress (ACCESS) project in Boston.

They found increased levels of IgE expression in cord blood among infants whose mothers experienced higher level stress even when exposed to relatively low levels of dust mite during pregnancy. This indicates that mother's stress during pregnancy magnified the effect of dust exposure on the child's immune system such that the child's immune response at birth may be altered even with lower levels of dust exposure in the home. The results held true regardless of the

mother's race, class, education or smoking history.

"This research adds to a growing body of evidence that links maternal stress such as that precipitated by financial problems or relationship issues, to changes in children's developing immune systems, even during pregnancy," said Dr. Wright. "This further supports the notion that stress can be thought of as a social pollutant that, when 'breathed' into the body, may influence the body's immune response similar to the effects of physical pollutants like allergens, thus adding to their effects."

While these findings are important, Dr. Wright noted that only with continued follow-up of these children will they know if these effects will result in increased asthma risk. Moreover, it will be important to replicate these findings in larger populations to give a clearer picture of the relationship between prenatal maternal stress, allergen exposure and subsequent childhood asthma development.

"It is notable that these findings were obtained in a U.S. urban population, which may be more likely to be simultaneously exposed to multiple factors, including stress and indoor allergens. More studies like this may help explain why asthma occurs more frequently in these high-risk groups," said Junenette Peters, Sc.D., postdoctoral research fellow who presented these results.

In the meantime, the findings suggest that when such exposures—prenatal stress, allergen exposure—occur together, there is a magnified increase in risk, which supports the assessment of maternal psychological well-being along with other environmental factors as part of a prenatal health program.

Source: American Thoracic Society

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