

Cryo-Ablation for Atrioventricular Reentrant Tachycardia Substrates in Pediatric Patients in Israel

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Objectives: To describe our experience with cryo-ablation (Cry-Ab) of accessory pathway (AP) with close proximity to the AVN and to describe a method of reducing the recurrence rate.

Background: Radiofrequency (RF) ablation has become established therapy for tachy-arrhythmias in the pediatric population. However challenges remain in term of the safety and efficacy of RF ablation in specific locations. Cry-Ab may be an alternative method. However, Cry-Ab is associated with high recurrence rate.

Methods: A total of 45 patients aged 7-24 years with SVT or overt AP underwent 53 Cry-Ab procedures. They had right antero-septal, para Hisian or right mid-septal AP. Cryo-mapping and Cry-Ab were performed with a 7F, 4mm tip catheter (freezer, Cryocath Technologies Inc., Canada). Cryo-mapping was performed at -350C for a maximum of 60 seconds and Cry-Ab for 4 minutes at -800C. An acute success was defined as noninducibility of SVT and conduction block over the AP. In case of recurrence an approach of "insurance cryo-ablation" method was used (an additional few Cry-Ab applications around the successful area).

Results: The mean and median age was 15.2±4.6 and 14, respectively. The acute successful rate was 43/45 (96%). During a mean follow-up of 2.3±1.3 years, 7 patients had recurrence of arrhythmia (16%), all of them had successful second procedure and one had third successful ablation, reaching a total long term successful rate of 43/45 (96%). The total Cry-Ab time and the number of full Cry-Ab applications were significantly higher in the second compared to the first procedure (820±315 second and 3.4±1.3 applications vs 350±130 second and 1.4±0.5 applications, respectively, P<0.01). One patient had mechanical ablation of the AP and one patient had transient complete AVB.

Conclusions: Cry-Ab is a safe and effective treatment for SVT due to AP with close proximity to the AVN in children. A method of "insurance cryo-ablation" may significantly reduce the recurrence rate.