LDL-cholesterol and ischemic stroke in patients with non-valvular atrial fibrillation

Alexander Omelchenko, MD 1,*, Tziпи Hornik-Lurie, PhD2,*, Hagit Gabay3, BSc, Abid Assali, MD1,4, David Peregr, MD1,4

Drs Omelchenko and Hornik-Lurie contributed equally to the manuscript. 1 Cardiology Department, Meir Medical Center, Kfar Saba, Israel. 2 Meir medical Center research institute, Kfar Saba, Israel. 3 Clalit Research Institute, Tel Aviv, Israel. 4 Sackler Faculty of Medicine, Tel-Aviv University, Tel-Aviv, Israel.

BACKGROUND: Atrial fibrillation confers higher risk of ischemic stroke, but the contribution of low-density lipoprotein cholesterol (LDL-C) levels to this risk remains unclear. We examined the association between LDL-C levels and incident stroke in patients with atrial fibrillation treated with direct oral anticoagulants (DOACs).

METHODS: This study was conducted using the electronic database of Clalit Health Services. Included were 21,229 patients with first time diagnosis of non-valvular atrial fibrillation treated with DOACs between 2010-2017. Patients were categorized into 4 groups according to the CHA2DS2-VASc score (1-2, 3-4, 5-6, 7-9). Each group was further stratified to 4 sub-groups according to LDL-C levels (<70, 70-99, 100-130, >130mg/dl). Ischemic stroke rates were compared between the 4 LDL-C subgroups of each CHA2DS2-VASc category.

RESULTS: During 56,467 person-years of follow-up there were 2,481 incidents cases of ischemic stroke. Higher CHA2DS2-VASc score was associated with significantly increased risk of ischemic stroke (17.5, 26.9, 46.3, 94.9 cases per 1000 person years, for patients with CHA2DS2-VASc score of 1-2, 3-4, 5-6, 7-9 respectively, p<0.001). However, there was no association between LDL-C levels and incident ischemic stroke within each CHA2DS2-VASc score group even following a multivariate adjustment. Sub-analyses of patients with previous stroke and those treated with statins also failed to show any association between LDL-C levels and incident ischemic stroke.

CONCLUSIONS: Unlike the general population, LDL-C levels were not associated with ischemic stroke risk among patients with atrial fibrillation treated with DOACs. The findings support the non-inclusion of dyslipidemia in ischemic stroke risk stratification of patients with atrial fibrillation.