Lipoprotein apheresis a possible new approach to refractory angina

August 29 2016

Lipoprotein apheresis, a therapy normally used to filter excess cholesterol from the blood of patients with familial hypercholesterolemia, may have a new role in patients with refractory angina.

New results reported during a Hot Line session at ESC Congress 2016 showed the extracorporeal treatment resulted in significant improvements compared to sham therapy in patients who had refractory angina along with raised levels of lipoprotein(a).

"Angina which is refractory to both medical therapy and revascularisation is a debilitating condition that is increasing in frequency, and there is a pressing need for novel treatments for these patients," said lead investigator Tina Khan, MRCP, from Royal Brompton Hospital in London, United Kingdom.

The apheresis procedure study was conducted at Harefield Hospital, Harefield NHS Trust and Imperial College in London, United Kingdom, under the Directorship of the Principal Investigators Mahmoud Barbir, FRCP and Dudley Pennell, MD.

"These patients continue to suffer with troublesome angina despite optimal medical therapy, as well as surgical and/or percutaneous coronary revascularization, and available treatment options are limited," she added.

"Our trial provides the first evidence that lipoprotein apheresis leads to improvement among these patients in the primary endpoint of myocardial blood flow, as measured by myocardial perfusion reserve, as well as the secondary endpoints of exercise capacity, angina symptoms, quality of life and atheroma burden. Therefore this treatment approach could improve the cardiac health and lives of such patients."

Lipoprotein(a) - abbreviated as Lp(a) - is similar in structure to LDL cholesterol, except for an additional protein attached called apolipoprotein(a). Raised Lp(a) is a strong risk factor for coronary heart disease and may be prevalent in patients with refractory angina.

Studies suggest that elevated Lp(a) may promote atherosclerosis and reduce blood flow through the heart (myocardial perfusion), but there is currently no effective pharmacologic treatment yet approved to treat elevated Lp(a) - and it is essentially resistant to conventional lipid-lowering treatment with statins, said Dr. Khan.

However, Lp(a) can effectively lowered with lipoprotein apheresis.

The prospective randomised, sham controlled, blinded, cross-over study included 20 patients with refractory angina and elevated Lp(a) levels above 500mg/L.

Participants were randomised to weekly lipoprotein apheresis or sham treatments for 3 months and then crossed over for another 3 months, with a one-month washout period in-between.

The primary outcome, measured with cardiac magnetic resonance imaging, was Myocardial Perfusion Reserve (MPR) – which is the ratio of the myocardial blood flow at stress versus rest after three months of lipoprotein apheresis, compared to baseline.

The study showed a significant increase of 0.63 in MPR after apheresis treatment compared to sham (P