

Can psychostimulant drug therapy change the electrophysiological properties of low-risk manifest accessory pathways?: A case report

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Introduction: Attention-deficit hyperactivity disorder (ADHD) is the most common psychiatric disorder in paediatric population. Despite their safety profile some concerns about the potential cardiovascular adverse effects such as arrhythmias and sudden cardiac death (SCD) still continue. The effects of psychostimulant drugs on the accessory pathway conduction properties with asymptomatic WPW pattern during the treatment of ADHD have not been evaluated before.

Case report: A 8-year-old boy diagnosed with ADHD was admitted to our paediatric outpatient clinic for cardiac evaluation before the initiation of psychostimulant drug therapy. His medical and familial history were unremarkable in terms of tachycardia and any cardiac event. On admission, cardiac and other system physical examinations were normal. Electrocardiographic (ECG) examination showed a WPW pattern as short PR and delta waves. Echocardiographic examination revealed normal cardiac structure and functions. An electrophysiological study (EPS) was performed for assessing the electrophysiological properties of the accessory pathway (AP) before starting the psychostimulant therapy. The pathway's effective refractive period (APERP) from the high right atrium was 290 ms and shortest preexcited RR interval (SPERRI) was 310 ms during atrial fibrillation. There was no any inducible supraventricular tachycardia observed during programmed or burst atrial pacing. With this electrophysiological properties the AP was accepted as low-risk. On the sixth month of psychostimulant therapy patient underwent second EP study for evaluating the effect of methylphenidate on the AP's electrophysiological properties. The APERP was 250 ms and SPERRI interval was 210 ms during rapid atrial pacing. Due to the high risk properties of AP and patient will continue to use psychostimulant drug therapy we decided to perform AP's ablation. During delta mapping there appeared to be an accessory pathway potential in right posteroseptal region. Ablation was performed with 6-mm tip Cryocatheter by using 3D electroanatomic mapping (The EnSite NavX system, St. Jude Medical, St Paul, MN, USA) guidance (Figure). There was no evidence of preexcitation after cryoablation. After the ablation therapy patient was discharged without any complication.

Conclusions: Patients with WPW pattern who will use psychostimulant drug therapy should be evaluated by electrophysiological study even if they are asymptomatic in terms of any arrhythmic event



Figure: 3D electroanatomic mapping and ablation of AP