

**One cryolesion is often enough to treat children with septal arrhythmia substrates in the right atrium**

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Introduction: Cryoablation is the preferred method of ablation for children with arrhythmia substrates near the normal conduction system. It provides increased safety compared to radiofrequency energy due to the characteristics of cryoenergy tissue effects, ability to cryomap and firm catheter attachment during cryoenergy application. Freeze-thaw cycles or a line of adjacent lesions have been recommended to decrease recurrence risk, which has been suggested to be higher than with radiofrequency ablation. However, at least in the smallest children, extra lesions might cause additional unnecessary risks.

Methods: Children treated with only 1 or 2 cryoapplications were collected out of 62 consecutive children treated with cryoenergy during Dec 2005 and June 2010. These 25 patients were analyzed for arrhythmia substrates, ablation procedures, and recurrence rate. The median age was 13.5 yrs (range 7.3-18.3, 75% and 25 % interquartile 12.5-15.7), weight 52 kg (27-80, iq 42-66) and height 166 cm (131-187, iq 150-175). The tachycardia mechanism was AV nodal re-entrant tachycardia (AVNRT) in 19 patients (76%), accessory pathway in 5 (20%) and atrial ectopic tachycardia originating near coronary sinus ostium in 1 (4%). The accessory pathway location was right anteroseptal in 1, midseptal in 2 and posteroseptal in 2. The cryocatheters used were 7 F Freezor Xtra3 with a 6 mm tip in 16 pts and Xtra1 with a smaller curve in 9 pts. The median fluoroscopy time using NaVX navigation system was 5.5 min (1-26, iq 3-9), radiation dose 80  $\mu$ Gym<sup>2</sup> (24-570, iq 35-138) and procedure time 2 hrs (0.8-3.5, iq 1.5-2.5).

Results: 18 pts (29% of all pts) were successfully treated with one cryoapplication of 4 minutes or less, with only one recurrence. Additional 7 (11%) patients were cured with 2 lesions. The one recurrence occurred in a posteroseptal accessory pathway and was successfully treated in another procedure. The median follow-up time of the 25 patients was 24 months (5-59, iq 14-38).

Conclusions: Up to 40% of arrhythmia substrates in right atrium can be successfully treated with only one or two cryolesions in pediatric patients in straight-forward cases. The recurrence rate was 4% during a median follow-up of 2 years.