Asthma does not seem to increase the severity of COVID-19

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Asthma does not appear to increase the risk for a person contracting COVID-19 or influence its severity, according to a team of Rutgers researchers.

"Older age and conditions such as heart disease, high blood pressure, chronic obstructive pulmonary disease, diabetes and obesity are reported risk factors for the development and progression of COVID-19," said Reynold A. Panettieri Jr., a pulmonary critical care physician and director of the Rutgers Institute for Translational Medicine and Science and co-author of a paper published in the *Journal of Allergy and Clinical Immunology*. "However, people with asthma—even those with diminished lung function who are being treated to manage asthmatic inflammation—seem to be no worse affected by SARS-CoV-2 than a non-asthmatic person. There is limited data as to why this is the case—if it is physiological or a result of the treatment to manage the inflammation."

Panettieri discusses what we know about asthma and inflammation and the important questions that still need to be answered.

How might awareness of SARS-CoV-2 affect the health of people with asthma?

Since the news has focused our attention on the effects of COVID-19 on people in vulnerable populations, those with asthma may become hyper-vigilant about personal hygiene and social distancing. Social distancing could improve asthma control since people who are self-quarantined are also not as exposed to seasonal triggers that include allergens or respiratory viruses. There is also evidence that people are being more attentive to taking their asthma medication during the pandemic, which can contribute to overall health.

What effect might of inhaled steroids have on COVID-19 outcomes?

Inhaled corticosteroids, which are commonly used to protect against asthma attacks, also may reduce the virus' ability to establish an infection. However, studies have shown that steroids may decrease the body's immune response and worsen the inflammatory response. Steroids also have been shown to delay the clearing of the SARS and MERS virus—similar to SARS-CoV-2—from the respiratory tract and thus may worsen COVID-19 outcomes. Future studies should address whether inhaled steroids in patients with asthma or allergies increase or decrease the risks of SARS-CoV-2 infection, and whether these effects are different depending on the steroid type.

In what way does age play a role in how asthma patients react to exposure to the virus?

A person's susceptibility to and severity of COVID-19 infection increases with age. However, since asthma sufferers tend to be younger than those with reported high-risk conditions, age-adjusted studies could help us better understand if age is a factor in explaining why asthma patients may not be at greater risk for infection.

Children and young adults with asthma suffer mainly from allergic inflammation, while older adults who experience the same type of airway inflammation can also suffer from eosinophilic asthma—a more severe form. In these cases, people experience abnormally high levels of a type of white blood cell that helps the body fight infection, which can cause inflammation in the airways, sinuses, nasal passages and lower respiratory tract, potentially making them more at risk for a serious case of COVID-19.

In addition, an enzyme attached to the cell membranes in the lungs, arteries, heart, kidney and intestines that has been shown to be an entry point for SARS-CoV-2 into cells is increased in response to the virus. This enzyme is also thought to be beneficial in clearing other respiratory viruses, especially in children. How this enzyme affects the ability of SARS-CoV-2 to infect people with asthma is still unclear.

How might conditions in addition to asthma affect a person's risk of infection?

Asthma tends to be associated with far fewer other conditions than chronic obstructive pulmonary disease or cardiovascular disease. If SARS-CoV-2 is a disease that causes dysfunction in the cells that line blood vessels throughout the body, then diabetes, heart disease, obesity and other diseases associated with this condition may make people more susceptible to the virus than those who are asthmatic. However, older people with asthma who also have high blood pressure, diabetes or heart disease may have similar instances of COVID-19 as non-asthmatics with those conditions.

More information: Reynold A. Panettieri et al, Asthma and COVID: What Are the Important Questions?, *The Journal of Allergy and Clinical Immunology: In Practice* (2020). DOI: 10.1016/j.jaip.2020.06.008

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