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Innovative treatment option rapidly reduces harmful cholesterol levels after heart attack

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Results from the multi-center, randomized PREMIER clinical trial show a new treatment option dramatically lowers rates of low-density lipoprotein (LDL) for heart attack patients following an interventional cardiology procedure called percutaneous coronary intervention (PCI). The minimally invasive, one-time treatment decreases LDL levels by 50 to 80 percent in two to three hours. The study was funded by the Department of Veterans Affairs (VA) and presented today as late-breaking clinical research at the Society for Cardiovascular Angiography and Interventions (SCAI) 2019 Scientific Sessions.

According to the American Heart Association, one in four men and one in three women will die within the following year of having a heart attack, most often by cardiac arrest or another heart attack. High levels of LDL, known as the "bad cholesterol", causes plaque build up in arteries increasing one's risk for heart attack, stroke and other adverse cardiac events. Yet, of the more than 71 million adults in the U.S. with high LDL, less than half seek treatment (CDC), making them more likely to experience a heart attack and need PCI.

The clinical trial included patients from across four VA centers in the U.S. The study randomized 160 acute coronary syndrome (ACS) patients within 72 hours after PCI. LDL was removed by extracorporeal filtration during LDL-apheresis, using a machine that filters out only LDL from the blood. The study comprised single LDL-apheresis vs. no LDL-apheresis on background statin therapy. Trial objectives included primary safety and efficacy endpoints.

Findings show LDL was dramatically lowered by an average 53 percent in patients by a single LDL-apheresis treatment lasting an approximately three hours. Both treatment groups were comparable at baseline. The mean LDL reduction at discharge was lowered by a mere 17 percent in no LDL-apheresis group. The primary efficacy endpoint, percent change in atheroma or plaque volume at 90 days by intravascular ultrasound decreased by 4.81 percent (95 percent CI, -8.91 to -.71) in LDL-apheresis group and increased by 2.31 percent (95 percent CI, -3.98 to 8.61) in no LDL-apheresis group. These results were not statistically significant (p=0.06).

"With the incidence of heart attacks on the rise, the ability to rapidly reduce the burden of bad cholesterol is critical. The LDL-apheresis technology may provide patients an incredibly effective and efficient treatment option to reduce risk of a second heart attack and improve coronary health," said lead author Subhash Banerjee, MD, FSCAI, VA North Texas Health Care System & UT Southwestern Medical Center in Dallas, TX. "We saw that LDL levels remained low for up to six weeks, giving patients critical time to jumpstart their recovery after a heart attack. We have now created the opportunity to interrupt the course of this disease and advance outcomes for heart attack patients across the country. However, more work in this area is needed to demonstrate clinical benefit of this therapy".

To further verify their findings, the next step the authors claim is to examine the outcome of LDL-apheresis treatment on a broader range of patients, with greater representation of women.

More information: "Featured Clinical Research, Part I: Plaque Regression and Endothelial Progenitor Cell Mobilization With Intensive Lipid Elimination Regimen (PREMIER)" [May 21, 2019, 11:35 a.m. - 11:45 p.m. PDT, Belmont Ballroom 4]

Provided by Society for Cardiovascular Angiography and Interventions