



## Lipoprotein apheresis improves intima media thickness regression: Evidence in the era of new lipid-lowering therapies

Dear Editor,

Lipoprotein apheresis (LA) plays a fundamental role in the management of severe hypercholesterolemia that predispose to atherosclerosis because, decreasing the pool of cholesterol, result in regression of xanthoma and atherosclerotic coronary lesions [1].

The long-term effects of lipoprotein apheresis (LA) on carotid atherosclerosis in heterozygous Familial Hypercholesterolemia (FH) have been known since 1999 [2]. In heterozygous FH, atherosclerosis progresses over time [2] and aggressive cholesterol-lowering treatment may delay this process [3].

Recently Safarova et al. confirm the role of Lipoprotein Apheresis (LA) in slowing “vascular aging” in subjects with severe hypercholesterolemia [4]. Moreover, in our own experience, the association of chronic LA with evolocumab further accentuates carotid intima-media thickness regression [5].

In the era of new lipid-lowering therapies, it is important to keep in mind that for decades, despite being considered a therapeutic “*Cinderella*”, LA established itself as a safe and lifesaving treatment. Even today, LA will continue to maintain its clinical usefulness because PCSK9 inhibitors are not effective in null receptor homozygous FH [6], their effects on Lp(a) levels are unpredictable [7] and many patients with inherited hypercholesterolemia fail to archive LDL cholesterol target despite PCSK9i therapy, especially in the presence of statin intolerance [8].

### Author statement

All authors have seen and approved the study submitted. No part of the submitted work has been published or is under consideration for publication elsewhere.

### Funding

No financial support was received.

### Acknowledgments

None.

### Disclosures

No conflict of interest for each author.

### References

- [1] Thompson GR. The scientific basis and future of lipoprotein apheresis. *Ther Apher Dial* 2022;26:32–6.
- [2] Koga N, Watanabe K, Kurashige Y, Sato T, Hiroki T. Long-term effects of LDL apheresis on carotid arterial atherosclerosis in familial hypercholesterolaemic patients. *J Intern Med* 1999;246:35–43.
- [3] Ezhov MV, Safarova MS, Afanasieva OI, Pogorelova OA, Tripoten MI, Adamova IY, et al. Specific lipoprotein(a) apheresis attenuates progression of carotid intima-media thickness in coronary heart disease patients with high lipoprotein(a) levels. *Atheroscler Suppl* 2015;18:163–9.
- [4] Safarova MS, Nugent AK, Gorby L, Dutton JA, Thompson WJ, Moriarty PM. Effect of lipoprotein apheresis on progression of carotid intima-media thickness in patients with severe hypercholesterolemia. *Am J Cardiol* 2022;S0002-9149(22):00520-3 ([Epub ahead of print]).
- [5] Sbrana F, Dal Pino B, Monteleone A, Pasanisi EM, Petersen C, Ripoli A, et al. Evolocumab improves intima media thickness regression in HeFH subjects on lipoprotein apheresis. *Nutr Metab Cardiovasc Dis* 2020;30:2417–9.
- [6] Sampietro T, Sbrana F, Bigazzi F, Ripoli A, Dal Pino B. Null receptor homozygous familial hypercholesterolaemia: quoad valetudinem long life treatment. 2047487319864191 *Eur J Prev Cardiol* 2019. <https://doi.org/10.1177/2047487319864191>.
- [7] Sbrana F, Bigazzi F, Dal Pino B, Toma M, Ripoli A, Sampietro T. Elusive therapeutic effect of PCSK9 inhibitors on lipoprotein(a) levels. *Ther Apher Dial* 2019;23:385–6.
- [8] Sbrana F, Pino BD, Bigazzi F, Ripoli A, Volpi E, Fogliaro MP, et al. A large Italian cohort on proprotein convertase subtilisin/kexin type 9 inhibitors. *Eur J Prev Cardiol* 2020;27:2284–7.

Francesco Sbrana<sup>a,\*</sup>, Michele Cocci<sup>b</sup>, Beatrice Dal Pino<sup>a</sup>  
<sup>a</sup> *Lipoapheresis Unit – Reference Center for Diagnosis and Treatment of Inherited Dyslipidemias, Fondazione Toscana “Gabriele Monasterio”, Via Moruzzi 1, Pisa 56124, Italy*  
<sup>b</sup> *Interventional Cardiology Division, Fondazione Toscana “Gabriele Monasterio”, Via Moruzzi 1, Pisa 56124, Italy*

\* Correspondence to: U.O. Lipoapheresis and Center for Inherited Dyslipidemias, Fondazione Toscana Gabriele Monasterio, Via Moruzzi, 1, 56124 Pisa, Italy.  
 E-mail address: [francesco.sbrana@ftgm.it](mailto:francesco.sbrana@ftgm.it) (F. Sbrana).