An optimal approach for endocardial mapping of idiopathic ventricular arrhythmias in pediatric patents: 11 years experience

Research and Clinical Institute of Pediatrics at the N.I. Pirogov Russian National Research Medical University, Moscow, Russian Federation

Objective: To optimize the methods of endocardial mapping of idiopathic ventricular arrhythmias (VA) in pediatric pts.

Methods: In 2003-2013, 387 pts (165 - females) aged 6 to 17 yo which received invasive treatment of VA in one hospital were included into the study. ECG, 24-hour Holter monitoring and echocardiography were performed. The following criteria were used for endocardial mapping of VA substrate: presystolic activation time and pace mapping results. Two approaches for interpretation of those data were used. «Typical approach»: good prognosis for ablation – presystolic activation time is > 25 ms, spontaneous and artificial QRS morphology are identical. «Novel» approach was based on calculation of the probability of successful ablation using regression model, which included results of activation and pace mapping. Pts were divided in two groups depending on approach chosen: I (156 pts) – «Typical» approach, II – (231 pts) «Novel» approach. Efficacy, duration of procedure and effective doses were evaluated.

Results: In group I efficacy of procedure – 69.7%, in group II – 93.6% (p<0.05). Using the logistic regression model the probability of successful ablation (P) was divided into three grades: "low" (P<0.75), "medium" (0.75<P<0.9) and "high" (P>0.9). During evaluation of presystolic activation time (T) "low" P was calculated for T<29ms, "medium" P was calculated if 29ms<T≤73ms and "high" P was determined for T>73ms.

Pace mapping results were divided in two groups: "similar" and "identical". Only "medium" P was found in both cases. But P in "identical" pace mapping group was found in 2.6 times higher than in "similar" (p<0.05).

There were no significant differences in effective doses and duration of procedure (p>0.05).

Conclusions: An optimal approach for endocardial mapping of VA in pediatric pts should be based on evaluation of probability of successful ablation. Pace mapping may be useful when activation mapping results are not acceptable.