

Zero-fluoroscopy cryoablation of atrioventricular nodal reentrant tachycardia in children with congenital heart disease: when everything is a mirror picture

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INTRODUCTION

Minimizing radiation exposure to pediatric patients during invasive procedures is a critical goal to achieve in Electrophysiology laboratories, as these patients have a high stochastic risk of radiation-induced injuries due to their long life expectancy. In this context, multiple studies support the efficacy and safety of non-fluoroscopic navigation systems to guide ablation procedures in pediatric population. However, there are very few reports on the use of this technique in patients with congenital heart disease.

METHODS

We present a six-year-old male with congenital heart disease and episodes of a wide QRS regular tachycardia was scheduled for ablation due to failure of pharmacological treatment. He had recently undergone surgical repair of a double-outlet right ventricle with ventricular septal defect. Besides, he had viscerio-atrial situs inversus and dextrocardia.

The procedure was performed under general anesthesia and non-fluoroscopic guidance using the EnSite Precision™ Cardiac Mapping System (St. Jude Medical, Inc.).(figure 1: Right anterior oblique (RAO) and B. left anterior oblique (LAO) view show situs inversus with dextrocardia : The morphologic right atria is on the left and coronary sinus is on the right. The location of his bundle is in the low medium septum).

Atrial programmed stimulation revealed dual atrioventricular nodal physiology, and reproducibly induced the clinical tachycardia .After AVNRT diagnosis was made, atrioventricular nodal slow pathway ablation was performed.

Cryoenergy was selected for ablation instead of radiofrequency due to these two reasons: 1) The relatively low location of the His bundle in the triangle of Koch, and 2) The higher risk of iatrogenic atrioventricular (AV) block in children with congenital heart disease than in other patients when performing radiofrequency ablation of AVNRT.

CONCLUSIONS

In this case, we safely achieved AVNRT ablation using a non-fluoroscopic intracardiac navigation system and cryoenergy ablation.

