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Comparison of Cryo- vs. Radio-Frequency-Current-ablation in patients with av-nodal-reentry-tachycardia [AVNRT]

Emmel M., Khalil M., Udink ten Cate F., Brockmeier K., Sreeram N.
Paediatric Cardiology
Cologne Heart Center
University Hospital of Cologne

Introduction:
Cryo-ablation is a safe treatment for av-nodal-reentry-tachycardia [AVNRT] with a low risk for catheter-induced heart block, but its efficacy seems to be lower compared to radiofrequency-current [RF] ablation.

Methods:
We retrospectively analyzed the efficacy and safety of cryo- vs. RF-ablation in patients with AVNRT. Targeted end point were non-inducibility of tachycardia, absence of dual av-node physiology [DAVNP], defined as an ah-jump>50ms during atrial extra stimulus pacing, or at least no echo-beats and/or absence of sustained slow pathway conduction [SSPC].

Results:
Between 2003 and 2013 n=98 patients with AVNRT were treated either with RF- (n=62) or cryo-ablation (n=36). Mean age was 12.6±3.4 years in the cryo- and 12.5±3.6 years in the RF group, mean follow up 4.9±1.5 and 5.5±3.5 years, respectively.

Cryo-ablation was effective in 32/36 patients (89%) and in all patients with RF-energy. The four patients which could not be treated by cryo-ablation were effectively treated by RF-energy during the same procedure, accordingly n=66 patients were treated with RF-energy.

Two of 62 patients (3.2%) in the RF group and one out of four patients in whom we switched to RF got complete heart block. Thus the risk for heart block is 3/66 (4.5%) for all RF-ablations whilst none of the patients treated with cryo-energy developed heart-block.

Seven of the 32 patients (22%) after cryo-ablation and 2/66 patients (3%) in the RF-group had recurrence of tachycardia, despite the targeted endpoint was reached after the first ablation.

In the cryo-group were two successfully treated by cryo- and three by RF-ablation.Two got reappearance after another cryo-ablation and were finally treated by RF-energy. The two recurrences in the RF-group were finally treated by a second RF-ablation.

All together 9/32 patients (28%) could not be treated by cryo-ablation and finally had to be treated with RF-energy.

Conclusions:
For the ablation of AVNRT cryo-energy is very safe, but has a lower efficacy and a high recurrence rate. In contrast RF ablation is highly effective but associated with a risk for permanent heart block. Switching from cryo- to RF-energy is probably associated with a higher risk for completed heart block.