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Interest of coronarography in posteroseptal accessory pathways ablation in children

Alazard M. (1), Lacotte J. (1), Piechaud J.F. (1), Maltret A. (1, 2)
Institut Cardiovasculaire Paris Sud, Hopital Privé Jacques Cartier, Massy, FRANCE (1); Centre de référence « Malformations cardiaques Congénitales Complexes-M3C », Université Paris-V, Necker-Enfants Malades, AP-HP, Paris, FRANCE (2)

INTRODUCTION
Radiofrequency catheter ablation has become a routine management of pediatric patients with accessory pathways. Nevertheless ablation of posteroseptal accessory pathways are challenging, especially in children, because of the proximity of the target site to coronary arteries. We report the interest of coronarography prior to catheter ablation in posteroseptal accessory pathways in children.
METHOD
Between July 2009 and December 2015, we registered 441 paediatrics electrophysiologicals ablations, 237 (54%) concerned accessory pathways, among which we issued 55 (23%) posteroseptal accessory pathways. We retrospectively reviewed those 55 posteroseptal accessory pathways ablation procedures (20 with decremental conduction and 35 typicals) concerning 50 paediatrics patients.
RESULTS
The median patient age was 10.5 years old (range 3.5-18) and median body weight was 39.3 kg (12-92). 71% were symptomatic mostly with palpitations and 15% presented with heart failure due to tachycardia induced cardiomyopathy, all associated with decremental accessory pathways and permanent jonctionnal reciprocating tachycardia (PJRT). Radiofrequency ablation was performed using a 4 mm irrigated electrode catheter (Thermocool, Biosense Webster, Inc). 20 patients underwent a coronarography coupled to the 3D navigation system (Carto Univu). Among them, 30% had a coronary artery in close proximity to the ablation site which modified the course of treatment: 1 patient was switched for cryotherapy, 3 patients received limited RF energy (15W), the others 2 had coronary artery injury (figure 1). In the patient treated with cryotherapy the ablation was unsuccessful, among the 3 patients with limited RF, one had an early recurrence.
CONCLUSION
Children are more at risk of coronary artery injury because of their relatively small hearts with a more pronounced proximity of ablation sites to coronary artery, which are narrower vessels with less cooling than in adult. Ablation of posterior septal pathways specifically in children carries a risk of coronary artery injury, which is probably underestimated. Coronary angiography should be strongly considered before catheter ablation for posteroseptal accessory pathways in children. The use of merged 3D images and coronarography, the limitation of RF energy or the switch to cryotherapy are possible ways to limit the risk of coronary artery injury.

Figure 1: Coronary injury secondary to RF ablation