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Intestinal parasites may hold the secret to preventing severe COVID-19 infection. (Auto generated image)

Research: Can intestinal parasites prevent the severe course of covid? The opinions of experts differ

George Citroner | 18/09/2023

Could parasitic worms hold the key to mitigating the severe course of covid-19? This interesting question arises from new research by scientists at the National Institute of Allergy and Infectious Diseases (NIAID).

Public health experts have noticed an unexpected trend during the coronavirus pandemic. "Countries across Africa and Asia reported fewer cases of serious infections, such as hospitalizations or deaths, far fewer than the rest of the world," postdoctoral researcher and study co-author Kerry Hilligan said in a press release. She emphasized the connection between these areas and the endemic presence of infection caused by intestinal parasites of the order of hookworms.

Scientists at NIAID were so intrigued that they decided to investigate the topic further. They followed up on a small hospital-based study in Ethiopia that found covid-19 patients co-infected with parasitic worms had a significantly lower risk of severe symptoms.

"This research is a great first step toward understanding how the course of covid can be modulated or dampened in some cases," Dr. Thomas Gut, director of the Covid Recovery Center at Staten Island University Hospital in New York.

He noted that he would never recommend intentionally infecting a patient with another type of infection, which carries its own set of risks. "However, the results found offer an opportunity for further research into how inappropriate immune responses can be better controlled," adds Dr. Gut.

Parasite infection increases lung immunity

The idea that parasitic worms such as helminths influence our immune response to infections by other pathogens is not new. Previous research shows that worms can stimulate both the innate immune system (our first-line response) and our adaptive immune response, carried out by antibodies that "learn" which new disease to attack.

In the new study, researchers infected mice with the N. brasiliensis worm to serve as a surrogate for human hookworm infection and then exposed them to the SARS-CoV-2 virus. The larvae migrated to the lungs, where they activated immune cells. Mice infected with the worms were more likely to survive lethal doses of covid than uninfected mice - 60 percent versus 20 percent survival.

Lungworms inform macrophages to quickly send out immune cells that control SARS-CoV-2, Oyebola O. Oyesola, a postdoctoral fellow at the National Institutes of Health and co-author of the study, explained in a press release.

Later experiments found that it was the worms located in the lungs, not just the intestines, that provided protection against covid. Another investigation found that seven days after being infected with covid, only mice exposed to the worms had much higher levels of cytotoxic T lymphocytes (CD8+ T cells), which destroy infected cells.

The importance of this T lymphocyte in the fight against covid-19 infection was confirmed when the researchers found that the depletion of CD8 reversed the protective effects of the worms.

"What's more, this effect appears to be long-lasting, with macrophages retaining this very strong ability to recruit and activate CD8 T cells long after the cyst has been removed from the body," said Kerry Hilligan.

In the future, the research team wants to understand the cellular signals and create the effect without the need for parasitic worms.

There are other approaches

However, not all experts agree with the use of parasitic worms.

Dr. Jacob Teitelbaum, a nationally known expert on chronic fatigue syndrome, fibromyalgia, sleep and pain, a board-certified internist who treats covid patients, disagrees with the intentional involvement of worms due to their potential downsides. "We have a number of tools that I would personally use before I would consider infesting the western world with these worms," he said.

Dr. Teitelbaum advocates nutritional supplements such as zinc, vitamin D and black elder to reduce the severe course of covid-19. He also recommends the diabetes medication metformin, which is considered a possible treatment for covid-19 because it can work against proteins involved in virus replication. It has demonstrated antiviral effects in laboratory tests and has anti-inflammatory and anti-clotting properties.

"[It] clearly reduces the risk of long covid [by] 50 percent while helping with acute infection," he said.

Evidence for and against

While NIAID research found that these parasites can help boost the immune system against infection, other evidence suggests that they could instead impair the body's ability to fight SARS-CoV-2.

Intestinal parasites live in the intestines, feeding on nutrients. Although they are generally considered a nuisance, some research has shown that they can positively affect immune function.

A 2022 review of studies published in *Therapeutic Advances in Gastroenterology* found that non-bacterial gut organisms, such as parasitic worms, may be beneficial by influencing immune development and microbiome diversity. One of the studies reviewed showed that intestinal marsupial improved gluten tolerance in celiac patients.

On the other hand, there are concerns that intestinal parasites could hinder the body's ability to fight off disease. Helminths can increase cancer risk through chronic low-grade inflammation, secretion of procarcinogenic factors, and suppression of immune surveillance against tumors.

Overall, the evidence for how parasitic worms affect immunity is mixed. Because covid-19 is still new, more research is needed into factors influencing disease outcomes.

Expert advice: Take care of your overall health to reduce your risk of disease

More studies are needed to determine whether intestinal parasites help with covid or not. Anyone with a "significant medical history" and pre-existing conditions is at increased risk of having a more severe course of the disease if infected with covid, explains Dr. Gut.

Maintaining overall health through diet, exercise, hygiene and preventative measures should be a priority. "Given the low death rate from covid, especially in younger people, and the health disadvantages of these worms, especially after they complete the lung cycle, I would not recommend the worms," says Dr. Teitelbaum.

It is also a matter of course that you consult your doctor first.