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Study Sheds Light on Aneurysm Prevention

Researchers at the University of Rochester Medical Center in New York said removing the gene that makes the protein cyclophilin A protected mice genetically predisposed to developing aneurysms.

Reporting in the journal Nature Medicine, the researchers said they were looking for drugs that might block this same protein in humans, offering a new way to protect people from abdominal aortic aneurysms, which kill 15,000 people a year in the United States.

Abdominal aortic aneurysms occur when the aorta -- the body's main blood vessel -- develops a weak spot and begins to bulge. They are often undetected, and when they rupture, they are fatal in 90 percent of cases.

Dr. Bradford Berk, who led the study, said the cyclophilin A protein may offer a highly targeted way of preventing this process.

Prior studies of abdominal aneurysms have suggested that angiotensin II, a hormone for controlling blood pressure, brings about the vessel damage. Berk thinks angiotensin II unlocks cyclophilin A, which causes a lot of the damage.

"It influences the formation of aneurysms in many ways," Berk said in a telephone interview.

He said cyclophilin A encourages the production of harmful compounds known as reactive oxygen species, which trigger cells to self-destruct.

It also increases inflammation and degrades structural components in the vessel wall, weakening blood vessels.

"ABSOLUTE PROTECTION"

To understand what role cyclophilin A plays, Berk and colleagues used mice bred to be predisposed to high cholesterol and high blood pressure.

From this group, they bred mice that lacked cyclophilin A. All were treated with angiotensin II, which is known to raise blood pressure and accelerate the development of aneurysms.

While 78 percent of mice with normal amounts of the cyclophilin A developed aortic aneurysms, none of the mice who lacked the protein did.

"It is extremely unusual for the removal of one protein to provide absolute protection, but it makes perfect sense because cyclophilin A promotes three of the most destructive forces in blood vessels -- oxidative stress, inflammation and matrix degradation," Berk said in a statement.
(source: reuters.com)

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