Breathing Smog in Pregnancy Linked to Child's Behavior Problems

Study found with moms' higher exposure, kids were likelier to have anxiety, depression at age 6

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THURSDAY, March 22 (HealthDay News) -- Women exposed to higher levels of certain air pollutants while pregnant are more likely to have children with anxiety, depression and attention problems by ages 6 and 7, new research suggests.

"This study provides new evidence that prenatal exposure to air pollution at levels encountered in New York City can adversely affect child behavior," said Frederica Perera, a professor of environmental health sciences and director of the Columbia Center for Children's Environmental Health at the Columbia University Mailman School of Public Health.

She led the new study, published online March 22 in Environmental Health Perspectives.

The researchers looked at pollutants known as polycyclic aromatic hydrocarbons (PAH). They are created by the burning of fossil fuels and are common in urban environments. Traffic emissions are a major source of these pollutants.

The study is believed to be the first to link behavior problems in school-age children with two measures of prenatal PAH exposure: air concentrations and a PAH-specific marker found in mothers' blood samples and umbilical cord blood. The PAH, inhaled by the mom during pregnancy, can cross the placenta, experts know.

Perera's team followed the children of 253 inner-city women who gave birth between 1999 and 2006. None of the mothers smoked.

The researchers measured the concentrations of PAH in the environment of the mothers for 48 hours during trimester two or three. They also took blood samples from the mothers and the umbilical cords.

In addition, the women answered questions about their children's behavior, including describing any attention problems, anxiety or depression. The attention problems would not qualify as attention-deficit/hyperactivity disorder, Perera noted.

The investigators found a link between higher PAH exposure levels and behavior problems. "Symptoms of anxiety and depression were 45 percent higher in the higher exposure group versus the lower," Perera said. Attention problems were 28 percent greater in the higher PAH exposure group.

When the researchers took into account other sources of pollutants such as tobacco smoke and diet, the link remained. However, although the study found an association between prenatal PAH exposure and childhood behavior problems, it did not prove a cause-and-effect relationship.

The level of problems were those that could result in referral to a doctor for further evaluation, Perera noted.

Several mechanisms could explain the link, she said. Oxidative stress is one. Or, the chemicals may be "endocrine disrupters, which are capable of affecting the normal signaling that occurs in early brain development."

Perera plans to follow the children until they are age 12.

"The study by itself is not convincing to me," said Dr. Victor Klein, an obstetrician-gynecologist who specializes in high-risk pregnancies and is director of patient safety and risk reduction at North Shore-LIJ Health System in Great Neck, N.Y. He reviewed the study and said that "further research has to be done."

Meanwhile, Klein said, it's "common sense" to try to keep your environment as pollution-free as possible, especially when pregnant. However, that can be easier said than done. He tells women to exercise, watch their diet and get good prenatal care.

Another expert, Dr. Andrew Adesman, chief of developmental and behavioral pediatrics at the Steven & Alexandra Cohen Children's Medical Center of New York in New Hyde Park, wondered if the study would apply to pregnant women living outside New York City. "On one hand, I don't think people will be surprised that pollution poses a potential risk," he said. "What is striking here is they have been able to document and quantify it."

The broader message, Adesman said, is the need for society to clean up the air and to reduce our dependence on fossil fuels.

Perera said that to reduce exposure to pollutants, pregnant women should not smoke and should ask others not to smoke in their homes and offices. When cooking, she said, ventilate with a fan. Avoid other toxic chemicals such as pesticides. And, in addition, eat a healthy diet full of antioxidant-rich foods such as fruits and vegetables, she advised.

SOURCES: Frederica Perera, Dr.P.H., professor, environmental health sciences and director, Columbia Center for Children's Environmental Health, Columbia University Mailman School of Public Health, New York City; Andrew Adesman, M.D., chief, developmental and behavioral pediatrics, Steven & Alexandra Cohen Children's Medical Center of New York, New Hyde Park, N.Y.; Victor Klein, M.D., obstetrician-gynecologist, geneticist and director of patient safety and risk reduction, North Shore-LIJ Health System, Great Neck, N.Y.; March 22, 2012, Environmental Health Perspectives, online

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