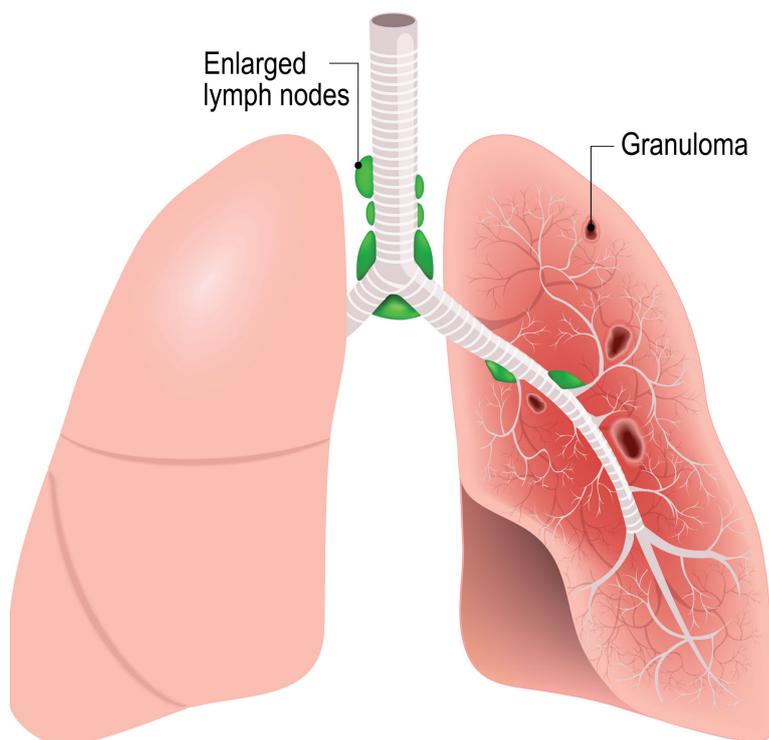


Miller School Study Illuminates Sarcoidosis in Veterans

Sarcoidosis is a chronic, inflammatory condition that can affect lungs, skin, liver and other organs. This poorly understood disease may cause breathing issues, blindness, liver cirrhosis and other health issues. Sometimes, sarcoidosis is fatal.



The research found that civilians and military veterans develop sarcoidosis based on different environments and exposures.

Now, researchers from the University of Miami Miller School of Medicine, led by Mehdi Mirsaeidi, M.D., M.P.H., have published research that sheds new light on this condition. By testing blood from civilians and military veterans with sarcoidosis, the researchers found the disease may have different environmental drivers for each group. The research was published on December 20 in *Nature Scientific Reports*.

“Veterans, particularly those who served in the Middle East, have been exposed to different hazardous materials: dust, burning pits, jet fuel, gunpowder,” said Dr. Mirsaeidi, assistant professor in the Division of Pulmonary and Critical Care and director of the University of Miami and U.S. Department of Veterans Affairs’ sarcoidosis programs. “So, sarcoidosis in civilians and veterans should not be seen as being the same. The cause of the disease is likely different based on the environments and exposures patients have.”

To better understand sarcoidosis in these different groups, the team collected blood samples from civilians with sarcoidosis, veterans with sarcoidosis and veterans with chronic obstructive pulmonary disease (COPD) to identify the hazards that may have precipitated each group’s disease. They also wanted to understand the factors that make veterans more prone to COPD than sarcoidosis.

Mirsaeidi and colleagues conducted comprehensive metabolomic and metallomic profiles for 78 patients. Of the group, 30 civilians and 13 veterans were being treated for sarcoidosis and 35 veterans for COPD. Metabolomics identifies metabolites – compounds produced by the body’s normal chemical processes – while metallomics looks at the metal ions associated with

certain biological mechanisms.

The study showed that metabolomic/metallomic profiles varied substantially between veterans and civilians, outlining different paths to sarcoidosis and confirming that diverse environmental hazards can trigger the disease. In particular, veterans had reduced levels of the amino acids needed to fight inflammation.

“We learned that veterans with sarcoidosis should be seen differently,” Dr. Mirsaeidi said. “Determining the mechanisms of the disease and how people end up with the disease can show us how we can help them. This could have a significant impact on clinical practice.”

The metallomics analysis showed veterans had higher levels of cesium, gallium, nickel, uranium and many other metals. It also found elements that disrupt immune cells. The rare earth element lanthanum can block calcium, affecting the protein ANXA11, which has been linked to pulmonary fibrosis and sarcoidosis.

While the metabolomic variations between veterans with sarcoidosis and COPD were relatively small, the metallomic differences were significant, highlighting a path for future research.

Mirsaeidi and colleagues are planning a larger study, with a 1,000 or more veterans, to confirm these results and possibly find additional causal information for sarcoidosis.

Ultimately, these findings are an important step towards understanding how environmental influences drive sarcoidosis

and could lead to better systems to monitor veterans for the disease.

“Sarcoidosis in veterans may be an occupational disease,” Dr. Mirsaeidi said. “If that is true, then it is possible more veterans will develop sarcoidosis, or other respiratory diseases, from their times in the service. We need to be prepared.”