Genetic test reveals risk of atrial fibrillation and stroke

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Many of those who are genetically predisposed to develop atrial fibrillation, which dramatically raises the risk of stroke, can be identified with a blood test. This is shown by new research from Lund University in Sweden.

The number of people affected by atrial fibrillation is rising rapidly, partly as a result of the ageing population.

Over recent years, a research group at Lund University in Sweden, working with other universities and hospitals in Europe and the USA, has identified twelve genetic variants in the human genome that increase the risk of atrial fibrillation. The research group has now studied the possible clinical benefits of a DNA test:

"One in five people have a genetic weakness that means they have twice as high a risk of developing atrial fibrillation as those with a low genetic risk. This genetic risk is therefore one of the strongest risk factors for atrial fibrillation that we know of in people without overt cardiac disease. It increases the risk as much as high blood pressure, for example", said Olle Melander, Professor of Internal Medicine, and Gustav Smith, Associate Professor in Cardiology, both from Lund University.

Since the symptoms of atrial flutter can be weak and unclear, they are sometimes difficult to pick up. However, even those with weak or absent symptoms of atrial flutter are at significantly higher risk of stroke.

"In patients who are suspected of having temporary but recurrent episodes of atrial fibrillation, or in people with high blood pressure, it can be important for doctors to look at their genetic predisposition using a blood test. The test can give guidance as to how often and how intensively doctors need to screen for presence of atrial fibrillation in these individuals. We also consider that more widespread treatment of high blood pressure may be justified in those with a high genetic risk of atrial fibrillation", explained Professor Melander.

Patients already diagnosed with atrial fibrillation were also studied, and the researchers observed that if they had the risk genes, their risk of stroke was increased by a further 70–80 per cent.

If an individual with atrial fibrillation is regarded as having a sufficiently high stroke risk, lifelong treatment with anticoagulant drugs such as warfarin is required in order to lower the risk.

"There are also benefits of checking the genetic risk of those who have already been diagnosed with atrial fibrillation. The test makes it easier to correctly assess whether anticoagulant medication is necessary to prevent stroke, especially for those under 65", said Olle Melander.

The research data was taken from a long-term follow-up of 27 400 participants in a population study.

"The present results are one of several examples of how genetics research is not only an effective way of identifying new disease mechanisms, but can also have clinical applications and help doctors and patients to decide on the right tests and treatment", said Olle Melander.

More information: "Twelve–Single Nucleotide Polymorphism Genetic Risk Score Identifies Individuals at Increased Risk for Future Atrial Fibrillation and Stroke." Hayato Tada, Dov Shiffman, J. Gustav

Smith, Marketa Sjögren, Steven A. Lubitz, Patrick T. Ellinor, Judy Z. Louie, Joseph J. Catanese, Gunnar Engström, James J. Devlin, Sekar Kathiresan, and Olle Melander. *Stroke*. 2014;45:2856-2862, published online before print August 14 2014, DOI: 10.1161/STROKEAHA.114.006072