

Researchers reveal darker side of the common cold

January 9 2012, By Carole Bartoo

(Medical Xpress) -- Human rhinovirus (HRV), also known as the common cold, can be uncommonly serious for certain children, a study led by a Vanderbilt University Medical Center pediatrician shows.

The study, published in the Dec. 28, 2011 online issue of the journal [Pediatrics](#), shows that not only can HRV lead to hospitalization in very [low birth weight](#) (VLBW) babies, but surprisingly, even more babies are hospitalized with HRV than with [respiratory syncytial virus](#) (RSV), which is known to be dangerous to tiny babies.

For the study, lead author E. Kathryn Miller, M.D., MPH, assistant professor of Pediatrics, Allergy and Immunology, and senior author, infectious disease specialist Fernando Polack, M.D., the Cesar Milstein Professor of Pediatrics, followed 119 VLBW babies for two years through the INFANT Foundation Network in Buenos Aires, Argentina. Babies were tested with every respiratory illness during the first year of life to see which viruses they caught and how ill they became. It was the first prospective comparison of RSV and HRV illness in these babies.

“People think HRV really only affects older children and adults and is not a serious disease. We found HRV was linked with 33 percent of the hospitalizations compared with RSV, which caused 25 percent of their hospitalizations over the course of a year,” Miller said.

While RSV infection was more likely to lead to hospitalization, it was much less common and had a well-defined peak season. In contrast,

HRV infected over half of the babies, and led to hospitalizations throughout the whole year.

Miller said there is also evidence of a link between HRV and childhood asthma. In the second study, Miller, Polack and their colleagues at INFANT in Argentina prospectively examined about 200 asthmatics severely impacted by wheezing during a cold, compared with 200 asthmatic children with a cold who did not wheeze.

This research, published Dec. 1, 2011, in the *American Journal of Respiratory Critical Care Medicine*, focused on the role of one of the body's natural defenses, an antiviral called Type 3 Interferon (INF) (Lambda) 1 in HRV infections.

"There was clearly an association of acute wheezing with HRV. We looked at several theories about the mechanism including viral load and type, as well as various inflammatory and allergic cytokine mediators, but weren't finding a link to wheezing," Miller said.

"Then we found Type 3 INF (Lambda) 1 was high in wheezing asthmatic kids with HRV. This was a bit unexpected because Interferons are antiviral and have been thought to reduce the impact of HRV," Miller said.

Another smaller study showed that certain individuals with asthma may start out with a Type 3 IFN (Lambda) 1 deficiency.

In the lab, primary airway epithelial cells from those individuals were introduced to HRV causing a dramatic increase in levels of Type 3 IFN (Lambda) 1.

In the population-based study, the higher the levels of this type of interferon in the respiratory tract, the more severe the wheezing.

Miller says there are confounding factors, like environment and population, that need to be explored further. She is already working with investigators at the INFANT Foundation in Argentina to follow the VLBW population from the *Pediatrics* study further to examine development of asthma.

Romina Libster, M.D., an Argentinean [pediatrician](#), is a co-author on both studies, which were made possible through collaborative initiatives the Vanderbilt Vaccine Center is conducting in Argentina with the INFANT Foundation.

Provided by Vanderbilt Medical Center

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