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Vitamin A deficiency during pregnancy could lead to asthma

By Jenna Iacurci / Feb 14, 2014 03:43 PM EST

Tags : prenatal , postnatal , asthma , vitamin A



(Photo : Flickr/NIAID) Vitamin A deficiency during pregnancy can lead to an overgrowth of smooth muscle surrounding the fetus's airways, making the lungs hyperresponsive to environmental stimuli later in life and raising his or her asthma risk.

Vitamin A deficiency during pregnancy can lead to an overgrowth of smooth muscle surrounding the fetus's airways, making the lungs hyperresponsive to environmental stimuli later in life and raising his or her asthma risk.

Dr. Wellington V. Cardoso led a team at the Columbia University Medical Center (CUMC) in studying the deficit of vitamin A in mice. The results showed that in the short-term, a shortage of the essential vitamin during lung formation in a fetus can cause the smooth muscle in airways to change, which makes lungs narrow in response to outside stimuli later on.

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"More generally," Dr. Cardoso said, "our findings highlight a point often overlooked in adult medicine, which is that adverse fetal exposures that cause subtle changes in developing organs can have lifelong consequences."

A mouse model was used to control the timing and dosage of vitamin A dispensed to the developing fetus through the mother's diet. Fetuses that

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lacked vitamin A had excess smooth muscle in the airways compared to the controls. In a follow-up experiment, mice were again deprived of vitamin A during the same developmental stage, but then returned to a normal diet afterwards until adulthood.

Dr. Cardoso was surprised at the outcome in the latter mice group.

"When the animals reached adulthood, they appeared normal - that is, they had no problems typically associated with vitamin A deficiency," he said in a [statement](#). "However, pulmonary function tests showed that their lungs were clearly not normal."

Dr. Cardoso says that additional factors come into play here, meaning more research is needed in order to fully understand the phenomenon.

"Most pregnant women in the U.S. are probably getting enough vitamin A in their diet, but it's possible that their babies are not making proper use of it," he said. "The body has a very complex system for processing vitamin A, and this system is prone to interference from outside factors, such as cigarette smoke and alcohol. We need to understand more precisely how early exposures of the fetus to adverse environmental factors can interfere with crucial developmental mechanisms, such as the one we found linking vitamin A to airway structure and function."

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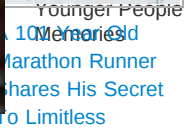
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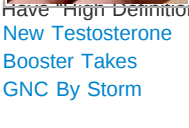
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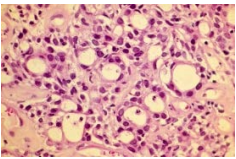
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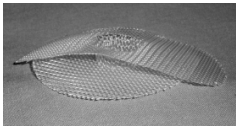
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patients with type 1 diabetes, but without chance of remission.

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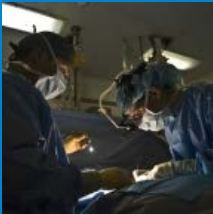
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