Lipoprotein apheresis in patients with maximally tolerated lipid-lowering therapy, lipoprotein(a)-hyperlipoproteinemia, and progressive cardiovascular disease - Prospective observational multicenter study

BACKGROUND
Lipoprotein(a) (Lp(a)) hyperlipoproteinemia is a major risk factor for cardiovascular disease, which is not affected by treatment of other cardiovascular risk factors. This study sought to assess the effect of chronic lipoprotein apheresis (LA) on the incidence of cardiovascular events in patients with progressive cardiovascular disease receiving maximally tolerated lipid-lowering treatment.

METHODS AND RESULTS
In a prospective observational multicenter study, 170 patients were investigated who commenced LA because of Lp(a)-hyperlipoproteinemia and progressive cardiovascular disease. Patients were characterized regarding plasma lipid status, lipid-lowering drug treatment, and variants at the LPA gene locus. The incidence rates of cardiovascular events 2 years before (y-2 and y-1) and prospectively 2 years during LA treatment (y+1, y+2) were compared. The mean age of patients was 51 years at the first cardiovascular event and 57 years at the first LA. Before LA, mean low-density lipoprotein cholesterol and Lp(a) were 2.56±1.04 mmol/L (99.0±40.1 mg/dL) and Lp(a) 3.74±1.63 µmol/L (104.9±45.7 mg/dL), respectively. Mean annual rates for major adverse coronary events declined from 0.41 for 2 years before LA to 0.09 for 2 years during LA (P<0.0001). Event rates including all vascular beds declined from 0.61 to 0.16 (P<0.0001). Analysis of single years revealed increasing major adverse coronary event rates from 0.30 to 0.54 (P=0.001) for y-2 to y-1 before LA, decline to 0.14 from y-1 to y+1 (P<0.0001) and to 0.05 from y+1 to y+2 (P=0.014).

CONCLUSIONS
In patients with Lp(a)-hyperlipoproteinemia, progressive cardiovascular disease, and maximally tolerated lipid-lowering medication, LA effectively lowered the incidence rate of cardiovascular events.

CLINICAL TRIALS REGISTRATION
URL: https://drks-neu.uniklinik-freiburg.de. Unique identifier: DRKS00003119.