Videoassisted thoracoscopic surgery in children with arrhythmias

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Videoassisted thoracoscopic (VATS) surgery is one of the surgical approaches for treatment of life threatening in patients with cardiac arrhythmias. Left Cardiac Sympathetic Denervation (LCSD) is an effective treatment in patients with life-threatening tachyarrhythmias, but extremely rarely used in children. Thoracoscopic pacemaker (PM) implantation in patients with bradyarrhythmias is less traumatic and is accompanied by a decrease in the frequency of postoperative complications, but is described only in adults.

Purpose: The aim of our work is to evaluate the safety and applicability of videoassisted thoracoscopic surgery in young patients with cardiac arrhythmias.

Methods: We included in the study 21 children (67% boys) with severe cardiac arrhythmias – catecholaminergic polymorphic ventricular tachycardia (CPVT) – 8 pts, long QT syndrome (LQTS) – 7 pts, atrioventricular block (AVB) – 5 pts, sick sinus syndrome (SSS) – 1 pt.

All pts had VATS surgery – LCSD (low pol of Th1-Th4) in 15 pts and epicardial implantation of PM in 6 pts from the database of the Russian Pediatric Arrhythmia Centre in 2016–2018. All pts with CPVT and LQTS were treated with BB and 8 pts had ICDs implanted.

Examination including personal and family history, ECG, 24-hour Holter monitoring, Treadmill exercise were made before surgery. All pts had structurally normal heart.

Results: The average age was 8.7±5.1 (from 2 to 17). The mean follow-up was 13.5±6.8 months (3 to 27 months). The mean operative time was 87.5 min (52 to 122 min), the blood loss was minimal, and all patients were able to move freely several hours after surgery. No pts experienced Horner's syndrome. No complications in the early and late postoperative period. Children with PM had VVIR or VVI with basic rate 70–75 imp/min and 45 imp/min in 1 pt. The percentage of children with cardiac events or syncope after VATS-S was significantly reduced from 62% to 5% (from 13 to 1).

Conclusions: VATS surgery is safe and associated with reduction of syncope or cardiac events in children with cardiac arrhythmias.