Atrial arrhythmias in patients with adult congenital heart disease

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**Introduction:** Catheter ablation is performed to treat atrial tachyarrhythmias in adult congenital heart disease (ACHD). However, the rate of recurrence is reported to be up to 50%. We aim to describe the electrophysiological findings, procedure details, and recurrence at 6 months after catheter ablation in patients with ACHD.

**Methods:** Patients with ACHD who underwent catheter ablation for atrial arrhythmias at the National Heart Centre Singapore between January 2017 and December 2018 were studied. Pre-specified clinical and procedural data of interest and time from ablation to recurrence were obtained by chart and procedure report review. Patients with atrial arrhythmias after Maze procedures were excluded.

**Result:** 16 patients with ACHD and atrial arrhythmias underwent catheter ablation; their ACHD diagnoses were atrial septal defect (ASD) (37.5%, n=6), atrioventricular septal defect (18.8%, n=3), ventricular septal defect (12.5%, n=2), tetralogy of Fallot (12.5%, n=2), pulmonary stenosis (12.5%, n=2) and complex congenital heart disease with transposition of great vessels, ventricular septal defect and pulmonary stenosis (6.25%, n=1) were studied. Female was 81%. Mean age was 59+/-13 years. All patients had previous surgical correction of defects except one patient with ASD. Mean left ventricular ejection fraction was 54+/-9%. A total of 24 arrhythmias were inducible. The EP diagnoses were cavitricuspid isthmus (CTI) dependent flutter (42%), intra-atrial reentry flutter around atriotomy scar (38%), RA free wall flutter (8%), atrial tachycardia (8%) and peri mitral flutter (4%). 50% of patients had two arrhythmia mechanisms. Mean procedure time was 176+/-79min. Mean radiofrequency ablation time was 1185+/-761 seconds. Mean Fluoroscopy time was 19+/-16min. No sustained atrial tachyarrhythmias were induced after ablation. Acute procedural success rate was 87.5% without any complication. Patients were followed over a median of 368 days (Interquartile range - 127 days to 438 days). At 6 months follow-up, recurrence occurred in 5 patients (31%) with two arrhythmia mechanisms. Of these 5 patients with recurrence, 3 patients underwent a repeat ablation with 100% success.

**Conclusion:** Catheter ablation of atrial arrhythmias in patients with ACHD is effective and safe. More than one arrhythmia mechanism has a higher risk of recurrence.