

Asymptomatic WPW pattern in children: a single center experience with the use of isoproterenol in the arrhythmic risk stratification

Oreto L.(1), Mandraffino G.(2), Baccano G.(1), Calaciura R.E.(1), Caruso E.(1), Gitto P.(1), Manuri L.(1), Poli D.(1), Saitta M.B.(1), Agati S.(1), Reali S.(1), De Zorzi A.(1), Di Pino A.(1)
Mediterranean Pediatric Cardiology Center, Bambino Gesù Pediatric Hospital in San Vincenzo Hospital, Taormina, Italy (1);Clinical and Experimental Department of Medicine, University Hospital of Messina, Italy (2)

Introduction: Lethal arrhythmias and sudden death are reported in asymptomatic children with a Wolff-Parkinson-White(WPW) pattern. Electrophysiologic study(EPS) has been advocated in order to identify high risk patients that may benefit from prophylactic ablation of the accessory pathway(AP). We aimed to report a single centre experience with risk stratification in asymptomatic children with WPW pattern using EPS.

Methods: We retrospectively analyzed records of asymptomatic patients with WPW pattern who underwent EPS(transesophageal or endocavitary) at our Institution since 2012. Parameters evaluated were: AP antegrade effective refractory period(aERP), shortest cycle length(1:1 SCL)sustaining 1:1 conduction over the AP, inducibility of atrio-ventricular re-entrant tachycardia(AVRT) and/or atrial fibrillation(AF) and shortest preexcited R-R interval(SPERRI) during AF. Parameters were determined at baseline and after iv infusion of isoproterenol. Patients were considered at risk and therefore proposed for AP ablation in case of AVRT induction with at least one of the following risk factors: aERP \leq 250msec, 1:1SCL \leq 250msec or AF induction with a SPERRI \leq 250 msec. Other indications for ablation were sport eligibility, parental choice and significant ventricular dissynchrony.

Results: Out of forty-seven patients(11 \pm 2 years,29 males), 5(10%) showed decremental properties suggesting Mahaim-type preexcitation. For the other 42, EPS results are reported in Table1. Patients at risk were 16/42(38%). Considering only AP properties, 14(33%) had aERP/1:1SCL \leq 250 msec at baseline and additional 13(30%) during isoproterenol. Only 3 patients(7%) fulfilled all risk criteria. A total of 24 patients(57%) underwent ablation(no procedural complications), which was acutely successful in 23(95%). Three recurrences occurred, 2 of whom underwent subsequent successful ablation. The remaining 18 patients(43%) are still asymptomatic (3-year mean follow-up).

Conclusions. In asymptomatic children with WPW pattern, isoproterenol during EPS induced significant reduction of aERP and 1:1SCL and increased the cases of inducible AVRT. In our experience the use of isoproterenol increased the number of patients considered to have potential high risk for lethal arrhythmias that could benefit from AP ablation.

Table1

AVRT baseline	AVRT isoproterenol	aERP baseline	aERP isoproterenol	Mann-Withney-Wilcoxon	1:1SCL baseline	1:1SCL isoproterenol	Mann-Withney-Wilcoxon	AF/flutter baseline	AF/flutter isoproterenol
12pts (29%)	17pts (40%) Relative risk+25% (no statistical difference)	314 \pm 50 msec	250 \pm 27 msec	p<0.0001	308 \pm 73 msec	226 \pm 32 msec	p<0.0001	9pts (21%)	6pts (14%)