P3725

Impact of left atrial appendage closure on circulating microvesicles levels: the MICROPLUG study

N. Amabile[1], I. Bagdadi[1], S. Armero[2], S. Elhadad[3], F. Sebag[1], L. Saby[2], K. Mammhoudi[1], A. Mechulan[4], Q. Landolff[1], C. Caussin[1], C.M. Boulanger[5]

[1]Institut Mutualiste Montsouris, Department of Cardiology, Paris, France; [2]Hôpital Européen Marseille, Marseille, France; [3]CH Marne la Vallée, Jossigny, France; [4]CHP Clairval, Department of Cardiology, Marseille, France; [5]Paris Cardiovascular Research Center (PARCC), Paris, France

Funding Acknowledgement: This work was funded by a research grant from the French Society of Cardiology and a research grant from St Jude/Abbott

Background: Percutaneous left atrial appendage occlusion (LAAO) has emerged as a valid alternative to oral anticoagulation therapy for the prevention of systemic embolism in patients with non-valvular atrial fibrillation (AF). Microvesicles (MVs) are shed-membrane particles generated during various cellular types activation/ apoptosis that carry out diverse biological effects, including procoagulant effects. Left atrial appendage has been suspected to be a potential source of MVs during AF, but the effects of LAAO on MVs production and circulating levels are unknown.The aim of this work study was to assess the variations of circulating MVs levels following LAAO.

Methods: The study includedn=25 LAAO patients and n=25 control patients who underwent coronary angiography. LAAO and control patients were treated by clopidogrel+ aspirin loading doses before procedures. Blood samples were drawn before antiplatelets therapy & 2 days after for all. A third sample was collected 6 weeks after procedure in LAAO patients. In N=10 extra patients, blood samples were collected from right atrium, left appendage and pulmonary vein during LAAO procedure. Circulating procoagulant (AnnV+), endothelial (CD62e+), platelets (CD41+), red blood cells/RBC (CD235+), leukocytes (CD11+) derived-MVs were measured using flow cytometry methods.

Results: Control and LAAO groups baseline characteristics were comparable, except for the higher age & incidence of previous stroke and lower incidence of coronary artery disease in LAAO patients. Baseline levels of the different microvesicles were comparable in both groups. In the LAAO group, we observed a significant increase of AnnV+ MVs (4355 [1712–8478] vs. 1798 [1006–2759] ev/μL, p=0.001), platelets (1615 [833–4772] vs. 802 [358–1376] ev/, p=0.005), RBC (207 [85–708] vs. 35 [5–84] ev/μL, $p<0.001$), and leukocytes MVs (1368 [783–2319] vs. 1067 [827–1564] ev/μL, p=0.02) following intervention, whereas only AnnV+ MVs levels significantly rose in controls (3701 [2043–7017] vs. 1506 [1033–4899] ev/μL, p=0.03). The 6-w analysis showed that RBC-MVs (55 [8–182 ev/μL]and AnnV+ MVs levels (2468 [1813–5576 ev/μL]were still significantly increased compared to baseline values in LAAO patients ($p<0.05$). The in-site analysis revealed that leukocyte MVs and CD62e+ endothelial-MVs were significantly higher in left atrial appendage compared to pulmonary vein (respectively 430 [26–700 vs. 161 [0–426] and 344 [22–723] vs. 200 [120–326] ev/μL, $p<0.05$), suggesting a local increased production. No major adverse ischemic or bleeding event was observed in any patient post procedural course.

Conclusions: LAAO impact circulating MVs and could create mild procoagulant status, inflammation and potential erythrocytes activation due to device presence during the first 6 weeks following intervention. These results suggest that careful attention should be paid in the anti-platelet/anticoagulant therapy in the post procedural course.