Abstract: P3757

Profibrogenic biomarkers and severity of left atrial fibrosis in patients with atrial fibrillation and metabolic syndrome: is it possible to predict the effectiveness of therapy?

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Background. Galectin-3 (Gal-3) and transforming growth factor-beta1 (TGFbeta1) – biomarkers of fibrosis are increased in patients with atrial fibrillation (AFib) and metabolic syndrome (MetS). We propose that both can impact on progression of the arrhythmia.

Purpose. Objective of the study was to evaluate the role of Gal-3 and TGFbeta1 in predicting the effect of antiarrhythmic pharmacotherapy (APT) and radiofrequency ablation therapy (RAT) in patients with AFib and MetS.

Methods. 539 AFib patients hospitalized in cardiology department (2015-2016 years) were examined. 204 AFib patients with paroxysmal (n=156) and persistent (n=48) forms 35-60 years old were included in prospective study: 110 had =3 components of MetS (IDF, 2005) and 94 without MetS. Serum GAL-3, TGF-beta1 (Enzyme immunoassay) were performed. Antiarrhythmics were applied during 12 months. Antiarrhythmic effect of pharmacotherapy was established if no episodes of AFib were registered during follow-up. 73 patients without effect of APT were treated with RAT with pulmonary veins isolation. Ablation procedure was performed with the system of electroanatomical mapping CARTO3. In the "offline" mode we evaluated areas of low voltage in the amplitude spectrum of 0,2-1,0 mV and divided all patients into groups: I - minimal (<10% of LAarea,n=18), II - mild (10-19% of LAarea,n=26), III - moderate (20-29% of LAarea,n=17) and IV - severe low voltage area (=30% of LAarea,n=12). After ablation, we analyzed the clinical data and the effectiveness of RAT during 12 months.

Results. Gal-3 in patients with recurrent paroxysms and without the effect of APT was higher than in patients without recurrent paroxysms (1312,1[750,2;2494,3] and 500,2[410,3;723,4]pg/ml,p<0,001). TGF-beta1 was also higher in patients without the effect of APT (11521,2[2950,2;17642,2] and 2999,5[1767,4;5490,2]pg/ml,p<0,001). Patients from IV group had greater low voltage area of LA, than in I group (33,4±2,1 and 6,6±2,4 %,p<0,001), but also higher levels of Gal-3 (1201,1[950,2;2140,3] and 490,2[310,3;523,4]pg/ml,p=0,027) and TGF-beta1 (9497,2[1257,2;14672,2] and 3491,5[1767,4;8470,2]pg/ml,p=0,04). The multivariate regression analysis demonstrated that Gal-3 is an independent predictor of non-effective antiarrhythmic pharmacotherapy of AFib (OR=2,38, 95%CI 1,12-5,04,p=0,024). In patients with AFib and MetS who had Gal-3 above 770,5 pg/ml (cut-off point on ROC-curve) the risk of non-effective APT was in 3,6-fold higher during follow-up (RR=3,6, 95%CI 1,6-7,9,p=0,002). Binomial regression analysis was found that greater % of LA fibrosis corresponds to higher probability of recurrence of AFib after RAT (OR=1,1, 95%CI 1,03-1,12,p=0,002).

Conclusions. Galectin-3 and TGF-beta1 in AFib and MetS patients with left atrium severe fibrosis are higher than in patients with minimal fibrosis. We suppose that profibrogenic substances can impact on progression of AFib and non-effectiveness antiarrhythmic pharmacotherapy.