Ten-year Experience of Radiofrequency Catheter Ablation of Accessory Pathways in Children and Young Adults

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Abstract Transcatheter radiofrequency ablation of supraventricular tachycardia was first introduced in 1987. The procedure is now well-accepted as primary treatment for supraventricular tachycardia in paediatric patients. In this report we describe our experience of radiofrequency ablation of accessory pathway mediated supraventricular tachycardia in the past 10 years. From 1994 to 2005, 121 procedures of radiofrequency ablation of accessory pathway were performed on 103 children and young adults aged 4.3 to 24.7 years. Ninety-three patients (90.3%) had one pathway and 10 (9.7%) had 2 pathways. Forty-four percent of all accessory pathways were associated with Wolff-Parkinson-White syndrome. There were 73 (65.2%) left-sided accessory pathways and 39 (34.8%) right-sided accessory pathways. One hundred and three (92%) accessory pathways were successfully ablated. Successful rate of left-sided accessory pathway ablation was higher than the right-sided accessory pathway (97.3% vs. 82.1%, p=0.005). Two patients (1.9%) developed major complications: one transient second degree and one permanent complete heart block who required permanent pacing. Recurrence after first successful radiofrequency ablation was 10.4% (9/86). Seventeen procedures (14%) were performed for failed first radiofrequency ablation or recurrence. On follow-up 90.3% of all patients remained asymptomatic. Our experience indicated that radiofrequency ablation is a safe and effective treatment for accessory pathway mediated supraventricular tachycardia in children and young adults.

Key words Accessory pathways; Children; Radiofrequency ablation; Supraventricular tachycardia

Introduction Supraventricular tachycardia (SVT) is the most common tachyarrhythmia in children.¹ The incidence of SVT is estimated to be between one in 250 to one in 1000 children.² There are three important mechanisms of SVT: accessory pathway (AP) mediated atrio-ventricular reentry tachycardia (AVRT), atrio-ventricular nodal reentry tachycardia and ectopic atrial tachycardia. In the study by Ko et al, AVRT is the commonest cause of SVT in children, accounting for about 73% of all cases.³

Previously surgical division of AP by cardiac operation was required to achieve cure for patients with drug refractory AVRT. However the complications associated with surgical treatment ranged from 5% to 20%.⁴ In 1987 successful transcatheter radiofrequency ablation of SVT in human was first reported.⁵ Since then, it is now widely accepted as a curative treatment for SVT. In 1994, radiofrequency ablation (RFA) became available for management of paediatric cardiac arrhythmias in our institute. In this report, we reviewed the efficacy and safety of this procedure for children and young adults with AVRT.