Abstract: P1002

Right atrial refractoriness as a predictor of hybrid therapy outcome in patients with coexisting atrial fibrillation and typical atrial flutter

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Topic(s):
Rhythm Control, Catheter Ablation

Citation:
Background. Hybrid therapy including cavotricuspid isthmus (CTI) radiofrequency ablation (RFA) and continued pharmacological antiarrhythmic drugs is a recognized approach for atrial fibrillation (AF) and typical atrial flutter (AFL) treatment. However, electrophysiological predictors of hybrid therapy are not well studied.

Purpose. To evaluate clinical and electrophysiological predictors of hybrid therapy efficiency in patients with coexisting atrial fibrillation and typical atrial flutter.

Methods. In our prospective single-center study we included 70 patients (59 (84%) men, 56±10.6 years) with symptomatic coexisting AF and typical AFL. After stopping all antiarrhythmic drugs, patients underwent successful CTI RFA, achieving bidirectional conduction block through the CTI in all cases. Recurrences of AF after CTI RFA were determined during long-term clinical follow-up on continued individual antiarrhythmic drug therapy, regardless of the initial antiarrhythmic medication. Depending on hybrid therapy efficiency, patients were divided into 2 groups: with AF (group 1) and without AF recurrences (group 2). Two groups were compared by baseline clinical data, echocardiographical data and electrophysiological study (ES) parameters. ES data was obtained directly before CTI RFA, including effective refractory periods in different right and left atrium sites, intraatrial and interatrial conduction time, induction of atrial fibrillation during programmed and rapid atrial stimulation.

Results. During follow-up of 12 (8-24) months, 23 (33%) patients had no documented AF recurrences, 29 (41%) patients had a significant decrease of AF episodes, absence of sustained or symptomatic AF, in 18 (26%) cases hybrid therapy had no effect. Duration of effective refractory period (ERP) in the lateral right atrium area (lat.RA) was the only significant dividing factor between groups (p=0.001). By ROC-analysis results lat.RA ERP = 240 ms predicted effectiveness of hybrid therapy with 81% sensitivity, 71% specificity and 88% positive predictive value (image 1).

Conclusions. Hybrid therapy achieved a full or partial antiarrhythmic effect in 52 of 70 patients (74%) with coexisting atrial fibrillation and typical atrial flutter. Defining the duration of lateral right atrium area effective refractory period before cavotricuspid isthmus ablation may be important to predict hybrid therapy outcome in this cohort of patients.
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Image 1. ROC-analysis of lateral right atrium ERP, predicting hybrid therapy outcome in patients with coexisting AF and AFL

Comment: ERP- effective refractory period; Lat. RA- lateral right atrium area;
Dividing value - 240 ms, sensitivity 81%, specificity 71%, positive predictive value 88%; area under curve 0.793; 95% confidence interval 0.655-0.894.