

Marker involved in lymphatic system connected to heart failure

March 8 2018

Researchers at Lund University in Sweden have found a new marker in the blood associated with an increased risk of heart failure. Surprisingly, the marker is not directly involved in how the heart functions, unlike most of the previously known markers. Instead, the new marker affects processes in the lymphatic system.

Heart failure is a condition in which the heart is unable to pump a sufficient supply of blood around the body. The symptoms can be vague and there are many possible causes. Researchers at Lunds University have therefore looked for markers, or signal substances in blood, for faster detection of [heart failure](#).

"We saw a clear connection in the analyses between a certain marker, a growth factor for lymphatic vessels called VEGF-D, and the risk of developing heart failure. This applied particularly to women," says Yan Borné, researcher at Lund University. The results have been published in the *Journal of the American College of Cardiology*.

The growth factor is involved in endothelial growth, regulating how the cells on the inside of the vessels grow. "Previous markers for heart failure have been primarily related to the heart and the strain the heart is subjected to. We started with the lymphatic system instead, and the fact that people with heart failure retain fluid. The marker we identified affects the [lymphatic vessels](#) so that they help the body to remove fluid, from the legs for example," says Gunnar Engström, Professor of Cardiovascular Epidemiology at Lund University.

In the epidemiological study, the [researchers](#) followed 4,265 people from 1991 to 2014 in the Malmö Diet and Cancer Study. Using proteomics, which makes it possible to map a large number of proteins from a small blood sample, the researchers could measure the marker in question among the subjects, who had not been previously diagnosed with heart failure. The results showed that subjects with a raised level of VEGF-D had an increased risk of subsequently developing heart failure.

The researchers also studied a group of 430 patients with breathing difficulties who visited the emergency room at Skåne University Hospital in Malmö in 2013-2014. Of the 430 patients, 152 were given a diagnosis of heart failure. These people also had a raised level of VEGF-D. Yan Borné says that in the group with a raised level of VEGF-D, the likelihood of heart failure was four times greater than for those with a lower level of the marker.

"The results indicate that this marker could be used at an early stage to predict future heart failure, in view of how it affects the lymphatic system. We hope that in time the discovery will lead to a faster diagnosis at emergency departments," says Borné.

The next step, in addition to replicating the results, will be to investigate if there are genetic causes linked to the [growth factor](#) VEGF-D and the risk of developing heart failure. "We have seen a connection between [heart failure](#) and the marker. However, we do not know exactly how the mechanism works between them - this remains to be investigated," says Borné.

More information: Yan Borné et al, Vascular Endothelial Growth Factor D, Pulmonary Congestion, and Incidence of Heart Failure, *Journal of the American College of Cardiology* (2018). [DOI: 10.1016/j.jacc.2017.11.058](https://doi.org/10.1016/j.jacc.2017.11.058)

Provided by Lund University

Citation: Marker involved in lymphatic system connected to heart failure (2018, March 8)
retrieved 18 April 2024 from

<https://medicalxpress.com/news/2018-03-marker-involved-lymphatic-heart-failure.html>

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