Prenatal Exposure to Traffic Pollution May Lead to Asthma
Environment can boost mutations in genes, study says

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MONDAY, Feb. 16 (HealthDay News) -- Traffic pollution may cause genetic changes in the womb that increase a child's risk of developing asthma, say U.S. researchers who studied umbilical cord blood from New York City children.

They found evidence of a possible new biomarker -- an epigenetic alteration in the gene ACSL3 -- associated with prenatal exposure to polycyclic aromatic hydrocarbons (PAHs), which are created as byproducts of incomplete combustion of carbon-containing fuels such as gasoline.

PAH levels are high in heavy-traffic areas, and exposure to PAHs has been linked to such diseases as cancer and childhood asthma.

The findings, published in the Feb. 16 issue of the journal *PLoS One*, offer a potential clue for predicting environmentally-related asthma in children, particularly those born to mothers who live in high-traffic areas, said the researchers from the University of Cincinnati and Columbia University Mailman School of Public Health.

Epigenetic changes can disrupt the normal functioning of genes by affecting their expression but don't cause structural changes or mutations in the genes.

"Our data support the concept that environmental exposure can interact with genes during key developmental periods to trigger disease onset later in life, and that tissues are being reprogrammed to become abnormal later," the study's senior author, Shuk-mei Ho, chairwoman of UC's Department of Environmental Health and director of the Center for Environmental Genetics, said in news release.

If the findings are confirmed in future studies, changes in the ACSL3 gene could offer a new biomarker for early diagnosis of pollution-related asthma.
"Understanding early predictors of asthma is an important area of investigation because they represent potential clinical targets for intervention," study co-author Dr. Rachel Miller, director of the Columbia Center for Children's Environmental Health at the Mailman School of Public Health, said in the release.

More information

The American Lung Association has more about childhood asthma.

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