MedicalXpress

New coating may reduce blood clot risk inside stents

September 5 2013

Coating artery-opening stents with a new compound may someday eliminate a common side effect of the treatment, according to preliminary research in the American Heart Association journal *Arteriosclerosis, Thrombosis, and Vascular Biology*.

Stents are tiny mesh tubes that prop open clogged arteries so blood will flow freely to heart muscle, relieving chest pain and reducing the risk of heart attack. But implanting a stent damages the inner lining of the artery, triggering overgrowth of smooth muscle in the middle layer of the artery, a process that can re-narrow the passageway as the vessel wall thickens. To prevent this, stents are frequently coated with one of several medications that block smooth muscle growth.

However, the drugs that inhibit re-narrowing don't prevent another possible problem—blood clots forming inside the vessel with the stent—and make the side effect more likely. This happens because the medications also interfere with the repair and regrowth of a smooth and healthy layer of blood vessel lining cells (called endothelium) in the area of the stent.

In animal experiments of blood vessel injury, researchers found that a compound called a CTP synthase inhibitor successfully blocked smooth muscle growth and either promoted or didn't interfere with the growth of endothelial cells.

"We hope it may someday provide a long-term fix by supporting repair

of the injured endothelium," said Shi-You Chen, Ph.D., senior author of the study and associate professor of physiology in the Department of Physiology and Pharmacology at the University of Georgia College of Veterinary Medicine in Athens. "Most currently available drug-eluting stents also stop the growth of the inner layer of endothelial cells. This delays repair of the stent-injured lining and can trigger inflammation and formation of a blood clot at the injury site, which may severely block coronary blood circulation and damage the heart."

Patients with stents are at the greatest risk for blood clots within the first 30 days after the initial procedure, but the potential for blood clots remains a year or more after stent insertion.

More information: Abstract
Full Text (subscription or payment may be required)

Provided by American Heart Association