Medical Xpress

Research reveals link between high cholesterol levels and risk of aortic valve disease

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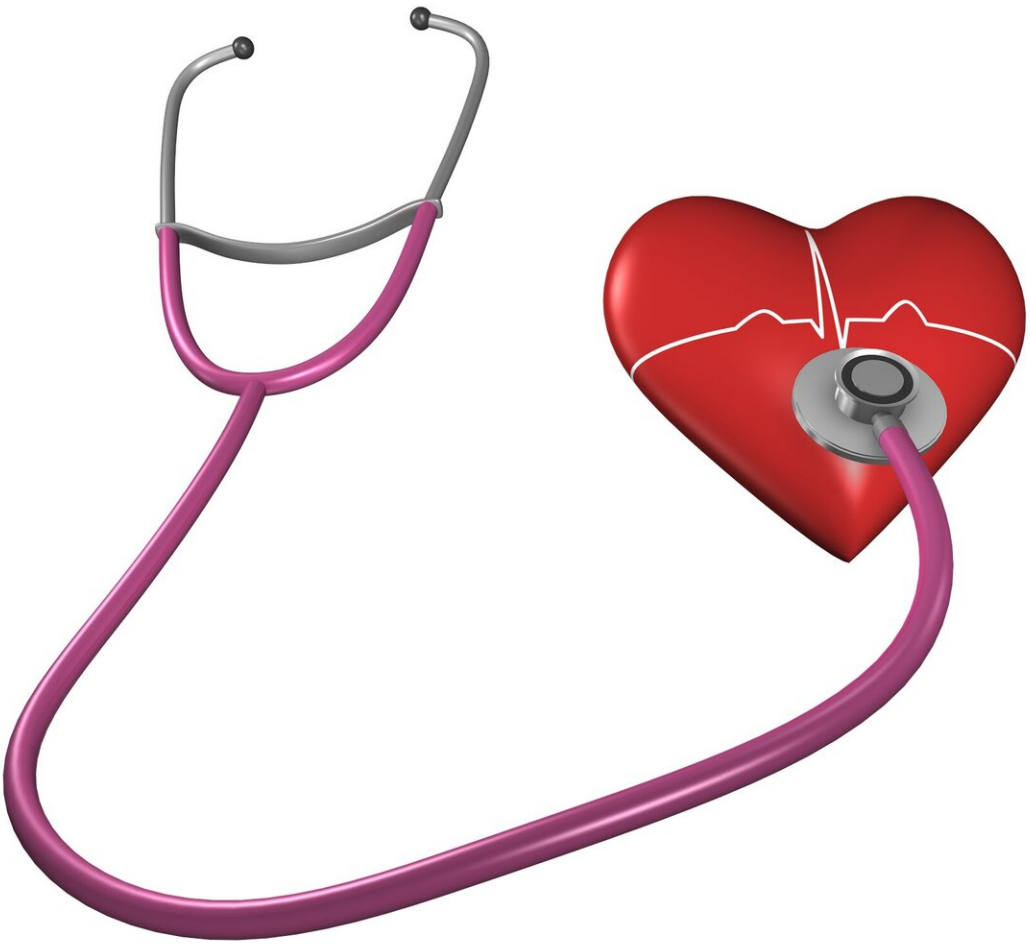

Researchers from The George Institute for Global Health at the University of Oxford have found that while having high cholesterol levels does not influence your risk of aortic or mitral valve regurgitation, it does increase your risk of developing another major heart valve disease—aortic stenosis.

Aortic stenosis is the most common form of heart valve disease in developed countries and is thought to affect 2-7% of those over the age of 65. The disease is characterised by restricted blood flow through the valve, with affected individuals commonly experiencing symptoms such as chest pain, shortness of breath, heart palpitations and, in more severe cases, collapse and loss of consciousness.

The study team used a state-of-the-art method called Mendelian randomization to determine this causal effect. At fertilisation (the union of a human egg and sperm cell), we are all randomly allocated genes that are known to be associated with health-related characteristics in later life; in this case either normal or high cholesterol levels. Researchers were therefore able to categorise the study population by genetically-determined cholesterol level and then directly compare outcomes in terms of onset of aortic stenosis.

"Until recently, aortic stenosis has been widely considered a degenerative disorder associated with ageing with no recommended medical guidance for its prevention. Management has, therefore, focused largely on valve replacement surgery or catheter intervention," said Milad Nazarzadeh who led the research using data from the UK

Biobank.

These management options are associated with significant complications and procedural costs estimated at £10,000 for valve replacement surgery and £16,000 for catheter intervention in the UK.

Professor Jeremy Pearson, Associate Medical Director at the British Heart Foundation, said: "Aortic stenosis is the narrowing of the aortic valve, the 'door' between the main pumping chamber of the heart—the left ventricle—and the body's main blood vessel—the aorta. This study shows that having high levels of 'bad' LDL cholesterol in the blood stream for a prolonged amount of time could increase your risk of developing the condition, putting extra strain on your heart to pump blood around the whole body.

"It's important that we know whether our cholesterol levels are in a healthy range or not. The good news is that getting access to these numbers is easy. Everyone between the ages of 40-74 is eligible for a free NHS health check, which assesses your risk of developing heart and circulatory diseases and includes a cholesterol measurement—a service we should all be taking advantage of."

Crucially, the evidence that high cholesterol is a risk factor for aortic stenosis presents clinicians with an opportunity to modify disease risk via preventative measures, for instance through the use of cholesterol -lowering medications such as statin therapy.

More information: Milad Nazarzadeh et al, Plasma lipids and risk of aortic valve stenosis: a Mendelian randomization study, *European Heart Journal* (2020). DOI: 10.1093/eurheartj/ehaa070