A tiny channel and a large vessel: A new clue for heart attack

September 9 2013

(Medical Xpress)—Scientists at The University of Manchester and medical institutes in Italy have identified a gene variant that predisposes people to a special type of heart attack.

Their research, published in the *International Journal of Cardiology* could lead to the development of new drugs to treat the problem.

Dr Paolo Tammaro, who led the team, said: "Heart attacks happen when the blood supply to the heart is reduced by the narrowing or blocking of the coronary artery – the vessel that supplies the heart with oxygen and nutrients. Often this is due to fatty deposits which narrow the vessel. However, in some people with perfectly clean arteries, the vessel suddenly constricts shutting off the blood supply. We have discovered that this process, known as vasospasm, can be associated with a rare variant of a particular gene."

Dr Enzo Emanuele, from the University of Pavia, who screened the patients, said: "We knew that this type of heart attack occurs in about 6% of patients and that many of them have a genetic predisposition, but we did not know the gene responsible. Now that it is identified it will be possible to predict who is at risk and to treat them accordingly."

The gene identified by the team encodes a protein termed KATP channel. This protein forms microscopic gated pores that allow potassium ions to move into and out of the cells, in this way giving rise to electrical impulses.

Dr Tammaro and research scientist Keith Smith, both based at the Faculty of Life Sciences at The University of Manchester, added: "These channels are abundant in the cells forming the wall of coronary arteries, and the electrical impulses they generate govern this artery's diameter. Due to the mutation we have identified, the KATP channel in the coronary artery can no longer fulfill this delicate process."

The team, whose work was supported by the BBSRC (Biotechnology and Biological Sciences Research Council), now plans to approach pharmaceutical companies with their findings, aiming to design novel drugs that could interact with this new target.

More information: Smith, K. et al. Coronary spasm and acute myocardial infarction due to a mutation (V734I) in the nucleotide binding domain 1 of ABCC9, (2013) *Int J Cardiol*. doi:pii: S0167-5273(13)00969-8. 10.1016/j.ijcard.2013.04.210.

Provided by University of Manchester