

The Use of 3D electro-anatomical mapping system in the management of complex atrial arrhythmias in patients with ACHD – a case series

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Introduction

ACHD patients suffer from multiple, and often atypical, atrial arrhythmias. A 3D electro-anatomical mapping system can assist in identifying these arrhythmias and to assist in ablation procedures.

Methods

We report on patients with adult congenital heart disease (ACHD) and atrial arrhythmias treated at our center with Ultra-high density Rhythmia™ mapping system.

Results

Included were 9 patients treated between April 2019 to November 2021. There majority were women (8 patients) and the average age was 42.7 ± 8.9 years. 13 procedures were performed of which 3 (33%) of these patients had multiple ablation procedures done during this time. The congenital heart disease diagnosis was varied – with anomalies including Tetralogy of Fallot, atrial septal defects, Ebstein anomaly, Transposition of the great arteries with Mustard palliation procedure. 5 Patients (55%) of the cohort had undergone a prior ablation procedure, average time following prior ablation was 49.1 ± 58.1 months. Multiple arrhythmias were identified in 5 of the 13 cases (38%). The arrhythmias included 5 of Cavo-tricuspid Isthmus dependent (CTI) atrial flutter, 4 of scar related flutter, 3 of atypical flutter, 5 of atrial

tachycardia and one of atrial fibrillation. In 77% cases the ablation was successful at the end of the procedure. During the follow up of 12.6 ± 8.3 months, there were 4 cases of recurrent arrhythmias (44% of patients) and 3 re-do procedures.

Conclusion

The use of anatomical electrocardiographic mapping is useful in the identification and treatment of complex atrial arrhythmias in patients with ACHD. In our cohort, the ablation of complex atrial arrhythmias in patients with ACHD using a high-resolution 3D mapping system was feasible with an acceptable success rate.