

P1-17

Nonfluoroscopic mapping for supraventricular arrhythmia ablation in pediatric patients. Initial results in a prospective study.

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Introduction:The current standard of care for imaging during supraventricular tachycardia (SVT) ablation uses fluoroscopy, which exposes otherwise healthy children to the potential harmful effects of radiation.**Objective:** The purpose of this study was to determine whether the adjunct use of nonfluoroscopic imaging systems reduces radiation exposure during SVT ablation among children.**Methods:** This was a prospective, single-center study that included consecutive patients aged with less than 18 years-old with SVT and normal cardiac anatomy referred to catheter ablation. Patients were randomized to control (fluoroscopy only) or study group (fluoroscopy + NavX electroanatomic mapping). The same operator performed all procedures. Fluoroscopic and procedure times (minutes) were registered and radiation doses (mSv) were measured by two dosimeters positioned on the anterior and posterior chest wall. **Results:** Twenty six patients were enrolled (12 control group, 14 study group). Median age was 11.5 years-old (Q1: 8.1, Q3: 15.3); 21(80.7%) had accessory pathways, 4(15.4)% had AVNRT and 1 (3.8%) Atrial Tachycardia. The study group presented shorter fluoroscopic time (155±94 vs 86±58 seconds, p=0.03). No difference was observed on x-ray exposure measured on anterior [Study: 0.4mSv (Q1:0.1, Q3: 0.85) vs Control: 0.25mSv (Q1: 0, Q3: 0.65); P=0.42] and posterior [Study: 0.6mSv (Q1: 0.15 Q3 2.65) vs Control: 0.9mSv (Q1: 0.225 Q3: 2.175); P=0.79] dosimeters. Procedure time was longer on the study group (61±33 min vs 114±52min; p=0.006). Acute success was obtained in 11 (91.7%) procedures on control group and in 12(85.7%) in the study group (P=1), with no adverse events. **Conclusion:** Electroanatomic nonfluoroscopic imaging systems during SVT ablation in children resulted in a reduction in fluoroscopic time, without reduction in radiation, measured by dosimeters. Conversely, an increase in the procedure time was observed.