

Pacemaker treatment in a national cohort of patients after Fontan surgery.

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Objective

In patients with univentricular heart defects Fontan type of surgery has been performed in Sweden since the beginning of the 1980's, and increasingly so during the last 30 years. We aimed to examine the prevalence of, indications for and risk for pacemaker, with regard to type of Fontan surgery.

Methods

We retrospectively reviewed all Swedish patients who underwent complete Fontan surgery from 1982 to 2017 (n=581). Patients were identified from four different registries and clinical records were reviewed.

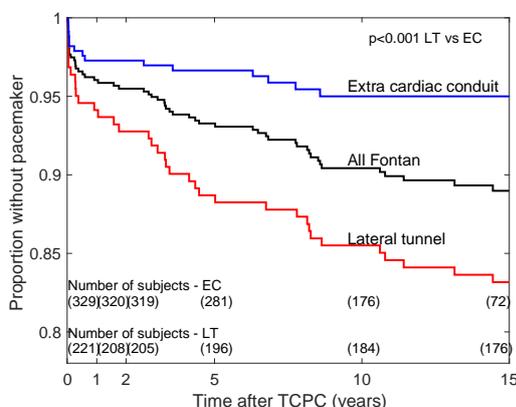
Results

Fourteen percent (79/581) of the patients with a completed Fontan circulation had received a pacemaker. The mean follow-up time from complete Fontan was 12.6 ± 7.2 years. Four patients had an atriopulmonary connection (whereof 3 had a pacemaker); 230 had a lateral tunnel (LT) and 343 had an extracardiac conduit (EC). In Sweden the surgical method of choice has developed from from LT to EC, thus the follow-up time was shorter in the EC group than in the LT group. A Kaplan-Meier analysis was performed to compare the need for pacemaker in the patients with LT/EC who received their pacemaker after the Fontan completion. The incidence of pacemaker treatment was higher in patients operated with LT (17%) than in patients with EC (4%) (Figure).

The most common indication for pacemaker was sinus node dysfunction (66 %) followed by atrioventricular block (30%). In 4 % of the cases the indication was protection for bradycardia due to need for treatment with anti-arrhythmic drugs for ventricular or supraventricular tachyarrhythmias. A Kaplan Meier analysis was performed in patients with pacemaker treatment only due to sinus node dysfunction (lateral tunnel =29, extra-cardiac conduit =10) and we still found a significantly higher prevalence in patients with LT compared to EC ($p<0.001$).

Conclusions

In the Swedish national cohort the incidence for a pacemaker in patients with Fontan circulation operated between 1982 and 2017 was 14 %. The main indication was sinus node dysfunction (66%). The incidence of pacemaker treatment was higher in patients operated with lateral tunnel than in patients operated with an extra-cardiac conduit ($p<0.001$).



Kaplan-Meier curve showing the proportion of patients that were free from pacemaker treatment at different times after TCPC. Numbers in parentheses refers to the remaining number of EC/LT patients at the time points 0, 1, 2, 5, 10 and 15 years after TCPC. TCPC= Total Cavo Pulmonary Connection, LT= lateral tunnel, EC= extracardiac conduit