

Recurrent wheezing in children linked to 'silent' viral infections



Credit: John DiJulio, University Communications

by **University of Virginia**

Nearly a quarter of children with recurrent wheezing suffer from lung infections that present no symptoms and should be treated with antiviral medications, University of Virginia (UVA) researchers say.

Nearly a quarter of children with recurrent wheezing have "silent" lung infections that would be better treated with antiviral medications than commonly prescribed steroids that can carry lifelong side effects, new research from the University of Virginia School of Medicine reveals.

The discovery came after pediatric pulmonologist Dr. W. Gerald Teague was inspired to investigate large numbers of children with stubborn wheezing cases referred from community providers and through the UVA Health Emergency Department. Teague and his collaborators have [published](#) their findings in the *Journal of Allergy and Clinical Immunology*.

Knowing that rhinoviruses—the main cause of the common cold—can trigger wheezing episodes, Teague wanted to see if there was a link between the recurrent wheezing and "indolent" lung infections—infections that can carry no symptoms and persist for long periods.

After screening more than 800 children and teens with severe wheezing, he and his collaborators determined that 22% had undetected lung infections that did not display typical cold symptoms. The infections do not respond to corticosteroids commonly used to treat wheezing.

Higher doses of steroids may put children at increased risk for lingering lung infection

In fact, the researchers found that higher doses of the [steroids](#) may put children at increased risk for lingering [lung inflammation](#), in addition to known side effects such as irritable behavior, reduced bone density and suppressed growth.

"While steroids can help some children with wheeze, many children in the study showed no patterns of inflammation that would improve with steroids," said Teague, a clinician-scientist at the UVA School of Medicine's Child Health Research Center.

"I advise the parents of my patients that wheeze episodes that are triggered by colds should be treated with anti-inflammatory medications that build immunity to viruses, such as azithromycin," he said. "They look surprised that we would use an antibiotic for a viral infection, but, in fact, azithromycin bolsters the [immune response](#) to viruses in a positive way."

Underlying causes of recurrent wheezing

Teague and his collaborators are uncertain why the children have been unable to shake off silent lung viral infections. While rhinoviruses were by far the most common infection identified, Teague and his team detected other unresolved respiratory infections as well.

The scientists suspect something may be going awry with the mucosal immune cells in the children's lungs that makes them unable to fight off these viruses. Notably, the problem seems to mostly affect very young children and becomes less common by school age, the researchers found.

Further research is needed to better understand the cause of this immune malfunction and find ways to remedy it, researchers say. In the meantime, doctors should rethink how they treat recurrent wheezing, Teague says.

Before prescribing powerful corticosteroids, doctors must ensure that children have inflammation that will respond to the steroids rather than lung infections that would be better treated with antivirals.

"Viral infections are the most important trigger of acute wheeze episodes in children and, in some cases, lead to respiratory distress and hospital care. We hope this discovery will stimulate further work in the treatment of recurrent wheeze and viral infections in children," Teague said.

"The field has to get away from overuse of potentially toxic steroids for the treatment of acute wheeze to include novel therapies which target specific patterns of inflammation," he added.

Based on the findings, Teague plans to study whether this type of faulty immune response may also be a risk factor for children developing asthma.

More information: W. Gerald Teague et al, A novel syndrome of silent rhinovirus-associated bronchoalveolitis in children with recurrent wheeze, *Journal of Allergy and Clinical Immunology* (2024). DOI: [10.1016/j.jaci.2024.04.027](https://doi.org/10.1016/j.jaci.2024.04.027)

Journal information: [Journal of Allergy and Clinical Immunology](#)

Provided by **University of Virginia**

-medicalxpress.com, August 6, 2024