

Babies born during high pollen and mold seasons have greater odds of wheezing by age two

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Newborns whose first few months of life coincide with high pollen and mold seasons are at increased risk of developing early symptoms of asthma, suggests a new study led by researchers at the University of California, Berkeley.

Researchers found that children born in the high mold season, which generally encompasses the fall and winter months, have three times the odds of developing wheezing - often an early sign of asthma - by age 2 compared with those born at other times of the year.

The study results, to be reported online Tuesday, Feb. 24 (12:01 a.m. GMT) in the journal *Thorax*, may help shed light on why babies born in the fall and winter appear to have a higher risk of eventually developing asthma than children born in the summer.

Numerous factors have been linked to asthma risk, including heredity and exposure to air pollution, animal dander and tobacco smoke. A 2008 study of birth and medical records found that babies born in the fall are at greater risk of later developing childhood asthma. That study suggested an influence from early exposure to respiratory viruses, which is more common during the peak of cold and flu season.

"In our study, we took a different tack to understand the link between month of birth and asthma by considering ambient concentrations of

fungal spores and pollen, which follow distinct seasonal patterns," said Kim Harley, associate director of health effects research at UC Berkeley's Center for Children's Environmental Health Research and lead author of the new study. "Until our paper, there were very little data about exposure to allergens in the air, which we know can trigger symptoms for those who already have asthma. This is the first study to look at the potential role of early life exposure to multiple outdoor fungal and pollen groups in the development of asthma."

The researchers examined 514 children born in 1999 and 2000 in California's Salinas Valley, a region with mild, rainy winters and dry summers. They identified 27 spore and 48 pollen groups in the study, recording the average daily concentrations for the groups that accounted for more than 3 percent of the total during the first three months of life for each child in the study.

The peak of the pollen and spore seasons did not always occur in the same months of each study year, but for this region, ambient mold levels begin to increase in November and December, and pollen peaks in the early spring months of March and April, the researchers said.

After adjusting for such factors as family history of asthma, air pollution, secondhand smoke and signs of cockroaches, rodents or mold in the home, the researchers found that babies born in the fall and winter have triple the odds of developing early wheezing, often a precursor to asthma, by 24 months of age.

High concentrations of two groups of fungal spores, basidiospores and ascospores - emitted from such sources as mushrooms, molds, and rusts on plants - had a significant association with early wheezing at age 2. Basidiospores and ascospores are common outdoor allergen-bearing particles that are more prevalent during periods of rain or high humidity.

Total pollen concentration exposure during the first three months of life was also linked to greater risk of early wheezing. Of the groups of pollen, those from alder, pine and cypress trees had a greater effect than those from oak, mulberry or elm trees.

The researchers noted that definitive diagnoses of asthma are generally not made until children are older, often around school age. As many as 40 percent of children who wheeze early in life may go on to have childhood asthma, especially if they have other allergic symptoms, according to the researchers. They are continuing to follow the children in the study and expect to have findings from lung function tests in another year or two.

"We are not in position to say conclusively why some children develop asthma, or to even suggest precautionary measures to help babies born in the fall and winter," said Dr. Ira Tager, UC Berkeley professor of epidemiology and senior author of the study. "We already know that family history is a major risk factor for developing asthma, but the role environmental factors play is still being fleshed out. What this study does is provide valuable clues about airborne allergens that are worth exploring further."

Harley added that while this study did not directly address the role of respiratory viruses, it is possible that exposure to ambient pollutants combine with early respiratory infections to increase the risk of asthma for fall and winter babies, and that future studies may do well to look at both factors.

Source: University of California - Berkeley

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