Prognosis of radiofrequency catheter ablation in patients with twin atrioventricular nodes before TCPC procedure

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Background: Twin atrioventricular nodes (tAVNs) are sometimes associated with complex congenital heart disease such as heterotaxy syndrome and can be a cause of AV reentrant tachycardia (AVRT). Therefore, electrophysiological evaluation is important for total-cavo pulmonary connection (TCPC) candidates because catheter access to the atrium and AV valve is restricted after TCPC, and prophylactic catheter ablation (CA) is occasionally performed to inducible AVRT. On the other hand, few investigators have reported that ablating one of tAVNs might cause interventricular dyssynchrony and systemic ventricular dysfunction. The aim of this retrospective study is to investigate clinical results of prophylactic CA of unilateral AVN in TCPC candidates.

Methods: Electrophysiologic study was performed in 10 TCPC candidates (median age; 3 years) who had undergone Glenn operation and associated with common AV valve. Nine patients were heterotaxy syndrome (asplenia in 6 and polysplenia in 3). Spontaneous narrow QRS tachycardia had been demonstrated at the palliative operation and/or diagnostic catheterization in all patients.

Results: Two different QRS complexes without preexcitation were observed and two distinct His bundle electgrams were recorded at the anterior aspect and the posterior aspect of the common AV valve in all 10 patients. AVRT involving tAVNs was also induced in all patients and then we decided to perform CA of unilateral AVN. Successful RFCA of one AVN which showed recessive anterograde conduction was achieved and no further AVRT was inducible in all cases. The QRS duration was 80±10ms (63-90ms) before CA and 85±12ms (68-95ms) after CA. The ventricular ejection fraction was 62±7% (55-68%) before CA and 60±6% (53-69%) after CA.

Conclusion: Prophylactic CA of unilateral AVN for TCPC candidates with inducible AVRT involving tAVNs may be one therapeutic option. Iatrogenic ventricular dyssynchrony after CA was never observed in our experience.