

Apheresis as novel treatment for refractory angina with raised lipoprotein(a): A Randomised Controlled Trial

Authors:

Dr Tina Khan, Dr Li-Yueh Hsu, Dr Andrew E Arai, Samantha Rhodes, Alison Pottle, Ricardo Wage, Winston Banya, Dr Peter D Gatehouse, Dr Shivraman Giri, Prof. Peter Collins, Prof. Dudley J Pennell, Dr Mahmoud Barbir

Disclosures:

DJP is a consultant to Siemens and Bayer, and a stockholder and director of Cardiovascular Imaging Solutions.

SG is a Siemens employee.

PC is a consultant to Itamar Medical.

The other authors have no conflicts to declare.

Declaration of Interest

- I have nothing to declare



Background

- **Refractory Angina is challenging to manage and novel therapeutic options are needed.**
- **Raised lipoprotein(a) [Lp(a)] is an independent cardiovascular risk factor that can be effectively reduced by lipoprotein apheresis.**
- **Raised Lp(a) may be prevalent in Refractory Angina.**
- **To date there is no randomised controlled data assessing the clinical benefit of lipoprotein apheresis in patients with refractory angina and raised lipoprotein(a).**

Declaration of Interest

- **DJP is a consultant to Siemens and Bayer, and a stockholder and director of Cardiovascular Imaging Solutions.**
- **SG is a Siemens employee.**
- **PC is a consultant to Itamar Medical.**
- **The other authors have no conflicts to declare.**

Purpose and key points about methods

- **Purpose:** To determine the effect of LA on quantitative myocardial perfusion, carotid atheroma, exercise capacity, angina symptoms and quality of life (QoL) in patients with refractory angina and raised Lp(a) >500mg/L.
- **Methods:** An RCT with cross-over design in 20 patients with refractory angina and Lp(a) > 500mg/L and LDL <4mmol/L, randomised to 3 months of blinded weekly lipoprotein apheresis or sham, followed by crossover.
- **Primary endpoint:** was change in quantitative myocardial perfusion reserve (MPR) by cardiovascular magnetic resonance (CMR).
- **Secondary endpoints:** included measurement of carotid atheroma burden by CMR, exercise capacity, angina symptoms and quality of life.

Results

- **Primary endpoint: MPR increased by 0.47 [95% CI, 0.31 to 0.63] from 1.45 ± 0.36 to 1.93 ± 0.45 following apheresis, but decreased during sham by -0.16 [95% CI, -0.33 to 0.02] from 1.63 ± 0.43 to 1.47 ± 0.30 ; yielding a net treatment increase of 0.63 [95% CI 0.37 to 0.89; $p < 0.001$ between groups].**
- **Secondary endpoints: Significant improvements in exercise capacity, angina symptoms, quality of life and atheroma burden.**

Conclusions

- **In patients with refractory angina and raised Lp(a), apheresis leads to statistically significant benefits in**
 - myocardial perfusion,
 - carotid atheroma,
 - exercise capacity,
 - angina symptoms and
 - quality of life